DEPARTMENT OF THE NAVY
UNITED STATES NAVAL ACADEMY
121 BLAKE ROAD
ANNAPOLIS MARYLAND 21402-1300

DIVPRODEVINST 3530.2F
28 Feb 18

DIVISION OF PROFESSIONAL DEVELOPMENT INSTRUCTION 3530.2F

Subj: SAIL TRAINING CRAFT NAVIGATION STANDARDS

Ref: (a) Coastal and Offshore Personnel Qualification Standards (PQS) for Large Sail Training Craft (STC) Version 01-13
(b) Furuno NAVnet TZT14 Marine Radar and Electronic Charting System (ECS) User Manual
(c) Expedition Marine Navigation User Manual (VOST)
(d) DIVPRODEVINST 3120.7, SOP for Large Sailing Training Craft
(e) Boat Information Book for Navy 44 MK II Sail Training Craft

Encl: (1) Sail Training Craft Navigation Standards
(2) Sail Training Craft Navigation Report
(3) Navy Sailing Chart Preparation Checklist
(4) Preparation Checklists for Furuno ECS/Chart Plotter and Expedition ECS/Chart Plotter
(5) Required System Settings for Furuno ECS NOAA ENC S-57 Charts (OSTS/VOST)
(6) Required System Settings for Expedition Software (VOST)
(7) Navigation Brief Format

1. Purpose. To establish navigation procedures and best practices for the United States Naval Academy (USNA) Sail Training Craft (STC) when operating both in the local OPAREA and when deployed offshore.

2. Cancellation. DIVPRODEVINST 3530.2E

3. Background. The primary purpose of a Sail Training Craft (STC) is to deliver safe and effective leadership and seamanship and navigation training for midshipmen when under sail. The responsibility for safety and delivery of training rests with those individuals embarked in each STC that have completed the qualification process outlined in reference (a).

4. Action

a. Personnel charged with operating the STC underway shall review this instruction annually.

b. All Skippers, Executive Officers, and Navigators are to become thoroughly familiar with the accuracy and use of all available methods for determining the current position and predicting future movement of the craft.

c. Director, Naval Academy Sailing (DNAS) is responsible for reviewing this instruction annually.

B. P. O'DONNELL

Distribution: (electronically)
PRODEV
DNAS
Offshore Sail Training Squadron (OSTS)
Varsity Offshore Sailing Team (VOST)
All students undertaking STC training

SAIL TRAINING CRAFT NAVIGATION STANDARDS

1. Background and Introduction. The safe navigation of a STC is a unique challenge, especially when operating under sail and in close quarters with other vessels. With the prevalence of Global Position Systems (GPS) in the maritime environment and the accuracy of such systems, Electronic Navigation will serve as the primary navigational source underway. Handheld compass bearing positions will serve as a backup to GPS position keeping. A working knowledge of manual and chart navigation will be accomplished via exposure during training. The presence of an Electronic Chart System (ECS) is not a substitute for good judgment, sea sense, and taking all reasonable precautions to ensure the safety of the vessel and crew. An ECS should be considered an aid to navigation, one of many the navigator will have at his or her disposal to help ensure a safe passage. While possessing revolutionary capabilities, it must be considered a tool, rather than an infallible answer to all navigational problems. The rule for the use of electronic charts is the same as for all other aids to navigation: the prudent navigator will never rely completely on any single one. (The American Practical Navigator)

The Safety of Life at Sea (SOLAS) convention is published by the International Maritime Organization (IMO) at which World Sailing have consultative status. SOLAS Chapter V refers to the Safety of Navigation for all vessels at sea. While government vessels are not obliged to align with the convention, the goal is to act in a manner consistent with it insofar as it is reasonable and practicable. Within Chapter V is the delegation of navigation to an Electronic Chart Display and Information System (ECDIS) that precludes carrying and navigation on paper charts. Since the STC lack the infrastructure to support such a system and instead employ an ECS, the system has to be used in conjunction with an appropriate portfolio of up-to-date paper charts.

2. Navigation Team Organization Duties and Responsibilities. With respect to all aspects of navigation, the following duties and responsibilities exist as stated in reference (d) and are further amplified below:

a. DNAS. Responsible for executing an effective training and qualification program. Maintaining proficiency of basic maritime skills is critical to safe navigation. Additionally, a thorough understanding of the principles of operation and capabilities and limitations of all installed equipment is essential knowledge. DNAS sponsored training programs and the qualification process of outlined in reference (a) must provide for accurate assessment and the necessary training to educate, qualify, evaluate and periodically re-qualify assigned personnel. DNAS (or Program Director if delegated) is responsible for the final approval of all charts.

b. Skipper. The Skipper is ultimately responsible for the safety of the STC and all embarked personnel. He or she shall:

(1) Ensure that safe seamanship and navigation is always the absolute priority.

(2) Review and sign all applicable paper charts before submitting to DNAS/Program Directors for final approval. Charts should be prepared in accordance with enclosure (2).

(3) Review and approve the Digital Voyage Plan in the ECS to include: Ensure the chart portfolio has all relevant vector and raster charts included. Validate the track, ensuring all waypoints, and track legs/routes precisely match those marked on the paper charts.

(4) Ensure that all navigation equipment is properly configured in accordance with references (b) and (c) and enclosures (3) through (5).

(5) Ensure that the STC is operated in accordance with reference (d).

(6) Take early and sufficient action to avoid collision and/or grounding. A safe speed adapted to the prevailing circumstances and conditions must be observed at all times.

(7) If unsure of the position of the STC, immediately slow or stop as appropriate given the situation. Establish a fix by GPS if possible, handheld GPS as backup, dead reckoning from last known position, or manual fix from handheld compass, and only recommence training once the precise location of the craft is determined and assessed to be safe.

c. Executive Officer (XO). The XO will assist the Skipper as required with all tasks outlined above. Responsible for taking immediate action to avoid collision or grounding when the Skipper is off watch or otherwise unable to do so.

d. Watch Team. When underway, it is essential that the entire watch team make a constant appraisal of the craft position, future movement and safe speed. The installed ECS will provide the most accurate means to do so as long as it has been properly configured in accordance with enclosure (4) through (6), and accuracy checks are completed with Navigation reports. The Watch Captain is responsible for ensuring accuracy of navigation plotting and log keeping. If required, the Lookout or Sail Trimmer will act as a Bearing Taker using a handheld magnetic compass or sextant.

e. Navigator. The Navigator and Assistant Navigator are responsible for all administrative navigation preparations prior to departure and training the Nav Plotters in electronic and manual position fixing.

(1) Prepare charts for Skipper's approval, ensuring all navigational resources are available onboard with a working knowledge of how they are utilized, configure the navigation equipment onboard in accordance with enclosure (3), and review weather forecast.

(2) While underway, give careful attention to the ship's course and speed and available depth of water when approaching land or shoals.

(3) Personally supervise navigation of the STC, checking the electronic navigation with the plot on a corrected paper chart.

(4) Stay aware of current and forecasted weather conditions.

f. Plotter. The Plotter is a watch position assigned by the Watch Captain. This position may rotate during the watch, but care should be given to not rotate the watch frequently when in restricted waters when change in the watch may prove hazardous to navigation.

(1) Maintain situational awareness of the STC position, utilizing GPS, visual, or radar fixes.

(2) Act as time keeper for fix intervals.

(3) Check soundings as indicated by the fathometer with the charted depth after each fix.

(4) Maintain the ship's navigation log with all applicable notations.

(5) Proactively and loudly give the STC Navigation Report IAW enclosure (2).

(6) Immediately notify the helm, Watch Captain, CO and/or XO when the determination is made that the STC is standing into danger. Ensure this report is acknowledged and make course and speed recommendations to prevent the STC from entering dangerous waters.

3. Electronic Navigation. Shall be the primary method of navigation when underway and operating with electronic charts. All personnel shall reference the installed ECS for position keeping and supplement it with other sources as appropriate. An ECS must be considered a single aid to navigation and should be used with a corrected chart.

4. Position Log. A record of positions and soundings from all fix sources used shall be maintained as an official record of each fix taken. Position, course and speed, charted depth, fix type and fathometer soundings will be recorded at a minimum. The track option shall be enabled to record data via the Furuno system, the system recording limitations may require overwrite of some data. The Voyage Data Recorder of the ECS (where available) will also be enabled and may be used as an official record while racing (VOST only).

5. Fix Interval. Fixes shall be entered in the log from the ECS and used to generate a STC navigation report, enclosure (2). Fixes should not exceed 9 minutes while within 2NM of shoal water, 15 minutes between 2-10NM, and 60 minutes while 20NM or greater from shoal water.

AREA	DISTANCE FROM LAND/SHOAL WATER	FIX INTERVAL
Restricted Waters	Less than 2 NM	6-9 minutes or as conditions warrant*
Piloting Waters	Between 2-10 NM	6-15 minutes or as conditions warrant*
Coastal Waters	Between 10-20 NM	15-30 minutes or as conditions warrant*
Open Ocean	Greater Than 20 NM	30-60 minutes

*The Skipper/XO shall determine or approve the fix interval with respect to other actions on deck, speed, distance to navigation hazards, and visibility.

6. Paper Charts. While the ECS will be the primary navigation plot, manual plotting on paper charts shall be the secondary navigation plot. As a result, paper charts shall be prepared and maintained to be ready for their immediate use in the event of loss of the ECS. Additionally, even while maintaining ECS as the primary plot, manual paper plotting will increase situational awareness. While using paper charts, GPS shall still be used as the primary fix source in all waters. Visual and/or radar fixes may be used at the discretion of the skipper. Fix intervals for paper plotting shall be in accordance with the table in paragraph 6. Skippers may adjust or relax the paper plotting requirement in restricted and piloting waters if the plotting activity is hindering situational awareness.

7. Navigation Instruction Exceptions

a. OSTS and VOST Local area training/racing. During local area training/racing, navigation log keeping may be stood down once the craft has arrived in the pre-briefed training or racing area.

b. VOST Racing.

(1) During VOST out of area, inshore racing competition, crews shall navigate to and from the pre-briefed start and finish lines of the race course. A digital log shall be maintained and electronic navigation shall be used while racing.

(2) An entry shall be made in the Deck Log when navigation is stood down and again when resumed.

(3) On a marked race course, VOST boats may operate in less than 18ft of water, but will always maintain at least 3ft of water beneath the keel.

8. Procedures. The ECS will be used as the primary means of navigation, using all available resources listed below to ensure safe passage:

a. Navigation Brief Requirements Prior to Departing the Annapolis Operation Area. The geographical limits of the Annapolis OPAREA are defined as the Severn River, seaward of Route 450 Bridge, north to the William P Lane Bridge and South to a line connecting Thomas Point Shoal Light and Bloody Pont Bar Light, or for VOST local racing only-North of a line connecting Green Can 83A and R84.

(1) For OSTS evolutions, an all-encompassing Transit Brief is an overview of the voyage to include weather, travel time and distance to be covered, and all anticipated challenges to include every restricted water transit during the passage. This brief does not alleviate the need to do crew Navigation Brief per enclosure (7). The crew brief should cover specific restricted water transits that will be conducted within the following 24 hours. VOST shall prepare a comprehensive Transit Brief to include crew, coaches and sailing staff.

(2) All local area training and any out of OPAREA restricted area transits will be discussed with a formal Navigation Brief pier side or underway within 12 hours of the transit. The Transit Brief will be the crew's opportunity to focus on transit data in detail for the specific area which is to be navigated.

(3) If a significant change from the original track/route is required, a new navigation and hazard brief will be conducted.

b. ECS Configuration. The ECS shall be properly configured prior to getting underway using the settings found in enclosures (4)-(6). Failure to do so will jeopardize the craft, as safety issues may arise if the equipment is not properly configured. ECS will display the position, course, and speed from the selected GPS source at an update rate of approximately 1 Hz.

c. ECS Accuracy. The accuracy of the electronic fix should be checked at available opportunities (each manual fix or on passing a conspicuous navigation aid) and by each available means including: through use of the fathometer, by radar, visually, by handheld magnetic compass or sextant.

d. Resources. The following resources should be used for voyage planning prior to departure from USNA and for updates underway:

(1) Tide and weather websites:

Website	URL/Hyperlink
NOAA Tides and Currents	http://tidesandcurrents.noaa.gov/
NOAA Weather	http://forecast.weather.gov/
USCG Navigation Center	http://www.navcen.uscg.gov/

(2) Publications. Eldridge tidal predictions and OPAREA appropriate Light Lists and Coast Pilots shall be carried aboard.

(3) Paper Chart Folios. A master chart folio for the planned operating area with pre-planned tracks shall be prepared in advance. Any navigation track on paper should be supported by a series of verified waypoints entered into the ECS. A master database of approved digital navigation plans is retained by the VOST and OSTS Operations Officers. All charts, regardless of origin, must be correctly updated and prepared in accordance with enclosure (3).

e. Hazard Avoidance. The nearest danger to navigation (including nav aids and AIS contacts) is to be known by all watch standers on deck. The expected depth is to be reported by the Plotter to the Skipper/XO and other personnel in the cockpit. Once the water is 18 feet or less, a constant watch is to be kept on the fathometer. The escape course and direction to safe water should also be known.

f. Loss of ECS. In the event of a total loss of ECS, or when the Skipper wishes to demonstrate the use of paper charting to accomplish a specific training goal, the following procedures will be followed by the Navigator:

(1) Slow or stop the STC (as appropriate) and use all available means to fix position, including the use of the handheld GPS unit.

(2) Simultaneously: Dead Reckon out from last known position based on ship's log while proceeding with a plot from a handheld GPS fix, radar, or visual fix using the appropriate symbol and label it with a 4-digit time. Record the fix in the log and plot position on paper charts as needed (visual and radar fixes), ensuring that an appropriate fix interval is maintained. The fix interval is driven by distance from shoal water and the craft's speed. When operating within 1000 yards of danger, fix intervals should not exceed six minutes.

(3) Immediately notify the Skipper and/or XO if unable to determine known position or plot a good fix.

(4) Follow the six rules of Dead Reckoning (DR) after plotting a fix on the paper chart used for navigation. Always check the fix against the expected depth, taking into account tide fluctuation for the operating area. If not relying upon a GPS source for position, make an appropriate allowance for set and drift, and calculate a future estimated position. DR must be maintained using the following six rules:

(a) Plot a DR position at least every hour on the hour.

(b) Plot a DR position at every course change.

(c) Plot a DR position at every speed change (when under power).

(d) Plot a DR position when obtaining a fix or running fix.

(e) Plot a DR position when obtaining a single Line Of Position (LOP).

(f) Plot and label with course, speed, and time a new course line from each fix or running fix as soon as it has been determined and plotted on the chart. This is accomplished whether the ship is on track or not. The DR plot should be for the next two fix intervals.

9. Vessel Characteristics. To ensure that safe seamanship and navigation is conducted near or in restricted waters, or under bridges and other elevated obstructions, it is critical that all embarked personnel know the vessel dimensions contained in reference (e) or in manufacturer specifications for chartered boats.

SAIL TRAINING CRAFT NAVIGATION REPORT

Notes for Navigation Reports:
1. Relative bearing is the following: 270 would be port beam on current heading
2. .1 nm =200 yards
3. Reference nautical miles unless inside 200 yards.
4. Hazards: shoal water, unlit buoy, navaid, non-AIS traffic, AIS traffic, bridge, etc.

Last GPS fix verified good by fathometer, expected depth is _____feet.

Or

Good/Poor, Visual/Radar fix, expected depth is _____feet.

Safe on this course for _____ nautical miles and ____ minutes at current speed of ___knots.

OR

Recommend course change to heading _____ degrees. Safe water is to port/starboard. (Recommend a tack or gybe as needed).

Closest hazard is _____, relative at bearing_____, range____nautical miles or ___minutes at current speed.

Closet AIS contact is relative bearing_____, range _____nautical miles. Closest Point of Approach (CPA) on current course will be _____nautical miles.

AIS contacts within a 10 mile range that have a CPA of 2nm or less are at relative bearing_____, range _____ nautical miles, Time to CPA (TCPA) is _____.

Next recommended course change is in _____minutes.

CHART PREPARATION CHECKLIST

_____Ensure the chart is the latest edition and reference Notice to Mariners (NM) and Local Notice to Mariners (LNM). For chart corrections refer to: http://ocsdata.ncd.noaa.gov/ntm/ and http://www.navcen.uscg.gov/?pageName=lnmMain

_____Do not write on or mark over written information on the chart (light characteristics, notes, etc.) while prepping each chart. If circling an aid to navigation with pen, leave a space in the circle (or triangle) for text. Do not use red ink on the chart, it will not show up under red light at night.

_____ Waypoints (N/A for VOST): Plot all in pencil on each chart using the waypoint list provided by the Operations Officer. Waypoints shall be a 1/8" solid round dot (no crosshairs), labeled with the four digit alpha numeric name of the waypoint (CN04) to coincide with the waypoint list. Create the track specified on the waypoint list with a pencil.

_____ Shoal water (18 foot contour): Outline on the chart with a blue Sharpie Permanent Marker, Ultra Fine Point. Outline all shallow areas (18 feet or less) within the deeper water. Outline all fish traps and fish haven areas in 18 feet or less. Outline security areas (such as Cove Point LNG terminal). NOTE: VOST is directed to outline 12ft contour for Navy 44 STC. VOST STC with draft > 8ft are directed to trace 18ft contour.

_____ Corrections: Mark on the chart using the NTM and LNTM. Make ALL corrections to aids to navigation, and other corrections (shoal water, new obstructions, moved buoys, new fish trap areas, etc.) that occur in water 18 feet or deeper. Use Chart No. 1 as a reference to put new information on the chart, and the chart correction template to draw symbols.

_____Correction tree: Create a tree with three columns on a margin of the chart. Highlight the top row (NTM/Date/Initials) in orange highlighter. The first column will be the NTM or LNTM number (designated by the week/year it was made, for example 42/11 is week 42 of 2011). The second column is the date the correction was made by the chart preparer (1JUN12) and the third column is for the initials of the chart preparer (RM). Use one line for each correction. Temporary corrections shall be made in black pencil, permanent corrections in black ink.

NTM	Date	Initials
42/11	1Jun12	RM
13/12	1Jun12	RM

_____Chart sounding datum: Highlight in yellow fluorescent highlighter.

_____ Geodetic Datum: Highlight in orange highlighter. Note if not in WGS-84 and adjust chart plotter GPS on boat as needed.

_____Magnetic ring of compass roses: Highlight all on the chart in yellow highlighter. Highlight variation if true only (offshore charts).

_____ Unlit buoys: Identify all unlit beacons (buoys, shoal poles, etc.) by a 5/8" circle using a template; outline in black pen, and color with a green highlighter. Do not make "green" using a yellow and blue highlighter – it cannot be read under a red light at night.

_____ Visual Ranges: Highlight all visual range lines with yellow highlighter.

_____ Red Sectors: Highlight arc of navigation aid red sectors with yellow highlighter.

_____ Bridges: For all bridges on track, highlight bridge controlling height, crossing point and center span location in yellow highlighter.

_____ Radar navigation aids: (navigation aids with a RACON and prominent points of land) Identify using a 5/8" triangle using a template; outline in black pen, and color with a blue highlighter. Radar nav aids will have a two or three figure identifier, with "R" as the first letter for Radar. RACON buoys will be labeled by their buoy number. Land or land based objects will use one or two letters following "R", i.e. "R P" for a pier or "R TP" for Turkey Point.

_____ Visual navigation aids: (lit and unlit buoys can be used in addition to land based visual aids such as lights on fixed structures, tanks, spires, and prominent points of land) Identify by using a 5/8" circle using a template; outline in black pen, and color with a yellow highlighter. Visual aids are used for shooting a line of position (LOP) and will have an identifier starting with "V" as the first letter. Buoys will be labeled by "V" and their buoy number, i.e. V 87 for buoy 87 on the Chesapeake Bay. Land based aids will use up to three letters or numbers following "V" i.e. V CD for Chapel Dome or V RT1 for Radio Tower 1. Ensure visual aids on overlapping charts have the same identifier for recording in the bearing log. Choose navigation aids that can be used in daylight and/or night, and that you can triangulate for a fix.

_____Fold and label the chart: Label the number of the next chart near the track at the intersecting margin. Mark a line with green highlighter, and write the next number between the line and the chart margin. With the chart face up fold right to left, bottom to top. Lay the chart down so that there is a single fold at the lower right hand corner. Label the chart in this corner. When the chart is placed in the navigation desk you should be able to see only a single fold and the label will be in the right hand corner. Label in legible 1" block letters on the bottom right hand corner of the folded chart – the chart number and name. Immediately above the label, write the number of the connecting chart (from the chart list provided by the relevant sailing program Operations Officer); immediately below the label, write the chart number of the following chart. The numbers of the previous and following charts should be 1/3" letter. For example:

Chart: 13224
Chart: 13223 NARRAGANSET BAY INCLUDING NEWPORT HARBOR
Chart: 13218

_____ Track: (N/A for VOST). When approved by the Skipper, mark it with a black Sharpie, Ultra Fine Point. Each straight-line segment of the track will be labeled with the magnetic course (C xxx°M) and distance (D xx.x nm) in a track box. This marking will be placed along each segment at least once. The reciprocal course shall be placed along each segment if used as a return track, with the arrow pointing the opposite direction.

_____Approval: DNAS or the Program Director (OSTS/VOST) is responsible for the final approval of all charts. After review and making any necessary corrections, DNAS or the Program Director will sign Block #_____, (year)_____ Approved by:_____(DNAS or Program Director signature). (NOTE: This does not alleviate the responsibility of each Skipper and XO to review and sign their own charts prior to departure.)

PREPARATION CHECKLIST FOR FURUNO ECS/CHART PLOTTER

Date: _____

The Navigator shall review the following has been completed prior to getting underway and the XO or CO shall verify them.

Action	Reviewed	Verified
1. Ensure the required voyage plans are loaded and that tracks and waypoints are accurate. (OSTS Only)		
2. Configure the Display Systems Settings in accordance with enclosure (5). Refer to reference (b).		
3. Check operation of radar.		
4. Set display range so nearest NAVAID is visible.		

PREPARATION CHECKLIST FOR EXPEDITION ECS/CHART PLOTTER

Date: _____

The Navigator shall review the following has been completed prior to getting underway and the XO or CO shall verify them.

Action	Reviewed	Verified
1. Configure the Display Systems Settings and Vector Chart Features in accordance with enclosure (6). Refer to reference (c).		
2. MAST SAFETY HEIGHT: check STC owner's manual for each type of craft.		
3. Ensure that Own Ship's Heading Vector is set to twice the fix interval (usually six minutes).		
4. Check all sensors that are enabled.		
5. Set Own Ship/Track History to 8 hours.		
6. Set display range so that nearest NAVAID is visible, reference safety status message.		

REQUIRED SYSTEM SETTINGS FOR FURUNO ECS NOAA ENC S-57 CHARTS (OSTS/VOST)

The default settings shall be verified, or changed as specified below, per referen0ce (b).

Press the Home key, and select "MENU":

General
- Reset Default Settings
- Change Function Gesture to "MOB"
- Change RotoKey to "Full"
- Change "Allow Remote Control" to "View Only"
- Set Local Time Offset to UTC -4
- Change "Auto Scroll" to "ON"
- Change "Key Beep" On/Off per preference

Ship and Track
- Reset Default Settings
- Change "Track Intervals" to "5'00" (5 minutes)
- Track may be hidden, but do not activate "Delete Track"

Routes
- Reset Default Settings
- No changes

Points
- Reset Default Settings
- No changes

Plotter Display
- Reset Default Settings
- Change "Day/Night Mode" as needed
- Ensure "Chart Priority in Auto Mode" is "Raster"

Vector Chart
- Reset Default Settings
- Change "Shallow" to 9'
- Change "Safety" to 12'
- Change "Deep" to 18'
- Change "Display Soundings in Red Shallower than" to 12'
- Change "Light Description" to "ON"

S-52 Display
- Reset Default Settings

- Change "Radar" to ON
- Change "Fishing Facilities" to OFF
- Change "Harbor Facilities" to OFF
- Change "Services and Small Craft Facilities" to OFF

Weather
- Reset Default Settings
- No changes

Radar
- Reset Default Settings
  - **NOTE: DO NOT reset "Factory Settings"**
- Change "Antenna Longitudinal Position" to 42'
- Change "Antenna Latitudinal Position" to 2'

Targets
- Reset Default Settings
- Change "CPA/TCPA Alarm" to ON
- **NOTE**: CPA Alarm will sound in Santee Basin, turn CPA/TCPA Alarm "ON" when you reach Greenbury Point.

Alarm
- Reset Default Settings
- Change "Depth Alarm" to ON
- Change "Depth Value" to 12' for VOST N44, 18' for OSTS N44 and VOST boats with draft over 8'
- Set "Anchor Watch Alarm" as needed

Files
- No changes

Units
- Reset Default Settings
- Change "Position Format" as needed to match chart, either deg.mm.sec or deg.mm.mm

Camera
- N/A

Initial Setup, Verify the following
- Boat Length = 44'
- Longitudinal GPS = 42'
- Latitudinal GPS = 2'
- Boat Icon = Sail
- Depth Transducer = 3.3'

- Keel = 7.6'

- Average Boat Speed = Sailing
- Nav Data Max = Shallow
- Charts Master Device = ON
- WAAS = ON
- PGN = Open and ensure the following items are turned "ON"
  - Cross Track Error
  - Navigation Data
  - Navigation – Route/Waypoint Information

AIS/ARPA Target Display

- From the chart plotter or radar display:
  - Using RotoKey menu, choose Targets
  - Select AIS/DSC (check mark) to show AIS targets
  - **NOTE**: Dangerous AIS targets are shown as a red triangle icon, and have a CPA/TCPA less than the alarm value.
- When using radar, use the RotoKey menu, Targets, and ensure ARPA has a checkmark for ON.

Brooks & Gatehouse (B&G) Instruments

- Press "Menu" twice to access "Settings"
- Use down arrow to scroll to "Calibration"
- Select "Depth" from the right side menu
- Verify (or change) "Depth Offset" = 3.3'
- Press "Enter" key to confirm
- Press Pages to exit Settings

- Press "Menu" twice to access "Settings"
- Use down arrow to scroll to "Alarms"
- Verify (or change)"Alarms Enabled" is check-marked "NO"

REQUIRED SYSTEM SETTINGS FOR EXPEDITION SOFTWARE (VOST)

The following items shall be verified as enabled, or changed as specified below and enabled, per reference (c), in Settings:

System Settings
- Nautical miles
- Depth in feet
- Speed in Knots
- Magnetic mode

Users Tab
- Boat 0 (zero) 1 hz
- Enables boat tracking feature

Display
- MOB and SART
- Current leg
- Boat size: Medium
- Period (Predictor line): 15 min (restricted waters) 60 min (open waters)
- Auto-pan – checked

Racing data (Optional – Recommended settings)
- Laylines
- Opposite Tack
- Starting Line

Boat
- COG
- Heading
- Events

AIS and DSC
- Targets
- Tool Tips
- Predictor Lines

Other (Optional – recommended settings)
- Tool Tips
- Ships and weather buoys

Status Bar
- Check all boxes

Charts

- Orientation: Chart up or Heading up (generally useful in restricted waters)
- S-57 ENC's
    - Shallow Depth – 5m
    - Safety Depth: 5m
    - Deep depth: 5m
    - Lat/Long Grid
    - Anti-clutter
    - Light Sectors
    - Land Features
    - Simplified Boundaries
    - Important Text
    - Geographic Names
    - Lights

C-Map

- Palette :NOAA
- Depth Shading: Safe
- Reference Depth 5m (inside 18ft contour will be highlighted)

    - Marine
        - Check all except Tides/Currents and Value added data
        - Navigation Aids
        - Light sectors
        - Nav aid names

    - Land
        - Land features

    - General
        - Lat/Long grid
        - Enhance coloring
        - Tool Tips

NAVIGATION BRIEF FORMAT

Item	Details
Navigation/Voyage Plan	Track Overview, proximity of shoal water and other hazards to navigation, overview of total distance and safe haven ports. VOST review of NOR and Sailing Instructions.
ETD / ETA / SOA	What is the overall Speed, Time and Distance challenge in relation to estimated arrival time?
Weather Forecast	Brief the weather forecast out to ETA + 12 hours for each leg of the course (bay, coastal, ocean).
Ephemeral Data	How will the predicted currents and tidal states impact the navigation plan and proposed dockage area transits and mooring locations?
Anchoring	Procedures
Communications	VHF, HF, and Portable SATCOM.
Outstanding Preparations	Fueling plan, Ready for Sea Reports, outstanding maintenance items.
Emergencies	First Aid, Fire, Flooding, Dismasting, Lightning Strike/Loss of Power, Loss of Steering, Abandon Ship, Mayday Procedures
ORM	Risks and control measures put in place, personnel readiness.
Lessons Learned	Brief lessons learned from previous cruises, and midshipmen lessons learned when applicable
OTC Comments	OTC brief squadron on specific instructions
Port Visit Brief	Includes PAO briefing, in-port uniform requirements, housing arrangements, mandatory events, outreach obligations, liberty time, duty officer requirements, daily muster, watch standing, and departure preparations (provisioning, fuel, maintenance)