

# Navigation On-The-Water Teaching Aid Guide

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The On-The-Water exercise is to give the student the experience of taking a real sight under “real life” conditions, the fun and camaraderie of getting together with fellow students, and ideally, satisfying the sight folder observation requirements. In order to satisfy the sight folder requirements the student can take these sights either independently or with a group of other students. Perhaps valuable benefits are achieved when a group of students gets together when taking sights, to exchange information, knowledge, experience and equipment. An interesting and realistic experience is achieved when the sights are taken from on board a boat in open water. The purpose of this guide is to outline, for Course Instructors and Assistants, their preparation to help students take the required sights on the water. It must be emphasized that while an instructor organized on the water exercise may be convenient and helpful for the student, the individual student has the responsibility for the sights. If the on the water experience accomplishes only part, or none of the requirements, the individual student must still fulfill the course’s sight folder requirements.

With the exception of the safety elements and briefing which are mandatory, instructors may choose those elements from this guide that apply to their situation and previous demonstrations in the classroom and pick those elements that will work with a group of students in a reasonable time frame. This includes both “on-the-dock” and “on-the-water” demonstrations and discussions. The Sight folder requirement for Navigation is for both daytime sights (Meridian Transit) and probably twilight sights (Moon, star, planet). Unless a long day is undertaken, two outings will be necessary in order to expose the students to all the requirements. It may be possible to start out in the morning for meridian transit of the sun, in the afternoon get sun-Moon and possibly Venus sights, ending with stars and planets in twilight. More practically the election will be for two outings. Obviously, the type of boat and locale available will have an effect on the elements used and the method of instruction. Depending on the type of boat and size of the boat and size of class, some of the elements may be combined as is logical. The instructor should encourage students to be as involved as they feel comfortable and can do safely. Always keep the safety of the boat and the students in mind. However desirable it may be, it is not the instructor’s responsibility to provide the student an opportunity to fulfill all the sight folder requirements.

This is an optional part of the Navigation Course and participation will not affect the credit given for the course. It does not provide any certification or credential to the student except it may provide a convenient and fun time to fulfill sight folder requirements. At minimum it will provide the experience of taking sights from a boat in open water.

This time together with the students on the vessel provides a good environment for sharing the “Boating is FUN...We’ll show YOU how” part of USPS and answers questions about the value of membership in the Squadron and organization. Other courses and seminars should be shared as a way to show how the student can gain additional boating knowledge and skill even if they do not become a member.

For general safety considerations:

Weather:

- The activity should be in good weather with moderate seas, with the sky clear and bodies visible enough for sights.
- Winds and waves not to exceed the capabilities of the boat and crew, and calm enough for safe taking of the sights.
- Review wind, tide, and current conditions affecting boat operation.

Navigation Limits:

The cruise area needs to be where there is either a natural or usable dip-short horizon.

- Within range of a cell phone (10 miles) or VHF shore station—not farther than 20 miles offshore.
- As navigation before morning nautical twilight or after evening nautical twilight is anticipated, safe night time navigation requires that special effort be made to avoid collision with another boat or a fixed object, and to prevent man-overboard. As everybody will be concentrating on sights and not boating traffic, the safest procedure is to select a sight-taking location that is not in an area that has heavy traffic, and the boat is anchored.
- If there is no suitable location for taking sights at anchor and sights are to be taken from a boat underway, there shall be a captain and an instructor. When underway, in order to maximize the safety of all on board, the captain shall operate the boat without distractions and shall not act as an instructor.
- The cruise area is to be clearly marked, no night time hazards exist
- The area selected shall be free of debris such as floating logs, or as free from debris as can be found.

Vessel:

- The vessel must have a current VSC sticker

- The vessel must be insured. USPS insurance becomes primary when the first participant comes on board for the activity, not when moving the boat to the activity location. The vessel should be in good condition with no significant problems (all vessels have problems, but not significant ones).
- The vessel must have sufficient fuel for the activity.
- The vessel must have a VHF radio, cell phone, or appropriate communication device.
- Conduct engine room/bilge visual and sniff check before operating machinery.
- Allow engine to warm up to operating temperature.
- Knowledge and Expectations: For larger more complicated vessels the boat owners should be aboard even if not participating in the subject Teaching Aid Activity. (Not necessary for runabouts).
- The squadron teaching aid activity must be documented. The Squadron Executive Committee must approve this activity in advance. An email from the Squadron Commander is also sufficient approval.
- It is Mandatory that every person must be wearing a PFD when entering the dock area and while on board the vessel unless below deck. (If the PFD is kept on at all times there is not a concern about coming up on deck without it).
- Participants should be told what to bring and what not to bring.
- Appropriate clothing should be recommended to participants.
- USPS float plan issued and check list on float plan completed, and filed with an appropriate person. (It is a tri-fold in the USPS materials catalog # 09-66-111 -N/C or [http://www.usps.org/o\\_stuff/fp\\_form.html](http://www.usps.org/o_stuff/fp_form.html)).
- Check for any medical condition of participants.

There is to be an appropriate safety briefing about the boat, relevant to the activity:

1. Weather check
2. Thru-hulls
3. Battery switches/electrical panel
4. Engine controls
5. Head usage
6. Trash disposal
7. Location of First Aid kit
8. Warning about sitting down or holding on during maneuvers
9. Location of throwable devices for MOB
10. Location of VHF/DSC radio and usage

11. Location of flares and other visual distress signals
12. Location of fire extinguishers and extinguisher ports to engine compartment (if applicable)
13. Anything relevant about the particular vessel being used

**REMINDER:** All OTW programs must be pre-approved by the Squadron or District to comply with insurance coverage requirements.

**This Navigation On-The-Water Teaching Aid Guide has been approved by the Boat Operator Certification and On-The-Water Training Committee as required and no additional approvals are necessary unless modifications are made to intent and contents.**

**Feedback comments should be directed to the Boat Handling Committee Chair to assist in making this Teaching Aid Guide the best possible.**

## Teaching Aid Activities:

ACTIVITY	TOPIC	DETAIL	INSTRUCTOR NOTES	COURSE REFERENCE
Pre-Departure Discussion at dockside or on boat before engine start	Briefing by instructor and skipper (if different person)	Location of Life Jackets (PFDS) and throwable devices for MOB	Insure proper fit. All students and instructors must be wearing them at all times	
		Location of Fire Extinguishers flares and other VDS	Proper operation of available types discussed	
		Location of VHF radio	Proper use discussed including DSC and AIS if available	
		Location of Marine Sanitation Device	Proper use discussed and demonstrated	
		Location and operation of through-hull valves	Have each of the guests on board put their hand on at least one of the valves, and assure that all of the valves are operable	
		Rules for overboard discharge and trash	Placards and stickers pointed out and discussed	
		Location of on-board electronics (GPS etc.)	Proper use and function discussed and demonstration of interfaces if applicable	
		Weather forecast	Discussion and source (VHF radio, TV, Phone)	
		Float Plan USPS Materials Catalog # 09-66-111 -N/C or <a href="http://www.usps.org/o_stuff/fp_form.html">www.usps.org/o_stuff/fp_form.html</a>	File approved USPS float plan	
		Characteristics of fuel	Discussion of fuel used aboard as well as dangers of fueling	

		Visual tour of engine/engines	Proper operating procedures discussed and, if possible demonstrated. Visual tour should include through-hulls.	
		Demonstration of Electrical panel	Demonstrate types of lights and proper switches for operation of all electrical systems	
		Tour of boat	Location of storage—spare parts, safety equipment i.e. flares, VDS, and First Aid kit.	
		Boat and Marina Courtesy	Discussion of expectations of crew on the boat and proper conduct in Marinas	
<u>While at the Dock, on the boat, or off</u>				
	Route Planning	Utilizing the software used in the course, each student shall lay out a proposed course to be followed.	The instructor will give start co-ordinates, and the co-ordinates of a possible location where the sights may be taken	Chapter 8
	Weather	Utilizing VPP2, the student shall determine the wind profile for that location, and investigate if there are any significant features, such as ice, tropical storms, percentage of gales, etc.	VPP2 is not precise, so the nearest location to the cruise area is to be used. This may be hundreds of miles away.	Chapter 8
	Determine watch error	Take Time Tick (WWV or WWVH) or access <a href="http://www.time.gov">www.time.gov</a> GPS times not acceptable		Junior Navigation
	Determine sextant errors	Including index and side error.	Optional: instructor to demonstrate removal of	Junior Navigation

			sextant errors (adjustment).	
	Set up paperwork and forms for recording sights	Calculate time of Local Apparent Noon (LAN) and nautical twilight. Using the Rude Starfinder, determine altitude and azimuth of possible bodies. Verify altitudes and azimuths using Celestial Tools		Chapter 2 Chapter 6
	Determine Height of Eye		Have students determine their Height of Eye for sitting, standing, various locations, etc.	Junior Navigation
	Demonstrating and practicing sight taking techniques	Demonstrate if 'Right' or 'Left' eyed Demonstrate use of shade glasses.		Junior Navigation
	Use of harness and lanyard, as appropriate			
Underway, at location suitable for taking sights				
	Students take suitable sights. Some, or all of the sight folder requirements may be taken. Sight Folder Requirements: a) All sights from its own qualified run.	Each student shall determine which body is suitable. Considerations may include the student's need (to satisfy folder requirements); what body is visible, relative azimuths for two body fix, sights toward or away from the direction of the sun.	Instructor must be continuously aware of the student's safety, and coach student on safe use of the sextant and having a secure location and position to take sights.	Appendix D, Sight Folder Requirements

	<p>b) Altitude and azimuth requirements.  c) LOPs from sun, moon, star, and planet.  d) Sun Meridian Transit.  e) Two body fix.</p>	<p>Each student takes a run of sights, saying, "Ready, ready, Mark!" Another student shall record the time. After each sight is taken, the student taking the sight shall record the sextant reading and watch time of sight. After each run the student shall record the watch error, index error, and height of eye, an approximate azimuth, and the GPS position.</p>	<p>Instructor may remind student of sight folder requirements.</p> <p>Instructor may act as recorder for sight times for a student taking sights, if the instructor can at the same time maintain the safety of all the students.</p> <p>Participants shall have a secure lanyard attached to the sextant used to avoid accidental loss over the side.</p> <p>If taking sights underway since both hands are used with the sextant the participants must either be in the cockpit or if on the deck should be using a harness tethered to the boat on jacklines or attached to some other secure point.</p>	
	<p>Weather during the observations</p>	<p>Log barometer reading, wind direction and velocity as well as wave and swell height and direction if possible.</p>		