

SEA SCOUT ADVANCEMENT REQUIREMENTS

Current copies of reference materials, such as merit badge pamphlets, U.S. Coast Guard navigation rules, *International Yacht Racing Rules*, OSHA requirements, *International Code of Signals*, and others change frequently. They should be available in your ship's library and are not reprinted in this manual.

Note: Boy Scout merit badge requirements are used in Sea Scout advancement. Merit badges and other Boy Scout insignia except the Eagle Award are not worn on Sea Scout uniforms.

APPRENTICE

Ideals

1. Qualify as an official member of your Sea Scout ship by taking part in the ship's admission ceremony.
2. Repeat from memory and discuss with an adult leader the *Sea Promise*. Discuss the *Scout Oath and Law* and the *Venturing Code*, and agree to carry out the provisions of your ship's code.
Reference: Pages iv, 4-10



Active Membership

3. Attend at least 75 percent of your ship's meetings for at least one month. *Note:* Check with your ship's yeoman.
4. Provide evidence that your dues are paid up and that you are doing your fair share in helping to finance your ship's program. *Note:* Check with your ship's purser.
5. Describe the Sea Scout uniforms adopted by your ship and obtain a suitable uniform. Tell how and when the uniform is worn and how to care for it.
Reference: Pages 3-15 – 3-25

Special Skills

6. **Seamanship:** Using both large and small line, tie and explain the use of the following knots: square knot, bowline, clove hitch, sheet bend, two half hitches, figure-of-eight, and cleat hitch. Demonstrate the ability to use a heaving line.
Reference: Pages 5-4 – 5-6; 5-19 – 5-20
7. **Safety:** Know the elementary safety rules for small boats. Know the safety rules that apply to the floating equipment used by your ship, and safety standards in the use of power tools, machinery, lifting heavy objects, and other safety devices used by your ship. Demonstrate the proper use of a personal flotation device such as a life jacket or a life buoy. Be familiar with and be able to list the standard marine distress signals, and demonstrate the procedure to send a VHF distress call.
Reference: Pages 5-83 – 5-91; 5-41; 5-51 – 5-53
8. **Customs:** Demonstrate the proper procedure for boarding a vessel. Demonstrate normal usage of personal courtesy on board a ship.
Reference: Pages 2-12 – 2-13, Appendix K
9. **Swim Test:** Swim 75 yards/meters in a strong manner using one or more of the following strokes: sidestroke, breaststroke, trudgen, or crawl; then swim 25 yards/meters using an easy resting backstroke. After completing the swim, rest by floating. Discuss the *Safe Swim Defense Plan* with a ship's officer.
Reference: Page 5-88; *Swimming* merit badge pamphlet, No. 33299
10. **Work:** Log at least 16 hours' work on ship's equipment, projects, or activities other than regular ship meetings, parties, dances, or fun events. *Note:* Arrange for this through the ship's officers.

ORDINARY

Ideals



1. Give an explanation of both Sea Scout emblems and tell how and why they are used. Prove that you have a general understanding of the customs and courtesies of the sea.
Reference: Pages 3-15; 2-12 – 2-19
2. Give a brief history of the U.S. flag, and show when to fly it and how to hoist, lower, fold, display, and salute it.
Reference: Pages 2-14 – 2-16

Active Membership

3. Attend at least 75 percent of your ship's meetings and special activities for six months. *Note: Check with your ship's yeoman.*
4. Complete quarterdeck training, either as an elected officer or as a prospective officer, as provided and required by your ship or council.
5. Recruit a new member for your ship and follow through until he or she is registered and formally admitted. (This requirement may be waived by the ship's committee if additional membership is not possible at the time the Sea Scout applies.)
Reference: Pages 2-20 – 2-21

Special Skills

6. **Boats:** Know the identifying features and special advantages of ten of the following types of boats: punt, skiff, dory, dinghy, pulling whaleboat, motor whaleboat, pram, kayak, canoe, catamaran, trimaran, runabout, motor cruiser, motor sailer, motor lifeboat, self-bailing surfboat.
Name the principal parts of the type of craft commonly used by your ship.
Know the proper display of boat flags and courtesy on small boats.
Demonstrate your ability to handle a

rowboat.

Reference: Pages 2-18 – 2-19; 5-98 – 5-101; 5-104 – 5-106 and Rowing merit badge pamphlet, No. 33392

7. **Marlinspike Seamanship:** Using line appropriate to the craft you normally use, tie the following knots and explain the use of each: overhand knot, stevedore's knot, bowline on a bight, timber hitch, rolling hitch, marline hitch, midshipman's hitch, and double bowline (French bowline).

Name the various materials used for rope, the advantages and disadvantages of each, and the characteristics of laid and braided rope. Understand the meaning of lay, thread, strand, and hawser.

Demonstrate the ability to secure a line to pilings, bitts and rings, and to coil, flake, and flemish a line. Know how rope is sized and measured. Demonstrate how to cut and heat seal a synthetic line.

Reference: Pages 5-1 – 5-10

8. **Ground Tackle:** Describe five types of anchors. Describe how each type holds the bottom, the kind of bottom in which it holds best, and any other advantages or disadvantages.

Name the parts of a stock and stockless anchor.

Demonstrate the ability to weigh and set anchor.

Reference: Pages 5-13 – 5-18

9. **Piloting:** Explain the degree system of compass direction. Explain variation and deviation, and show how corrections are applied to correcting and uncorrecting compass headings assigned by your consultant.

Name relative bearings expressed in both degrees and points. Be able to report objects in view, wind directions with respect to the boat, and know the duties of a lookout.

Name three kinds of devices used aboard ship for measuring speed and/or distance traveled and demonstrate their use if possible.

Make a dead reckoning table of com-

pass and distances (minimum three legs) between two points, plot these on a chart, and determine the final position. *Note:* It is best if this requirement can be met while under way. If this is not possible, it may be simulated, but the courses and charts used must be those in the normal cruising area of the ship.

Reference: Pages 5-32 – 5-35; 5-53 – 5-58

10. **Communications:** Name the three principal methods of visual signaling and explain the advantages and limitations of each method.

Name the three principal types of radiotelephone equipment in marine use and demonstrate your knowledge of correct radiotelephone procedures.

Reference: Pages 5-67 – 5-70; 5-50 – 5-53, and *International Code of Signals*, Pages 5-13

11. **Time:** Understand Universal coordinated time (Greenwich mean time) and zone time, and demonstrate the ability to convert from one to the other for your local area. Name the seven watches and bell time. Understand the 24-hour system of telling time.

Reference: Pages 5-74; 4-9 – 4-10

12. **Swimming:** Meet the requirements for the Swimming merit badge.

Reference: *Swimming* merit badge pamphlet, No. 33299, and Page 5-88

13. **Cruising:** Take part in the planning and make a 2-day (including overnight) cruise in an approved craft under leadership. Submit a satisfactory log of the cruise.

Name the wheel or helm orders specified in the current *Pilot Rules* manual. While on the cruise, perform the duties of a helmsman.

Reference: Page 5-66; 4-36 – 4-39

Note: For each day of the cruise, fill out a harbor log.

14. **Safety:** Know the man overboard, fire, abandon ship and all other drills used by your ship.

List the equipment that should be

contained in an abandon ship bag, and a list of duties to be performed before abandoning ship.

List safety equipment required by law for your ship's main vessel. Discuss *BSA Safety Afloat* with a ship's officer.

Reference: Pages 5-84 – 5-85, 5-90, and *BSA Safety Afloat Training Outline*, No. 34159, and *Federal Requirements and Safety Tips for Recreational Boats*, U.S. Coast Guard

15. **Galley:** While on a cruise or at a camp, prepare or take charge preparing a breakfast, lunch and dinner, including boiled, fried, and uncooked dishes. Demonstrate your ability to properly use the galley equipment or personal cooking gear aboard your craft. Demonstrate appropriate sanitation techniques for food preparation and meal cleanup.

Submit a menu, list of provisions, and estimated costs before meeting the above requirement.

Explain the use of charcoal, pressurized alcohol, propane, and compressed natural gas stoves including safety precautions for each.

Reference: *Cooking* merit badge pamphlet, No. 33257, and Pages 4-37; 5-86

16. **Sailing:** Name the principal parts of the masts, booms, spars, standing and running rigging, and sails of a gaff- or Marconi-rigged sloop, schooner, and ketch or yawl.

Describe the identifying characteristics of a sloop, ketch, yawl, cutter, and schooner.

Reference: Pages 5-92; 5-98 – 5-99; A-14 – A-15

17. **Work:** Log at least 16 hours work on ship's equipment, projects, or activities other than regular ship meetings, parties, dances, or fun events. *Note:* Arrange this through the ship's officers.

18. **Electives:** Do any three of the following. *Note:* Many ships place emphasis on differing skills because of the nature of their programs. Check with ship's officers

before selecting electives to assure that they will be consistent with the ship's program.

- a. *Drill*: Demonstrate your ability to execute commands in close-order drill.

Reference: Pages 4-16 – 4-18

- b. *Signaling*: Send and receive semaphore messages using proper procedures at a rate of at least 30 letters a minute.

Reference: Page 5-68

- c. *Compass*: Box the compass to 32 points and demonstrate your ability to compute the degree heading for each point. Describe the relationship between the 32 points and the relative bearing system using points.

Reference: Page 5-32 – 5-33

- d. *Yacht Racing*: Describe the procedures used in yacht racing, the signals used by the race committee to start a race, and serve as a crew member in a race sailed under current *International Yacht Racing Union Rules*. *Note*: Secure the help of your ship's officers to obtain a copy of the current version of the IYRU racing rules from the US Sailing Association and secure a berth on your nearest qualified yacht club race, or sail in your local council or regional sailing races.

Reference: IYRU rule book

- e. *Sailing*: In a cat-rigged or similar small boat, demonstrate the ability to sail singlehandedly a triangular course (leeward, windward, and reaching marks). Demonstrate beating, reaching, and running. A qualified instructor must observe this.

Reference: Pages A-7 – A-8

- f. *Ornamental Ropework*: Demonstrate your ability to make a three-strand turk's head and a three-stand monkey's fist. Using either ornamental knot, make up a heaving line.

Note: While pages 5-4 – 5-6 will be helpful, ornamental ropework are far too complicated to describe and illustrate effectively within a manual of this type. Secure the help of a consultant and read the literature he or she recommends.

- g. *Engines*: Perform routine maintenance on your ship's propulsion system including filter, spark plug, oil changes, and other appropriate proper fueling procedures. Refer to operation manuals or ship officers for correct procedures.

Reference: Page 5-24 – 5-29

ABLE

Ideals



1. Organize and conduct two impressive opening ceremonies and two impressive closing ceremonies for your ship.

Reference: Pages 1-1 – 1-15; 2-16 – 2-18

2. Demonstrate and explain the proper etiquette for boarding a Sea Scout vessel, landship, and navel vessel. Explain and demonstrate when and where to display the U.S. ensign, ship, and signal flags on a Sea Scout, Coast Guard, or Naval vessel.

Or

Lead your ship in a discussion of how the sea history of our nation has contributed to our way of life.

Reference: 2-17 – 2-19; 4-18

Active Membership

3. Attend at least 75 percent of your ship's meetings and special activities for one year.
4. Serve effectively either as an elected officer of your ship or as the chair of a major activity.

Reference: Pages 2-3 – 2-9; 4-19; 4-26 – 4-28

5. Prepare and present a 15-minute program on Sea Scouting to a Boy Scout troop, Venturing Crew, Venturing Presidents' Association meeting, school class, or other youth group. Some of the time should be used to describe the activities of your ship with time allowed for questions and discussion of Sea Scouting.

Special Skills

6. **Boats:** Know and use a customized equipment checklist for your vessel. Learn and demonstrate your ability to operate a boat equipped with an outboard motor of not more than 25 horsepower properly. Included should be proper mounting of the motor, fueling, manual starting, leaving a dock, maneuvering, coming alongside, and securing the motor (including flushing if in salt water). Some states require an operator's license for outboard motor operations. Secure such a license if required before meeting this requirement.

Locate the capacity plate required to be affixed to all newer small boats. Show how to compute the safe loading capacity of a small boat.

Reference: Pages 5-19; 5-90; 5-101 – 5-103, and *Motorboating* merit badge pamphlet, No. 33294

7. **Marlinspike Seamanship:** Submit an eye splice, short splice, and a palm-and-needle whipping. Know the names and functions of lines used to secure a vessel to a dock. Understand and execute docking commands used in handling lines on your ship's main vessel.

Describe the parts of a block and how blocks are sized. Demonstrate the various types of tackle used by your ship.

Submit a flat seam, round seam, and grommet eye sewn in canvas or Dacron. Describe how each is used in care of sails.
Reference: Pages 5-6 – 5-13; 5-18 – 5-20; 5-97 – 5-98

8. **Ground Tackle:** Identify a capstan or windlass and explain its use in handling line, wire rope, or chain. Identify and explain the fittings used to handle chain.
Describe the various kinds of anchor

rode and the advantages of each type.

Describe the methods of marking chain. Understand and execute the commands used in handling ground tackle.

Identify and explain the use of the following: thimble, shackle, turnbuckle, pelican hook, sister hook, and other ship's hardware and fittings commonly used aboard your craft. Describe how each is sized.

Reference: Pages 5-15 – 5-18

Note: See ship's officer's for identification of the hardware and fittings on your ship's main vessel.

9. **Piloting:** Understand the system of aids to navigation employed in your area, including buoys, lights, and daymarks, their significance and corresponding chart symbols. Read in detail a National Ocean Service chart, preferably for the area normally cruised by your ship, identifying all marks on it. Explain the use of tide tables, current tables, light lists, and how to update a chart using *Notice to Mariners*.

Describe the deck log kept aboard your ship's principal craft. (See description on pages 4-13 and 5-63). Keep a complete log for three cruises.

While on the water, determine a fix of your position from three or more visual bearings and plot this position on a chart. *Note:* This is difficult to do in small sailing or power craft. Arrange for a larger, more stable craft if needed. Check with your ship's officers.

Reference: Pages 5-32 – 5-65; 5-70 – 5-77; Plates 1-4

10. **Swimming:** Meet the requirements for the Lifesaving merit badge.

Reference: *Lifesaving* merit badge pamphlet, No. 33278

11. **Cruising:** Make a long cruise (two weeks) after becoming Ordinary.

Earn the Long Cruise badge.

Reference: Pages 4-32 – 4-39

12. **Safety:** Know and put into practice the rules for fire prevention. Conduct a fire

safety inspection of the craft normally used by your ship or of your ship's meeting place. Note any fire hazards and report them to your ship's officers.

Know the different kinds of fire extinguishing agents and how each works. Know the classes of fires and the type of fire extinguisher that may or may not be used for each. In a safe place under adult supervision, demonstrate the extinguishing of class A and class B fires with an approved fire extinguisher. See that the fire extinguisher used is properly recharged or replaced.

Reference: Pages 5-85 – 5-86, and *Firemanship* merit badge pamphlet, No. 33317

13. **First Aid:** Meet the requirements for First Aid merit badge or American Red Cross Standard First Aid. Obtain CPR certification. Demonstrate the Heimlich maneuver and tell when it is used.

Reference: *First Aid* merit badge pamphlet, No. 33276, *Boy Scout Handbook*, Pages 416-417

14. **Rules of the Road:** Explain and demonstrate a working knowledge of the nautical rules of the road that govern the local waters used by your ship's principal craft. Explain and demonstrate ship's lights, rules in limited visibility, whistle signals, and right of way including exceptions vessels. Describe special lights and day shapes deployed on the following vessels: not under command; restricted by ability to maneuver; constrained by draft; fishing (trawling); sailboat.

Reference: Pages 5-35 – 5-40

15. **Navigation:** Understand the systematic division of the earth's surface by latitude and longitude. On Mercator charts, place the coordinates of maritime positions and locate positions on charts when furnished with coordinates.

Demonstrate your ability to fix your position by the following methods: lines of positions on two known objects, running fix, and estimated position. Discuss the method for establishing a radar fix.

Lay a course and execute it using dead reckoning. Establish distance from a known object using "double the angle on the bow," and explain how to set a danger angle. Discuss how G.P.S. (Global Positioning System) works, the purpose of way points, and the use of set and drift.

Reference: Pages 5-56 – 5-61; 5-70 – 5-71; 5-76 – 5-77

Note: If this requirement cannot be met under way, the skills should be demonstrated using charts of the ship's normal cruising area.

16. **Boat Maintenance:** Know how and why to use marine enamel, varnish, and synthetic coatings for both topsides and underbodies of boats. Demonstrate the proper surface and coating preparation, coating techniques, care of stored coatings, and cleaning of brushes. Explain any special techniques needed for maintaining and repairing fiberglass hulls and decks.

Know the names, uses, sizes, and proper care of the common hand tools used aboard your craft.

Reference: Pages 5-23 – 5-24; 5-31

Note: Consult your ship's officers and the marine supplier or maintenance people in your area with which your ship does business for information on the above.

17. **Electives:** Do any *three* of the following.
Note: Many ships place emphasis on differing skills because of the nature of their programs. Check with ship's officers before selecting electives to assure that they will be consistent with the ship's program.

- a. **Sailing:** While in command of a crew of not less than two other persons, demonstrate your ability to sail a sloop or another suitable boat correctly and safely over a triangular course (leeward, windward, reaching marks) demonstrating beating, reaching, running, and the proper commands.

Reference: Pages A-7 – A-8

- b. **Boats:** Teach and command a crew

under oars using a boat pulling at least four oars single- or double-banked. Perform the following maneuvers: get under way, maneuver ahead and back, turn the boat in its own length, dock, and secure.

Reference: Pages 5-20 – 5-21; 5-105 – 5-107

- c. *Radio:* Demonstrate the correct procedures to transmit and receive radio-telephone distress (Mayday), urgency (Pan), and safety (Security) messages, as well as normal traffic.

Reference: 5-51 – 5-53, and *Marine Radio, Could be a Lifesaver*, U.S. Coast Guard

- d. *Drill:* Demonstrate your ability to give and execute commands in close-order drill.

Reference: Pages 4-16 – 4-18

- e. *Engines:* Understand the safe and proper procedures for gasoline and diesel inboard engines, including: fueling, pre-starting checks, ventilation, starting, running, periodic checks while running, securing, postoperative checks, and keeping an engine log.

Demonstrate using the type (gasoline or diesel) of engine aboard the craft you most frequently use if possible. Understand and demonstrate the preventive maintenance schedule recommended by the manufacturer.

Demonstrate basic knowledge of troubleshooting.

Reference: Pages 5-22 – 5-30; 5-86; and *Motorboating* merit badge pamphlet, No. 33294

- f. *Yacht Racing:* Demonstrate your understanding of the shapes, flag hoists, gun, and horn signals used in sailboat racing as well as a working knowledge of the racing rules of the International Yacht Racing Union.

Serve as helmsman with one or more additional crew members of a sloop-rigged or other suitable boat with a spinnaker, in a race sailed

under IYRU racing rules.

- g. *Sea History:* Know the highlights of sea history from the earliest times to the present date. Include the evolution of boat construction and propulsion, important voyages of exploration and development, the origin of sea traditions, and leaders of United States sea history and their achievements.

Reference: Pages 1-1 – 1-5

- h. *Ornamental Ropework:* Demonstrate your ability to fashion the following items of ornamental ropework: four strand turk's head, coach whipping, cockscombing, round braid, flat sennit braid, wall knot, and crown knot. Make a useful item such as a bos'n's call lanyard, rigging knife lanyard, bell rope, etc., or decorate some portion of your ship's equipment such as a stanchion, rail, lifeline, tiller, etc., as an example of your work.

Note: While pages 5-4 – 5-6 will be helpful, ornamental ropework are far too complicated to describe and illustrate effectively within a manual of this type. Secure the help of a consultant and read the literature he or she recommends.

- i. *Specialty Proficiency:* Do one of the following: become a certified scuba diver; become proficient in windsurfing, surfing, kayaking, or white water rafting/canoeing.

QUARTERMASTER

Ideals

1. Lead a discussion on the subject "participating citizenship" at a ship meeting or with a separate group of your peers.

Reference: Page 4-19

2. Write and submit a paper of about 200



words that tells how and what your ship can do to contribute to the world fellowship of Scouting.

Or

Prepare a written analysis of one of the following: your ship's bylaws, constitution, administration, or ceremonies and make recommendations for change to your ship's Quarterdeck.

Reference: Citizenship in the World merit badge pamphlet, No. 33254

Active Membership

3. Attend at least 75 percent of your ship's meetings and special activities for 18 months (including previous service of Apprentice, Ordinary, and Able). *Note:* Check with your ship's yeoman.
4. Present a brief talk or program (15 minutes in length is suggested) on Sea Scouting at a service club, religious organization, PTA, or other adult organization.
Reference: Page 4-19
5. While an Able Sea Scout, plan, develop, and give leadership to others in a service project helpful to any religious institution, any school, or your community. The project idea must be approved by your Skipper and ship committee and approved by the council or district before you start. This service project should involve your ship and at least one other group. *Note:* You must use the *Eagle Scout Service Project Workbook*, No. 18-927 in meeting this requirement.
Reference: Page 3-1, and Eagle Scout Service Project Workbook, No. 18-927

Special Skills

6. **Boats:** Demonstrate and teach the Motorboating merit badge. Know the principles of springing in and out from a dock, from both bow and stern, using an engine depending on the type of craft used by your ship.
Take charge of the craft used by your ship, or suitable powered craft and give all necessary commands to the crew while coming alongside and getting under way

in several situations of wind and current.
Reference: Page 5-20, and Motorboating merit badge pamphlet No. 33294

Note: The purpose of this requirement is to demonstrate a knowledge of the effect of propeller, steering, and hull in boat handling.

7. **Marlinspike Seamanship:** Teach the Ordinary and Able requirements No. 7, **Marlinspike Seamanship** to a crew. Demonstrate an eye splice in double braided line.
References: Pages 5-1 – 5-13; 5-19 – 5-20
8. **Ground Tackle:** Teach the Ordinary and Able requirements No. 8, **Ground Tackle**, to a crew.
Know the methods of bringing a boat to anchor or mooring with special emphasis on wind and current with respect to the vessel's course and speed.
Take charge of the craft used by your ship and give all commands to the crew for anchoring and weighing anchor in several different wind and current situations.
Take charge of the craft used by your ship and give all commands to the crew for picking up a mooring buoy and properly mooring the vessel in several different wind and current situations.
Reference: Pages 5-13 – 5-19
Note: Depending on the type of craft used by your ship, this requirement may be met either under sail or power.
9. **Piloting:** Teach the Ordinary requirement No. 9 and Able requirement No. 15 to a crew.
Know the methods of fixing a boat's position in limited visibility, and the special precautions that should be taken when limited visibility is encountered.
Reference: Pages 5-32 – 5-65; 5-70 – 5-77
10. **Signaling:** Draw the international code flags and pennants from memory and give the single-letter meanings of the flags. Demonstrate your ability to use the book, *International Code of Signals*.
Reference: Pages 5-69 – 5-70

Note: The *International Code of Signals* may be secured from most marine supply stores.

11. **Swimming:** Meet the requirements for BSA Lifeguard or Red Cross lifesaving, and obtain certification where applicable. *Reference:* *BSA Lifeguard Counselor Guide*, No. 34536, and *Application for BSA Lifeguard Certification*, No. 4435

12. **Cruising:** Take command of a vessel with a crew of not less than four Sea Scouts for at least 48 hours (including two consecutive nights). Do no work while in command. You must delegate all duties and supervise only. During the cruise complete the following:

1. Inspect the vessel for required equipment.
2. Supervise menu preparation.
3. Prepare the boat to get underway with proper checklist.
4. Anchor, dock, and maintain course by commands to the helmsman.
5. Remain underway for at an extended period during darkness. Discuss appropriate nighttime running procedures.
6. While underway perform man overboard, damage control, abandon ship, fire fighting, collision drills, and any other drills used by your ship.

During this cruise no substantial errors may be committed.

A competent adult leader should grade and observe this requirement and, if necessary for safety reasons, take command of the vessel.

13. **Safety:** Know the heavy weather precautions taken aboard both power and sailing craft when dangerous weather approaches, and demonstrate these precautions aboard the craft used by your ship.

Reference: Page 5-89

14. **Rules of the Road:** Teach Able Requirement No. 14, **Rules of the Road**, and demonstrate a working knowledge of both international and inland navigation rules.

Reference: Pages 5-35 – 5-40

15. **Weather:** Demonstrate your ability to read a barometer, thermometer, anemometer, psychrometer, and weather vane. Be familiar with the Beaufort scale of winds and seas.

Read and understand a local weather bulletin. Know how to obtain current marine and weather reports from the National Weather Service in your area either by telephone or radio.

Know weather signs including cloud types in your local area, and prepare a 48-hour forecast from them. Compare your forecast with the actual weather that occurred.

Reference: 5-78 – 5-82, and *Weather merit badge pamphlet*, No. 33274

16. **Electives:** Do *four* of the following. *Note:* Check with ship's officers before selecting electives to assure that they will be consistent with the ship's program.

- a. **Sailing:** Know the principles of handling a schooner, ketch, yawl, or other suitable sailing craft. Under competent direction, take charge of a crew and demonstrate your ability to handle a suitable sailing craft in all points of sailing.

Note: The key to success here are the words *competent direction*. You must secure the guidance of the adult related to the sailboat you will use. Read the reference material he or she suggests, and learn by doing as you sail together.

- b. **Engines:** Explain the principal features of steam turbine, turboelectric, direct reversing diesel, diesel-electric, gas turbine, nuclear, gasoline, and diesel engines and the relative advantages of each type.

Understand the operation of spark ignition and compression ignition for internal combustion engines used aboard small craft.

Be familiar with the engine aboard the craft used by your ship

including its principles of operation, fuel, lubrication, cooling, and electrical systems, and their component parts.

Be able to locate and correct minor engine troubles according to the engine manufacturer's troubleshooting guide.

Reference: Pages 5-22 – 5-30

Note: With the help of your ship's officers, locate a consultant who has a knowledge of engines. Read reference material he or she suggests, and ask him or her to relate it to the engine aboard your craft.

- c. *Radio:* Qualify for and obtain the "Marine Radio Operator Permit" as issued by the Federal Communications Commission.

Note: Look in the blue pages of your local telephone book for the address and telephone number of your nearest U.S. Federal Communications Commission Field Office. Ask for an application and appropriate study materials, and secure the help of a qualified adult. Blind applicants will be specially examined.

- d. *Boat Maintenance:* Take charge of reconditioning or overhauling at least one of your ship's boats, or take charge of hauling out the principal craft used by your ship. In either case, lay out a plan of the work to be done in advance, including an estimate of the materials, tools, cost, and time involved.

Reference: Pages 5-22 – 5-24

Note: Work closely with an adult leader of your ship to carry out this requirement.

- e. *Electricity:* Know and demonstrate the correct method of rescuing a person in contact with a live wire. Demonstrate the approved method of resuscitation.

Understand the construction of simple battery cells. Demonstrate the proper care of storage batteries.

Understand the difference between direct current and alternating

current and the best uses for each.

Demonstrate that you know how to replace fuses, reset circuit breakers, and properly splice shipboard electric cable.

Submit a diagram of the electrical system aboard the craft used by your ship or aboard another craft.

Understand wire tables, the current carrying capacity of circuits, and the hazards and prevention of electrical overloading.

Understand electrolysis as applied to the deterioration of a boat's underwater fittings by galvanic action and its prevention.

Reference: Page 5-28 – 5-29, and *Electricity* merit badge pamphlet, No. 33206, and *Rules and Regulations for Small Passenger Vessels*, CG-323, and U.S. Coast Guard

Note: Secure the help of a qualified adult to help you understand the wiring of your boat and the effects of galvanic action on the underwater fittings of your boat.

- f. *Navigation:* Understand how the sextant works. Show how to use it and demonstrate measuring horizontal angles and altitudes. Understand the navigator's day's work.

Demonstrate finding latitude by the altitude of Polaris or by the sun's altitude at local apparent noon. Demonstrate how longitude is determined.

Demonstrate finding error in the boat's compass by the sun's azimuth.

Note: While pages 5-70 – 5-76 will be helpful, celestial navigation and sextant use are far too complicated to describe and illustrate effectively within a manual of this type. Secure the help of a consultant and read the literature he or she recommends.

- g. Demonstrate the ability to handle the ship's company in close-order drill. Do all maneuvers set forth in pages 4-16 through 4-18.

Reference: Pages 4-16 – 4-18

h. *Piloting*: Under competent direction, assume the con of your ship's vessel. Plot its projected course between two ports, and cruise that course *mooring to mooring* handling all piloting duties and acting as officer of the deck. The cruise should be made in daylight hours with good visibility.

Reference: Pages 5-32 – 5-65

i. *Yacht Racing Crew*: Take charge of a crew in a race using current IYRU racing rules.

j. *Rigging*: Demonstrate your ability to splice and handle wire rope, attach wire rope fittings, and complete a safety and tuning inspection of a ship's vessel.

Reference: Pages 5-6 – 5-9