

# **Standard Operating Procedures (SOP)**



Version 1.0

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Note: Nothing in this document is meant to restrict quick action and good judgment of the crew.

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## Introduction

**Heart of Gold Philosophy:** Have Fun, Look Good, Place Well. Be continuously dissatisfied with Heart of Gold's VMG performance! Safety at Sea is fundamental in all we do!

**Purpose:** Heart of Gold SOP provide a common baseline of guidance and principles for everyone to understand with specifics where needed. In depth information is available in the XP-44 Owner's Manual and the individual equipment manuals. The application of experience and judgement is critically important along with great communication.

## **Expectations:**

- 1. **Captain/Person in Charge** (PIC) Will be designated and the overall Captain of Heart of Gold. Never hesitate to get him/her up and involved in decisions that are safety related or related potential hazards (storms, potential collision situation, significant changes in weather, etc.). Judgement required on when and every individual on the crew has that responsibility.
- 2. **Backup PIC** Will always be designated and ready to take command should something happen to PIC.
- 3. **Watch Captains (WC)** Makes decisions with PIC and Navigator. In charge during watch section evolutions, on watch safety supervisor, directs crew rotations, provides input to PIC and Navigator, communicates ability to carry out tactics, makes recommendations and carries out sail changes, makes and reviews log entries, oversees meal preps and clean up, general stowage, and watch routines (wake-ups, etc.).
- 4. **Crew-** It is everyone's responsibility to ensure the Watch Captain and Captain/PIC have all the information to make sound decisions. If you see, hear or smell something let the Watch Captain know. If your concerns are not addressed tell the Captain.
- 5. **Decision Making** -The Captain will make every effort to obtain all available information and discuss the situation with the crew, as time allows, and gain consensus on the way forward. It is everyone's responsibility to offer alternate courses of action and perspective. We all have different experiences and knowledge to draw on. The Captain has the final call. We will continuously evaluate the situation and make changes. When we sail we do not lock the sheets and rudder and see where the wind, waves and tides take us. We continuously make course corrections to reach our objective.
- 6. **Navigator/tactician** Maintains the big picture weather patterns and currents, what is expected to be seen during the race and how we see will impact race decisions, phases of race (starting plan, first leg...final leg), hazards on the course, decision points and sail changes. Communicate boat mode (close hauled, VMG, VMC...) to the watch section along with conditionals like "close hauled until above/below XXX). And remember to get topside, look around and incorporate observations that the topside crew sees.
- 7. **Safety:** Heart Of Gold is equipped according to the US Sailing and World Sailing Offshore Safety Regulations Category 1 Ocean Long distance races, well offshore, where rescue may be delayed. PFDs with harnesses are to be **worn on deck at all times** unless specified otherwise by the Watch Captain or Person in charge. Everyone is expected to be clipped in when:
- a) Forward of the mast
- b) Hiking out on rail
- c) At night

- d) A storm is approaching
- e) True wind speed is above 20 knots
- f) Any appreciable sea.
- 8. Race Performance: Distance racing is all about consistent boat speed and the ability to push the boat in the right direction as hard as possible for as long as possible. Planning ahead for expected weather changes and shifting sails early will often lead to winning success by preventing torn sails, equipment damage and injury. If in doubt, down shift early (reef, jib change, dousing a spinnaker...). Squalls at night are difficult to see and create the most challenging conditions when conducting boat evolutions. Proficiency at reefing mitigates risk to the main sail and reefing will often result in better boat performance with reduced heel. Similarly, knowing when to shake a reef, or switch to a higher performing sail for the new conditions pays dividends.
- 9. **Leverage the experts** when needed and get them up when needed. (navigation, electronics, sailing experience, trim, medical...) We have a team of experts who are becoming an expert team.
- 10. **All hands on deck.** There will be situations that require "manning battle stations". Some of these can be anticipated and some not. These are typically related rapidly changing weather conditions to do sail changes or get sails down in a storm. Expect these situations to occur on occasions and be ready to quickly get safety gear on and topside.
- 11. **Watch turnover.** The on watch WC controls. We do not want to be excessively formal but <u>before</u> you head to the bunk, check with the on watch WC and you should not expect to hit the rack until sails stowed, galley clean, and required tasks are completed. Once the watch section turnover has occurred, the WC can turnover. Integral to the turnover will be a briefing on racing current objectives, weather and expected changes, equipment status, (battery, water tanks, bilge status, VHF mode and volume, Iridium status, any boat messages, stowage of gear, sail stack ...)
- 12. **Safety and health** Always be aware of your teammate's status. Are they geared up properly, wearing the proper safety equipment, how are they doing... We each are relying on each other and this is part of being on an off shore racing team. Be safety conscience, stay healthy (eat, hydrate, sleep, manage energy...), communicate with others, be ready and on watch when scheduled (or early).
- a **NO GEAR ADRIFT.** Stow gear properly immediately after use. A little bit of time saves precious minutes at night or in emergencies. Nothing is more frustrating than looking for a tool, block or your headlamp. Stow all personal gear in your duffle bag. Gear adrift is a safety hazard for tripping, when trying to access floor boards or using bilge pumps which suck up indiscriminately.
- b **Keep Galley Clean** Put food away, clean dishes, wipe counters, empty trash, clean floor boards.
- c **Heads** Should be spotless and smell clean all the time! Squat to pee.
- 13. **Heart of Gold Speed Team (driver, main trimmer and spin/jib trimmer)**: Always focused on the main thing boat balance, speed, active trimming, Heart of Gold's performance headed in the right direction...VMG! Big gains can be made at night.
- 14. **US Sailing Safety at Sea:** A Guide to Safety Under Sail and Personal Survival. A key resource to refer to often and the foundation for doing well.

# 1 Heart of Gold Watch Standing Plan

Watch Standing: Each watch will be responsible for completing the following tasks.

- 1) Marking our position on the chart at least every two hours
- Maintaining a proper lookout, AIS and radio watch (know status of volume and scan...HI POWER).
- 3) Check Iridium phone for messages and calls. Log all checks
- 4) Check battery voltages every at least every watch turnover. Do not rely on alarms. Charge when voltage reaches 12.2 V
- 5) Checking the bilge at least once (prior to assuming watch)
- 6) Checking the rigging at least once (prior to assuming watch)
- 7) Checking the forecast weather (prior to assuming watch)
- 8) Checking current sail configuration and ready stack on deck (prior to assuming watch)
- 9) Checking the navigational lights at least once on any watch between dusk and dawn
- 10) Checking the batteries (monitor discharge rate, maintain state of charge greater than 50% and voltage above 12 volts) every two hours (when feasible, run the generator during daylight hours). Charge battery at 1800rpm and work to achieve 90% charge.

## 1.1 Logbooks

The Navigator typically maintains the logs. When the Navigator is sleeping, the Watch Captain will ensure log entries are made.

#### 1) Engine

- 1. Daily oil, belts, visual
- 2. Watch Change: Fuel/Water levels, Hours
- 3. Engine Start/Stop with Battery voltage

### 2) Deck

- Underway/Moored/Anchored
- 2. Watch Turnover
  - i. Position, course, speed
  - ii. Wx, wind, baro
  - iii. Crew on deck, Watch Captain
  - iv. Sail Configuration
- 3. Sail changes
- 4. Hourly position, course made good/speed made good; true wind speed/direction, set/drift; and barometric reading
- 5. Water temperature every hour when approaching the West Wall of the Gulf Stream;
- 6. Any radio comms

# 1.2 Advising the Captain:

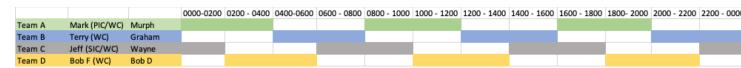
Never hesitate to wake up. Notifications should be made whenever there is:

- a) A significant/un-forecasted change in wind, weather, air temperature or sea conditions (waves, color change);
- b) Heart of gold is approaching/approached by a large vessel within four miles at night, or within two miles during the day;
- c) At night whenever lights/sound signals are detected and the meaning is not clear;
- d) Any perceived hull impact (bump in the night)
- e) Whenever the watch feels it would be helpful or appropriate;
- f) Whenever one of the emergency plans contained here-in is implemented.

**Watch Rotation:** Watch rotations will be set up to distribute crew member skills across watch sections, help maintain race continuity, and avoid wholesale changes when possible. Weather and phase of the race (beginning, middle, finish sprint) may alter the rotation. Staggered four on and four off with a new pair every 2 hrs. The goal in each is for each person to get two 90 minute sleep cycles in a 4 hour off watch status. Eight in crew with 2 sections. 4 crew on deck, on watch in four hour rotation. Option balances available people for skill positions and their ability to conduct simple sail evolutions. Wake ups on the XX45. Off going watch supports required sail evolutions.

Appendix 6 - Watch, Quarters, Station Bill contains sample watch bills for racing and deliveries.

## Watch rotation starting at 1800 on first day of race.



**Watch Partners:** In general, each has a watch partner to maintain awareness of and to double check watch readiness.

**Watch Captain**: When two designated WC are overlapped, the one from the previous watch will continue duty

# 2 Normal Procedures

The following sections detail common actions for routine evolutions The XP-44 owner's manual contains detailed instructions and diagrams. This SOP summarizes those procedures. For additional information or abnormal operations, consult the XP-44 manual or individual equipment manuals.

# 2.1 Getting Underway

See Appendix 4 - Underway Checklist

**Personal Gear:** Minimize your footprint! Consolidate into one small sea bag and foul weather gear, clearly mark your gear and your bag. Bring your off shore vest, tether, personal AIS/MOB, rigging knife/multi-tool and head lamp with a red night light mode. One labeled zip lock bag with your tooth brush and other small bathroom items and daily medications for the head locker and items for the ditch bag. Bring a refillable non-metallic water bottle with a carabiner. Metal water bottles rattle and make a lot of noise. Bring a personal sleeping bag. Sheet covers for rack cushions will be provided to protect the cushions.

**Heart of Gold Ditch Bag**: Upon departing moorings for the start of an off shore race or delivery, all crew members will place their Passport/Identification, a sealed envelope with medical history and allergies (as needed, see

Appendix 7 Personal Medical Information), and an emergency supply of any prescription medications into the Heart of Gold ditch bag. A full list of all items contained in the Ditch bag is located in the bag. The Ditch Bags are co-located with the lift rafts for easy access while underway. A list of all crew personnel with names, phone numbers and emails for emergency contact personnel will be stored in watertight zip lock bag in the ditch bag. Additional crew manifests with addresses, passport numbers and other information will be included as needed.

# 2.2 House Keeping

All cabin ports and top opening hatches are to remain closed when underway except for sail evolutions. In moderate weather, ports or hatches may be opened with express permission of the Skipper/Co-Skipper.

- 1) Foul weather gear will be securely stored in the designated head hanging locker on the line/carbineers provided.
- 2) Sea boots should be secured in a location not to cause trip hazards and prevent access moisture being taken into berthing areas.
- 3) Tidy berthing area after use by stowing bedrolls, personal pillows and gear bag out of the way
- 4) The Navigation station is to be kept free from any debris or loose gear while underway. It is intended to be the primary location for conducting safe navigation with immediate access to power and instrument control.
- 5) USB & 12V outlets are provided throughout the boat for personal device charging.

## 2.3 Head Instructions

Nothing goes in the toilet except what came out of you ...and a little bit of provided TP.

#### \*\*\*NEVER FLUSH BABY WIPES OF ANY KIND \*\*\*

- 1. Add a <u>little</u> water in the bowl by pressing Button 2.
- 2. Do your business.
- 3. If you are a prodigious producer, courtesy flush several times to prevent back up.
- 4. TP is under sink. If you need a lot of TP, make a pile and flush it a little at a time.
- 5. Alternate using Button 2 (Water Only) and Button 3 (Evacuate only) until bowl is clean.
- 6. Out of sight does not mean it's gone. Use Button 1 (water and flush) for 5 seconds to clear pipes.
- 7. Press Button 3 until bowl is empty.
- 8. Toilet brush is under sink.

# 2.4 Operating Under Power

#### 2.4.1 Engine Operation

The most efficient between 1800 and 2000 rpm. Fuel consumption increases expotentially above 2,000 rpm.

Engine spares are located under the floor boards at base of ladder.

#### Starting

- 1) Complete engine daily, see Appendix 4 Underway Checklist
- 2) Control level in Neutral
- 3) Panel power on, wait for self test alarm to silence
- 4) Push and hold start button
- 5) Check for water discharge and oil pressure
- 6) Allow engine to warm to operating temp
- 1. Normal Coolant Temp 76 90C (169-194F)
- 2. Normal Oil Pressure is 0.28 0.54 Mpa (41-78 psi)
- 7) To charge batteries without engaging prop, pull button out and advance throttle to 2,000 rpm

#### **Stopping**

- 1) Engine in neutral
- 2) Allow five minutes to cool if operating at high RPM
- 3) Press and hold STOP Button (NOT the power button)
- 4) MOMENTARILY place throttle in reverse to feather prop, then in neutral.
- a. **WARNING**: LEAVING IN GEAR WILL DESTROY SAIL DRIVE OVER TIME
- 5) Wait a few minutes for fan to cool engine compartment
- 6) Press Power Off Button

#### See 2.6.3 Securing Engine

#### 2.4.2 Bow Thruster

The bow thruster and anchor wildcat are operated off of a separate battery under the forward berth.

## CAUTION: Do not operate bow thruster without the engine running. It will drain the battery.

- 1. Anchor and Bow Thruster CB (Forward cabin)— ON
- 2. Bow Thruster Switch (Elect Control Panel) ON
- 3. Press Power button and Push Controller to right to power on
- 4. Press Red Down Button to lower Thruster.

Controller will beep ever few seconds while the Thruster is down.

#### WARNING: Do not motor greater than 3 Knots with the Bow Thruster down

5. Use the controller to move bow right or left.

# WARNING: Do operate continuously for more than a few seconds otherwise the motor will over heat, shut down or burn out.

- 6. Stow by pressing up button
- 7. Press Power button and controller to right to power off
- 8. Anchor and Bow Thruster CB OFF (Forward cabin)
- 9. Bow Thruster Switch OFF (Elect Control Panel)

#### 2.4.3 Entering / Departing harbor for mooring

1. Check wind and current

- 2. Brief evolution to crew
- 3. Prepping required gear such as lines, fenders, and boat hook.
- 4. Assign crew duties such as bow, midship, and stern line handlers, and order for stepping off boat onto pier or handing lines to shore.
- 5. Assign a bow watch day and night watching for marks, obstructions, buoys, and traffic (especially in tight maneuvering locations
- 6. Make clear to all the lines of communication skipper makes the calls, skipper communicates with bow watch and line handlers.

# 2.5 Operating Under Sail

#### 2.5.1 Sai Crossover Plan

The Heart of Gold sail cross over plan provides a notional guidance for making sail selection decisions based on expected conditions for a steady wind state. The chart will be posted by the main cabin head.

See Appendix 2 Sail Cross Over Chart

## 2.5.2 Reefing

A reef should be inserted or taken out in about one minute

#### 1. Prepare

- a WC briefs evolution
- b Driver focused on driving on the jib,
- c Pit sets up main halyard and reef line,
- d Main Trimmer checks that reef line is located in proper location on boom, with sufficient slack

#### 2. Execute

- a WC calls "Reef the Main"
- b Pit blows vang while main is eased off, Pit lowers main to reef mark
- c Mast pulls down and gets new reef tack locked, calls "Made"
- d Pit raises main halyard to proper tension, calls "High"
- e Pit pulls out slack on reef line then tensions
- f Main Trimmer watches main, calls "Hold"

#### 3. Complete -

- a Pit pulls on vang
- b Main Trimmer adjusts trim. If needed, put on sail ties on main reef points)

# 2.6 Anchoring/Mooring

## 2.6.1 Anchoring

The anchor windlass uses the same battery as the bow thruster.

There is 82 feet (25 m) of chain and 150 feet (45 m) of multi-plaid 5/8" rode for a total of 232 feet (70 m). Using 7:1 scope max anchoring depth is about 33 feet (10 m)

WARNING: Engine must be running to use electric anchor windlass to prevent damage to the battery from excessive drain.

- 1. Engine Start
- Anchor and Bow Thruster CB ON (Fwd cabin)
- 3. Bow Thruster CB ON (Electrical Panel)
- 4. Anchor controller (Helm) ON
- 5. Crew Brief
- 6. Determine Scope 7:1
- 7. Remove Anchor stop (Bow man)
- 8. Test Anchor
- 9. Drop anchor with slight sternway
- 10. Mark GPS waypoint
- 11. Bow man points in direction tending
- 12. Continue backing down so that chain does not pile up on seabed
- 13. Set anchor stop (Bow man)
- 14. Set GPS anchor alarm
- 15. Anchor Controller Off
- 16. Bow Thruster CB Off (Electrical Panel)
- 17. Bow Thruster and Anchor CB OFF (Fwd Cabin)
- 18. Check swing circle depth and obstructions

Getting underway is the reverse process.

There is a saltwater hose in the bow chain locker to wash anchor and chain. It is controlled by Switch on main electrical panel.

## 2.6.2 Mooring

- 1. Engine Start
- 2. Anchor and Bow Thruster CB ON (Fwd cabin)
- 3. Bow Thruster CB ON (Electrical Panel)
- 4. Boat Hook On deck
- 5. Crew Brief

#### 2.6.3 Securing Engine

- 1. Race engine 2-3 times to clear fuel ejectors (This can be done approaching mooring).
- 2. Idle engine for 5 minutes to cool

- 3. Press Engine Stop switch on cockpit engine panel (NOT THE POWER OFF button)
- 4. After engine stop the compartment fan will continue to run. Wait 5 minutes to cool compartment.
- 5. Press Engine control panel power button. Check the panel lights/LCD are off.

Note: While sailing or at anchor the engine will always be ready to start for emergencies with battery switches on and seacock open.

#### When moored:

- 6. Turn Engine Battery switches OFF (Horizontal)
- 7. Remove battery switch key with lanyard
- 8. Close engine seacock (Port aft cabin engine access)
- 9. Place battery key with lanyard on seacock handle. (Can't start the engine without it!)

### 2.6.4 Securing with Shore Power

The shore power cable is in the port cockpit lazarette. It is permanently wired to the boat.

- 1) Connect shore power cable
- 2) On Engine CB Panel in Stbd aft berth
  - a. Shore Power CB ON
  - b. Battery Charger ON
- 3) Engine Battery Switches OFF (Horizontal, not what the sticker says)

#### 2.6.5 Securing without Shore Power

It is vital to insure all electrical loads are secured to avoid vampire drain on the house batterier

The keel bilge pump is directly wired to the battery and does not require any switch or CB to operate.

- 1. Secure all CB in forward berth
- 2. Turn House battery switch in Fwd berth OFF
- 3. Engine Switches OFF (horizontal not what the sticker says)
- 4. Engine Seacock (port berth engine access )— CLOSED
  - 1. The engine switch with the lanyard should go on the engine seacock when closed as a reminder/safety to open the seacock.

# **Special Operation**

# 2.7 Reduced visibility procedures

- 1. Turn on navigation lights
- 2. Fog horn on deck (located in tool shed)
- 3. Wear PFD and tethers
- 4. Closely monitor AIS
- 5. In heavy shipping traffic consider flare kit on deck

## 2.8 Heavy Weather

Checklist of possible foul weather preparations steps:

- 1. Shorten sail and prepare to rig storm sails
- 2. Coil and stow all lines.
- 3. Secure any sails on deck.
- 4. Check jack lines and life lines
- 5. Retrieve Gale Rider drogue and attach lines
- 6. Check crew status as to foul weather gear, PFD and clipping in
- 7. Check that all ports and hatches are secure.
- 8. Walk through below and secure objects that may come adrift,
- 9. Confirm sink drains sea cocks are closed
- 10. Empty toilet bowls
- 11. Check bilges and establish a base line for water
- 12. Check all wooden plugs are present and tied to through hull location
- 13. Close off unnecessary seacocks
- 14. Raise companion way wash board
- 15. Prepare hot water and easy food
- 16. Consider energizing running lights
- 17. Check area for hazards to navigation (shoals, rocks) and nearby vessels

## 2.9 Storm Sails

The Storm Jib can be hoisted three ways:

- 1. In the head stay track using the luff rope
- 2. Tacked to the base of head stay and loose luff
- 3. Tacked to middle of foredeck padeye as stay sail

The Storm Tri-Sail is hoist on the main halyard (or available jib/Spin halyard. The luff is attached to the dynema mast stay on the starboard aft side of the mast.

Tri-sail is sheeted to the Spinnaker turning blocks, then to primary winches.

## 2.10 Stove Instructions

The control panel is in the top cabinet above reefer. It should be powered on all the time so that the CO and gas detector alarms are active. There are two alarm sensors, one on the galley overhead and a second in the galley bilge. Propane is a heavy gas and will settle there first.

To turn stove on:

- 1) Open propane bottle valve in port aft lazarette. Open all the way, then back off ¼ turn.
- 2) In cabinet above reefer, turn on solenoid power button. Green light will illuminate.
- 3) Press solenoid open button. ▷< Top row, far right. Green light will illuminate.
- 4) Press and hold electric start button on stove. You should hear clicking
- 5) Turn burner knob and push in until burner lights
- 6) Once burner lights keep knob pushed in for a few seconds to heat thermocouple which keeps gas line open.

#### To Turn off:

- 1) Turn all burners off
- 2) Close solenoid valve (top row last button)
- 3) Close propane bottle valve

Leave panel powered for CO/Gas alarm.

# 3.4 Indicating the measured gas concentration (Alarm or safe) Whether a gas concentration has been measured by the sensor and whether the sensors is functioning correctly is shown by an acoustic alarm and two LEDs, one for each sensor.

The indication is as follows:

LED	GREEN	Safe	No combustible gas or CO has been detected.
LED	GREEN 1 s - 0,25 s - 0,25 s - 1 s 0,3 s - 8 s	Warning CO	A minimum amount of CO has been detected, but less than the alarm level. This is in the warn- ing range.
LED	GREEN 1s-0,25s-0,25s-0,25s-1s 0,3s-8s	Warning Combustible gas	A minimum amount of combus- tible gas has been detected, but less than the alarm level. This is in the warning range.
LED	RED 1 s - 0,25 s - 0,25 s - 1 s 0,6 s - 0,3 s	Alarm CO	An amount of CO higher than the alarm level has been detected.
LED	RED 1s-0,25s-0,25s-0,25-0,25s-1s 0,6s-0,3s	Alarm Combustible gas	An amount of combustible gas higher than the alarm level has been detected.
	0,5 s - 0,5 s	Attention	The sensor is faulty or aged.

NB: if no sensors are connected to the gas detector it cannot function. Both LEDs [10 SENSOR 0.2] will flash RED until at least 1 sensor has been detected,

## 2.11 Instruments –

During inland and coastal sailing the garage center Triton display will always have depth displayed with the alarm set.

Normal Startup and shutdown procedure - TBD Reduced power configurations - TBD Transitioning between day and night modes - TBD

# 2.12 Rigging the Boom Preventer/Brake

If sailing deep down wind or wave conditions dictate the boom break is rigged to the top of the boom vang. The lines are secured to the base of the shrouds.

## 2.13 Sat Phone

Use of the Sat Phone for Voice & Data (list of emergency numbers should be on readily accessible laminated card or sticker posted by sat phone)

# **3 Emergency Evolutions**

The following sections detail common and non-common responses to at sea emergencies. Each page will identify the situation, immediate actions and follow up actions required of watch standers and then the entire crew. In addition to the core positions listed above, some crew members may be assigned an additional role during emergencies such as spotter, communications, fire fighter, life raft coordinator. In all cases crew members shall know and understand the immediate and follow up actions to these emergencies and be prepared to step into each other's roles when required.

The following will be posted by the main companionway.

Appendix 1 – Through Hull and Emergency Gear Location

Appendix 6 - Watch, Quarters, Station Bill contains individual assignments for major evolutions. Crew positions are guidance only as a crew members may be engaged in damage control, first aid, overboard or injured.

# 3.1 Safety and Damage Control Equipment

Heart of Gold is equipped according to USCG, US Sailing and World Sailing Offshore Safety Regulations (OSR) Category 1 Ocean - Long distance races, well offshore, where rescue may be delayed.

- First Aid Kit
- Fire Blanket
- Two Viking 6 person life rafts \*
- Dan Buoy MOB Pole with light
- Heaving Line
- Recover Sling
- Wood DC plugs are tied to each through hull fitting

- Emergency running lights (behind Nav desk)
- Rig cutter is under Nav desk seat
- Sail Repair kit is in stbd forward locker
- Radar Reflect behind Nav Desk
- Emergency Tiller
- Emergency Steering using drogue

# 3.2 Communications Equipment

- Installed VHF with AIS and DSC at Nav Station and remote at helm by engine console
- Handheld VHF with GPS and AIS/DSC (Ditch bag)
- Handheld VHF (ditch bag)
- Emergency VHF antenna is behind Nav Desk
- Iridium GO Exec Satellite phone and internet
- EPIRB installed at Nav Desk (GPS 406 Mz and AIS)
- EPIRB in Ditch Bag (GPS 406 Mhz and AIS)
- Flares handheld and rocket, Orange Smoke
- Air Horn

<sup>\*</sup> Life rafts are not required during inshore races and sailing.

## 3.3 Alarms

If you hear an alarm, locate it and notify the Watch Captain and/or Skipper.

- Engine Temp Alarm Engine Panel
- Engine Low Oil Pressure Engine Panel
- Depth Alarm B&G
- House Battery low voltage (separate alarms)
  - B&G display
  - Battery display on Electrical panel
- Autopilot Low Voltage Autopilot controller port helm station
- Carbon Monoxide/Propane Alarm Solenoid controller in cabinet above reefer
  - See paragraph 2.10 Stove Instructions

## 3.4 MAYDAY CALLS

<u>Situation:</u> Heart of Gold or a crew member is in grave distress and <u>requires immediate assistance</u>.

<u>Initiated by</u>: Skipper, Co-Skipper or remaining Person in Charge.

#### Radios Available:

- 1) Helm VHF with DSC
- 2) Nav Station VHF with DSC
- 3) Ditch Bag 1 portable VHF with DSC
- 4) Ditch Bag 2 portable VHF only
- 5) Iridium GO Exec Satellite phone and Internet (Offshore only)
- 6) EPIRB mounted by Nav Station
- 7) EPIRB in Ditch Bag 2
- 8) PLBs

#### **Immediate Actions**

Step 1. On one radio, transmit an automatic DSC alert by opening the red cover plate and pressing and holding the distress button for 2 seconds. Radio tuned to the DSC distress channel, i.e. channel 70 on VHF.

Step 2. Prepare for the subsequent distress traffic by tuning a radio to the distress traffic channel in the same band, i.e. channel 16 on VHF, while waiting for the DSC distress acknowledgment. The DSC alert will automatically repeat approximately every 4 minutes until an acknowledgment is received. [double check, it should]

### **Follow-up Actions**

Step 3. Make the following radio call on VHF CH16

a) "Mayday, Mayday, Mayday"

b)	"This is sailing vessel Heart of Gold USA 42, sailing vessel Heart of Gold USA 42, sailing vessel Heart of
Gold	d USA 42"

- c) "Position\_\_\_\_\_Latitude \_\_\_\_\_Longitude"
- d) Nature of Distress (sinking, fire, personnel injury)
- e) Number of persons onboard
- f) Assistance required
- g) Any other information which might facilitate rescue, such as number of persons needing medical attention, color of hull, Satellite phone number, MSSI number, etc.
- h) "Over"
- Step 4. Release microphone button and listen for response, repeat call periodically.
- Step 5. Log time of call, time of response, responding station if practicable
- Step 6. Cancel Mayday when directed

## 3.5 PAN-PAN CALLS

<u>Situation:</u> Heart of Gold or a crew member is at risk and requires serious help but there isn't a grave and imminent danger to the boat or anyone on board. Also used to notify other mariners of dangerous conditions, e.g. floating container, debris.

Initiated by: Skipper, Co-Skipper or remaining Person in Charge.

#### 3.5.1 Immediate Actions

Step 1. On one radio, tuning to the appropriate distress traffic channel, i.e., channel 16 on VHF. For Urgency calls a (a Pan-Pan call) the red DSC Alert button should not be activated.

Step 2. Make the following call on VHF CH16.

"Pan-Pan, Pan-Pan, Pan-Pan" (pronounced "PAHN-PAHN")

"This is sailing vessel Heart of Gold USA 42, sailing vessel Heart of Gold USA 42, sailing vessel Heart of Gold USA 42"

"Position	Latitude	Longitude'

Nature of Urgency (i.e. loss of steering, Broken or dismasted etc.)

Number of persons onboard

Assistance required

Any other information which might facilitate assistance if required, such as tools, supplies, medical supplies, towing, Satellite phone number, MSSI number, etc.

"Standing by on VFH CH16, out"

## 3.5.2 Follow-up Actions

Step 3. Log time of call, time of response, responding station if practicable

Step 4. Repeat Pan-Pan at 15 minute intervals until Cancel Pan Pan issued "Mayday, Mayday, Mayday."

Step 5. Cancel Pan-Pan when directed.

Note: An Urgency call of 'Pan-Pan' can be subsequently upgraded to a 'Mayday' call if the situation worsens and lives become endangered.

### 3.6 CREW OVERBOARD

#### 3.6.1 Immediate Actions

- Sound the Alarm
- Designate someone to keep eye on person in water
- Mark position by pressing 'MOB' button on chart plotter at helm and on the GPS at the Nav desk Release Dan Buoy
- Litter the Sea: Throw additional floatation into the water as near the person as possible
- o Dan buoy
- o Type IV PFD
- Turn into Wind (Heave to OR perform Quick Stop maneuver with jib or spinnaker)
- Direct someone to announce MAYDAY man overboard on radio
- Verify lines are clear and then start engine and maintain in neutral until needed



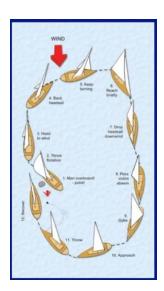
## **Decision Point**

Is person in water close enough to throw heaving line to? Is person attached to boat with tether?

**YES:** Heave to and stop the boat

- Do not release jib sheets or do quick drop on spinnaker
- As winds starts to backwind jib, shift rudder to keep boat headed into wind
- Boat will steady out
- Throw heaving line; if person in water is too far away go to next step.

NO: Execute Quick Stop Man Overboard Recovery Maneuver



- 1. Person Overboard
- 2. Head into wind
- 3. Throw floatation (Dan Buoy // Cushion)
- 4. Back headsail
- 5. Keep Turning
- 6. Brief Reach
- 7. Pass a beam of person in water
- 8. Deploy Life Sling
- 9. Gybe
- 10. Approach person in water to windward
- 11. Try to stop boat next to person in water if not continue turn until person in water has contact with Life Sling line
- 12. Soon as contact made STOP Boat by heading into wind and heaving to

(see directions above)

## 3.6.2 Follow-up Actions

- Select side for recovery and throw life sling
- Use heaving line if needed
- Attach topping lift to Man Overboard Lift tackle
- Pull person in water to midships on selected recovery side
- Have person in water attach lift tackle (snap shackle) to life sling and winch aboard
- Issue PAN-PAN notice on radio stating person in water recovered
- Render First Aid as needed, treat for hypothermia
- Gale Rider drogue can also be used to hoist injured crew.

## **3.7 FIRE**

#### 3.7.1 Immediate Actions

- Yell FIRE FIRE ensure off watch acknowledges
- Grab extinguisher and deploy fire retardant on fire, use fire blanket as needed
- Extinguisher in lockers below deck (x 3)
- o Forward cabin locker
- o Main salon port side behind cushion
- o Port Aft Cabin locker
- o Aft Port lazarette
- Shut off fire fuel
- Stove Fire
- Turn fuel off using knobs if able or soleniod
- Use fire blanket (top left cabinet)
- o Use fire extinguisher
- If Engine Fire (Black Smoke)
- o stop engine
- o Engine power off (turns fan off)
- O Use fire port on front of engine cover
- If Electric Fire (Blue Smoke)
- o Turn off circuit breakers on electrical panel (at Nav Station)
- o Turn battery power knob to off under forward cabin locker
- o Turn engine battery off, starboard aft cabin
- If Propane (Black Smoke) open propane locker port side aft and turn knob on top of propane cylinder to off and turn off power to propane
- Direct someone to announce MAYDAY Fire on radio (use handheld if power is off)
- Verify fire out
- Assign a fire watch with means to extinguish if re-flash

#### 3.7.2 Follow-up Actions

- Determine if any crew injured
- Render medical help to injured crew
- Determine extent of damage
- If boat can be sailed safely Cancel MAYDAY on radio state fire is out and boat can be sailed safely
- If boat cannot be sailed safely  $\circ$  Prepare to abandon  $\circ$  Activate EPIRB  $\circ$  Prepare to be towed

## 3.8 FLOODING

#### 3.8.1 **Immediate Actions**

- Yell FLOODING FLOODING ensure off watch acknowledges
- Determine source of water o
- Check through hull valves (most likely source)
- Transducer just forward of mast 0
- Head Sink and toilet (both)
- Galley sink 0
- Engine intake under engine port side
- Rudder post open aft lazarette
- Release sheets (slow/stop boat)
- Block hole in boat objective is to slow / stop water entering boat
- Start electrical pumps (don't wait for float switches)
- Use two manual pumps as needed



Decision Point – Can Flooding be controlled?

#### NO:

- Issue MAYDAY uncontrolled flooding call on radio before batteries short out
- Prepare to Abandon Ship
- Activate EPIRB
- Continue to try and stop flooding

#### YES:

- Develop and execute plan to further slow or stop water ingress
- Determine extent of damage
- Dewater boat to maximum extent possible
- Head to nearest port for repairs

## 3.9 ABANDON SHIP ACTION

Situation: Heart of Gold is in distress with loss/sinking possible and requires immediate assistance.

Initiated by: Skipper, Co-Skipper or remaining Person in Charge.

#### 3.9.1 Immediate Actions

- Get life rafts on deck from locker (DO NOT DEPLOY)
- All hands in life jackets
- Get Emergency Grab bags topside next to lift raft and hook both together
- Get emergency water topside next to raft
- Make MAYDAY radio call
- Activate EPIRB and assemble crew with lift raft and ditch bag
- Take anti-nausea medications



**Decision Point – Is sinking imminent?** 

#### YES:

- Tie life raft painter to stern
- Deploy life raft
- Send strongest person to life raft
- Load life raft with supplies
- Get all hands into life raft
- Stay connected to boat until boat sinks then cut life raft free with knife on life raft next to where painter is attached

#### NO:

- DO NOT DEPLOY LIFE RAFT
- Continue to keep boat afloat
- Advise rescue teams of status and maintain communications schedule
- If possible, get food into crew
- Keep hydrated

## 3.10 LOSS OF STEERING

#### 3.10.1 Immediate Actions

- Check rudder post for flooding
- If flooding stop flooding then worry about steering
- Release sheets
- Reduce sail
- Make PAN-PAN radio call stating loss of steering
- If cable/wheel failure > rig emergency tiller

#### 3.10.2 Follow-up Actions

- Check rudder intact
- Check for snagged lines/gear
- Check steering cables & hydraulics mounts
- Remove wheel if needed
- Rig emergency steering with drogue
- Rig heavy weather jib
- Rig main for second reef



Decision Point - Can you move rudder with emergency tiller?

#### YES:

- Raise sails
- Sail boat with emergency tiller
- Make PAN-PAN radio call stating steering regained with emergency tiller
- Investigate steering system to determine cause of steering failure
- Fix if possible
- Add more sail area if comfortable

#### NO:

- Rig emergency rudder
- Gale rider attached to spinnaker sheets
- Spinnaker sheets rigged amidships
- Raise sails
- Make PAN-PAN radio call stating steering regained with emergency rudder
- Investigate steering system to determine cause of steering failure
- Fix if possible
- Add more sail area if comfortable

## 3.11 BROKEN STAY

#### 3.11.1 Immediate Actions

- Release all sheets
- Put pressure on remaining stays o
- o If Forestay breaks head down wind
- o If Backstay breaks head up wind
- o If Port Side Stay breaks put boat on starboard tack
- o If Starboard Stay break put boat on port tack
- Get all hands on deck
- Consider reducing sail if practicable i.e., spin, shift to smaller jib...

## 3.11.2 Follow-up Actions

- Use Halyards for emergency stay replacement
- Use second jib or spinnaker halyards for forestay replacement
- Use any available halyard for port / starboard stay replacement
- Pull in sheets and determine if replacement stay needs further tightening
- Sail gently

## 3.12 BROKEN MAST

#### 3.12.1 Immediate Actions

- Release all sheets
- Turn boat into wind
- Wake up off watch
- Use hand held radio for PAN PAN call to advise of situation
- Verify all hands aboard
- Verify no injuries to crew

**DO NOT START ENGINE** until verifying no lines will get tangled with prop



Decision Point – Is the top part of mast still attached and a catastrophic danger to the

## boat?

YES: Cut the entire mast away and discard

NO: Secure broken section on deck to prevent further damage to boat, and for analysis once in port

#### 3.12.2 Follow-up Actions

- · Get remaining sails off of mast
- Clear lines and stays out of the water
- Use engine as needed to maintain a stable work platform when lines and stays are clear
- Use lines to create stays for what remains of mast, Or
- Create a jury-rig mast Options include: Boom
- Spinnaker pole Spliced dingy oars Sailboard Rig
- Mast remnants
- Rig sails to mast and sail to nearest port

## 3.13 DEMASTING

#### 3.13.1 Immediate Actions

- Release all sheets
- Turn boat into wind
- Wake up off watch
- Use hand held radio for PAN PAN call to advise of situation
- Verify all hands aboard
- Verify no injuries to crew

**DO NOT START ENGINE** until verifying no lines will get tangled with prop



Decision Point - Is the mast a danger to boat?

YES: Cut the entire mast away and discard

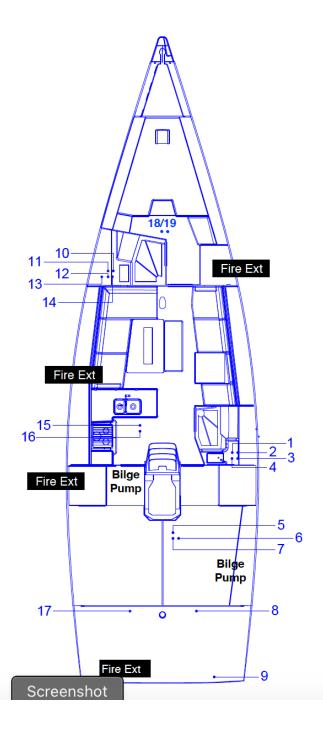
**NO:** Secure remaining mast on deck to prevent further damage to boat, use in jury rig and for analysis once in port

## 3.13.2 Follow-up Actions

- Get sails off of mast
- Clear lines and stays out of the water
- Use engine as needed to maintain a stable work platform when lines and stays are clear
- Create a jury-rig mast Options include:
- Boom
- Spinnaker pole
- Spliced dingy oars
- Sailboard Rig
- Mast remnants
- Rig sails to jury mast and sail to nearest port

# Appendix 1 - Through Hull and Emergency Gear Location

# Heart of Gold US 42



# Seacocks and through hull fittings

- 1. Seawater in toilet SB aft head (1/2").
- 2. Sink drain SB aft head (3/4").
- 3. Shower sump out SB aft head (3/4").
- 4. Holding tank out SB aft head (11/2").
- 5. Washboard drain (11/2").
- 6. A/C in (optional 1")
- 7. 230V AC generator in (optional 1").
- 8. Mainsheet recess/cockpit drain SB (11/2").
- 9. Main engine exhaust.
- 10. Seawater in toilet owner's head (1/2").
- 11. Sink drain owner's head (3/4").
- 12. Shower sump out owner's head (1/2").
- 13. A/C seawater out (optional 1/2").
- 14. Holding tank out owner's head (11/2").
- Sink drain/special Isotherm implant for fridge compressor.
- Seawater inlet deck wash pump/seawater tap galley (optional (3/4").
- 17. Mainsheet recess/cockpit drain PS (11/2").
- 18. Speedo
- 19. Fatho

# **Appendix 2 Sail Cross Over Chart**

175	170	165	160	155	150	145	140	135 A1	130 A1	125 A1	120 A1	115 A1	110 A1	105 A1	100 A1	95 A0	90 A0	85 A0	80 A0	75 A0	70 A0	65 A0	60 #1 Jib	55 #1 Jib	50 #1 Jib	45	40	35	TWA	4 SML	一上
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				A1	A0	A0	A0	A0	A0	A0	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib			8										
			A2	A1	A1	A1	A1	A1	Α1	A1	Α1	A0	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib		10	GOL						
		A2	A2	A2	A1	A1	A1	A1	A1	A1	A0	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib	#1 Jib		12	Ď						
	A2	A2	A2	A2	A2	A2	A1	A1	A1	A1	A0	JT	Л	Л	ង	#3 JIB	#3 JIB	#3 JIB	#3 JIB	#3 JIB	#3 JIB	#3 JIB		14	<u>ا</u>						
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			A2	A2	A2	A2	A2	រា	5	។	រា	។	។	។	5	5	។	រា	Л	JT	ង	#3 JIB	#3 JIB	#3 JIB	#3 JIB	#3 JIB	#3 JIB	#3 JIB		22	
				JT	<b>1</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>				<b>5</b>	'n	'n	'n	JT	ı	Л	JT	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB		24	
				_	$\vdash$	JT+1 Reef	$\vdash$	-	JT+1 Reef	5	5	5	5	រា	Л	JT	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB	#4 JIB		26					
				JT+1 Reef		JT #	#4 JIB #	#4 JIB #	#4 JIB #	#4 JIB #	#4 JIB #	#4 JIB #	#4 JIB #	#4 JIB #		28															
				JT+1 Reef	#4 JIB+1REEF	#4 JIB+1REEF	#4 JIB+1REEF	#4 JIB+1REEF	#4JIB+1REEF	#4 JIB+1REEF	#4 JIB+1REEF	#4 JIB+1REEF	#4JIB+1REEF	#4 JIB+1REEF		30															
				JT+1 Reef	storm jib	storm jjib	storm jib	storm jib	storm jib	storm jib	storm jib	storm jib	storm jib	storm jjib	storm jib	storm jib		32													
175	170	165	160	155	150	145	140	135	130	125	120	115	110	105	100	95	90	85	80	75	70	65	60	55	50	45	40	35	TWA	SWT	

# **Appendix 3 - Terminology**

We all come different areas, sometimes all over the world, where customs and terminology aren't always the same. To the greatest extent possible, the following will be used.

Trim	Direction to grinder and trimmer to take in sail
Ease	Let line out. Used for trimming sails. When used generally "Ease port spin gear"
	then it means push a rope.
Hold	Hold current tension on line, stop grinding
Slack	Take off tension, but be prepared to take back on
Stop	Emergency command to stop current evolution. Something is wrong
Secure	Cleat line.
Made	The line is secured to cleat, sail or reefing. Signals grinder to stop and trimmer to
	start.

# **Appendix 4 - Underway Checklist**

1.	Fatho/Speedo
2.	Winch/Anchor CB - On
3.	House Battery- On
4.	FWD Head Alignment
5.	Instruments/Lights/VHF/Bow Thruster – ON
6.	Aft head alignment
7.	Fuel/Water level – Checked and Logged
8.	Engine Daily
a.	Oil levels: Engine; Sail drive
b.	Fuel/Water separator
C.	Through hull
d.	Belt Tension
9.	Logbook (water, fuel, engine check)
10.	Engine Switch On
11.	Shore Power Off
12.	Flag – Flying
13.	Boat hook – topside cockpit
14.	Remove Shore power cable
15.	MOB Kit – Check
16.	VHF Remote - On
17.	Chart plotter - on
18.	Crew Brief Life
a.	Jackets, Rafts
b.	MOB
c.	Fire Extinguishers
d.	VHF/Cell phones/DSC
e.	Head
f.	Winches
g.	See, hear, smell
19.	
20.	Bow Thruster - ON
21.	Anchor Controller – As Required
22.	
23.	UW
24.	Bow Thruster – Stowed and OFF
25.	Fenders in and stowed

# **Appendix 5 - What To Bring**

In a small duffle bag:

- 1) PASSPORT!!!!
- 2) PFD
- 3) Foul weather gear
- 4) Tether
- 5) Personal AIS MOB-1/PLB
- 6) Headlamp with Red light
- 7) Knife
- 8) Sleeping bag
- 9) Small pillow
- 10) Ditty bag for head. I don't have pockets/shoe bag for individual stowage
- 11) Personal medications
- 12) Sunscreen no spray bottles
- 13) Hat
- 14) Water bottle with carabiner, no metal unless you have silent cover
- 15) Travel mug for hot beverages
- 16) Eye mask
- 17) Ear plugs
- 18) Towel
- 19) Phone external battery no charging! (1 hr of engine run time/day)
- 20) A positive mental attitude!

# Appendix 6 - Watch, Quarters, Station Bill

Various watch rotations are used depending on the number of crew, duration of passage, experience and type of sailing (racing, delivery).

## 2 Sections, 4 Hour Watch

- Standard Navy Watch
- Two teams, typically 4 crew each
- 12 hours Watch, 12 Hours sleep/off watch
- Can be modified by dogging (splitting) the 1600-2000 watch into two.
- Navigator/Skipper floats

	0000 - 0400	0400 - 0800	0800 -1200	1200 - 1600	1600 -2000	2000 - 2400		
Blue	Watch	Sleep	Watch	Sleep	Watch	Sleep		
Gold	Sleep	Watch	Sleep	Watch	Sleep	Watch		

# 9 Crew, 4 Hour with Float

- 3 crew on deck, with 3 in standby and 3 in rack.
- 8 Hours of Watch, Standby and Sleep per day.
- A little extra off deck time during float, if no sail changes.
- Allows float to prepare meals, clean, do maintenance, etc.

	0000 - 0400	0400 - 0800	0800 -1200	1200 - 1600	1600 -2000	2000 - 2400
Bill	Float	Sleep	Watch	Float	Sleep	Watch
Caitlin	Sleep	Watch	Float	Sleep	Watch	Float
Eric	Float	Sleep	Watch	Float	Sleep	Watch
Marcus	Sleep	Watch	Float	Sleep	Watch	Float
Matt	Watch	Float	Sleep	Watch	Float	Sleep
Mary	Watch	Float	Sleep	Watch	Float	Sleep
Mark	Sleep	Watch	Float	Sleep	Watch	Float
Megan	Float	Sleep	Watch	Float	Sleep	Watch
Roland	Watch	Float	Sleep	Watch	Float	Sleep

# 8 Crew, 4 Section Rotating Watch

- Four Teams, Two Crew Each in Four hour blocks
- Four Crew on deck at any time
- Good Racing rotation as two fresh crew come on deck every two hours

	0000-0200	0200 - 0400	0400-0600	0600 - 0800	0800 - 1000	1000 - 1200	1200 - 1400	1400 - 1600	1600 - 1800	1800- 2000	2000 - 2200	2200 - 0000
Team A												
Team B												
Team C												
Team D												

# **General Emergency/MOB**

Helm	Captain/PIC
Main Sail	
Trimmer Port	
Trimmer Stbd	
Pit	
Mast	
Foredeck	

# **Abandon Ship**

Some crew will likely be involved in damage control. Alternates are provided as a check in case primary is unable to preform duties.

	Primary	Alternate
Helm		
Topside Crew		
May Day, Charts,		
Logs		
Ditch Bags, EPIRB		
Prepare Rafts		
Water		
Food		
Flare Kit, First Aid Kit		
Damage Control		

# **Life Raft Assignments**

Assignments are made to ensure accountability and that each raft has the appropriate gear. However, in extremis the priority is to get everyone on board a life raft and as much gear as possible.

Life raft 1	Life Raft 2
1. Skipper	1. SIC
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

# **Appendix 7 Personal Medical Information**

This form will be filled out by each crew prior to offshore sailing, sealed in an envelope and placed in the ditch bag. It will only be opened if the crew member is injured and needs medical attention.

Name			
Date of Birth			
Emergency Contact	Name		
	Phone		Accepts Texts Y / N
	Email		
	Address		
Medical Conditions			
Medications	I have On board		
	Not on board		
Allergies	Reaction	Medication	