OPERATIONS MANUAL JUNE 1, 2011

"KITTIWAKE"

Welcome aboard KITTIWAKE –we named her after a beautiful sea gull that goes ashore only to breed.

We designed her especially for our cruising area in the NW, BC and Alaska and built her in New Zealand, the catamaran capital of the world. To accommodate our guests and family we have 2 staterooms and 2 heads, plus lots of room for little ones in sleeping bags. The salon table folds down and can be made up as a double bed.

Favorite things about "Kittiwake"
1. She's fast, fuel efficient, and amazingly maneuverable
2. She handles chop & large rollers comfortably and safely
3. As a ONE OFF she draws a crowd of admirers at the Marina
4. At anchor or in the marina she is very stable and does not rock with the waves like monohulls

We know you will enjoy our cruising grounds and will want to return. We hope Kittiwake brings you everything you expected and we want to thank you in advance for treating her as well as she treats you.

Bob & Jean Pier
172 Overlook Trail
Sequim, WA 98382
360-681-2308 home
360-477-5296 Bob cell
bobpier@bellhill.net e-mail

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Kittiwake Specifications

Year:	2004	Displacement:	20,000 lbs
LOA:	41’	Holding Tank:	40 gallons
LWL:	41’	Fuel Tanks (2) :	250 gallons total
Beam:	15’3”	Water Tanks (2):	150 gallons total
Draft:	3’		

1. ANCHORS

“Kittiwake” is equipped with two anchors, one on forward bow-roller and one stored in the forward starboard locker. The primary bow anchor is a 35# Delta anchor with 25 meters (82 feet) of 8 mm (0.3 inch) galvanized chain plus 100 meters (394 feet) of nylon rode marked at 30” intervals. The additional anchor is a Danforth 30 # with 20 feet of 5/16 chain & 200 feet of 9/16 nylon rode.

The scope to use in the islands is 4-to-1. Most coves are 15’-30’ deep, so expect to pay out about 60’-120’ of rode. After you have paid out the suitable amount of rode, a couple of in and out of reverse (idle speed) sets the anchor and tests its holding power.

For storm conditions, extend scope to 7 or 10-to-1 (200’ in 20’ of water. Or if anchoring space is limited, set two bow anchors (using the secondary anchor, chain and rode) in a v-type pattern for extra holding power.

2. ANCHOR WINDLASS.

Always operate the windlass while the engine is running! The circuit breaker (“on” and “off” switch) is located on the main battery control panel in the cockpit. The windlass can be operated (i.e., move anchor up or down) with buttons on the bridge control panel and foot buttons on the bow near windlass.

A. Deploying the Anchor:

After deciding where to anchor and determining the depth and desired scope, come *to a complete stop before releasing the anchor from the bow. Drop the anchor slowly off the bow roller into the water until it hits bottom and then slowly back down letting out chain & rode to the planned scope (Usually 4 to 1) Remember to check the tides to see what the maximum/minimum depths are at that location. Upon reaching the planned scope stop the windlass and continue backing down until it’s obvious the anchor is holding. If the anchor does not hold with the windlass not releasing line you need to retrieve the anchor and try again or try a different location with better holding.*

B. Retrieving the Anchor:

To retrieve the anchor, put one or both engines in gear and slowly move forward while using the windlass to slowly retrieve the rode and chain. ***CAUTION -****never use a windlass to pull the boat forward to where the anchor is set as this might cause serious damage to the windlass. To maintain a slow approach it may be necessary to switch the engines to neutral to avoid moving too fast or overshooting the anchor location. It's best to have someone on the bow to direct the movement and indicate a need to slow down or stop. The person on the bow should also keep an eye on the rode going into the anchor locker to ensure it doesn't become fouled.. Sometimes the anchor comes up with some mud. We just lower & raise the anchor a couple of times and that usually clears the anchor. Kelp can be removed the same way but often we need to pull the kelp off the anchor by hand.*

C. Securing the Anchor:

Once the anchor is on the bow roller, be sure to secure the anchor with the"keeper" line. Snap the line through a link in the chain nearest the anchor, then tie the line to the port bow cleat. (**CAUTION** The windlass should not be the only thing keeping the anchor **secure.**

3. BATTERIES & CHARGING

Upon boarding (or departing an anchorage) always check the battery voltage. A volt meter is located in the starboard passage-way electric panel (main passage way to the master suite). If the batteries are not fully charged it is best to bring them to a full charge before departing the dock or anchorage. To charge the start batteries (2) and house batteries (4) ensure the power cord is connected to the power source on the dock and the breaker (off/on switch located in the cockpit electric panel) for shore power is in the on position. At anchor the generator is used to charge both start & house batteries. (See section 14 Generator).

Prior to departing dock switch off the shore power breaker, retrieve and stow the power cable. *It's always best to connect the power cord on the boat and then connect to the shore power. When retrieving the power cord-shut off power at the dock, remove the cord from plug, retrieve cord to boat, unplug from boat, coil, and store.*

The start batteries are located underneath the fridge/freezer in the cockpit adjacent to the door to the Salon. The house batteries are located underneath the settee in the salon (the smaller portion amidships). Charging is automatically controlled by Ample Power Smart Regulator. House batteries are isolated but can be connected with the emergency by-pass switch in the Cockpit electric panel.

4. BERTHS.

"Kittiwake" has 2 staterooms with very comfortable Queen Beds (82 x 54). When needed, heat is supplied by Webastco heaters with 2 speed fans., located near the deck of each stateroom. Reading lights are individually controlled. Music/Radio is remotely controlled in both staterooms.

Additional sleeping areas are

1) The Salon Dining Table can be lowered and made into a double bed. Remove the leg extensions by loosening the screws and lowering the table. Remove the settee seat back (it's secured by Velcro and just needs a tug to be removed to make up the bed,. We suggest sleeping bags for this area.
2) Settee on Fly bridge can accommodate a couple of children or an adult. Sleeping bags suggested.
3) There is additional space on the deck on the bridge for a couple of children or adults. Sleeping bags are suggested.

5. **BILGE PUMPS**.
Please check the bilge areas each day, morning and evening. They are located as follows: Port Side engine compartment, compartment below Galley Fridge. Starboard side engine compartment and below deck at door to head in stbd passage way. There are 4 electric on demand bilge pumps that activate automatically when sufficient water is present. Underway alarms will sound on the fly bridge if a pump is activated. The active pump is identified to allow a quick inspection of the area involved.

6. **COOKING**
   1. **COOKTOP (ARGENT PROPANE)** the cook top has three burners. **Propane is a hazardous gas. For your safety, please follow these procedures:** Make sure all control knobs on the stove are in the "off" position.
   a) Open the faucet-like hand valve at the propane tank located in the forward deck port compartment...
   b) Turn the electric solenoid switch located on the passage way electric panel to "on". A red light will appear.
   c) Light a match or butane lighter, push in the stove control knob in and turn to the left to high. Hold the knob in for 2-3 seconds and release when lit. You may then operate the knob like a normal stove...
   d) When finished with the stove, shut off the burner(s), and then shut off the solenoid switch. No need to shut off the propane tank during the day.
   e) At night, it's recommended that you turn off the propane tank with its faucet-like hand valve. That way, should the solenoid value fail, there's no chance that propane will leak into the vessel
   f) The propane tank compartment has a BEP propane sniffer and is vented in case of a propane leak. The sniffer alarm control is on the passage way electric panel.

   2. **PANASONIC MICROWAVE & CONVECTION OVEN** The unit is located adjacent to the Guest Stateroom. It is powered by either shore power or by the inverter when cruising or at anchor. The instruction manual and recipe book are stored above the unit. As long as the AC breaker is on at the passage way electric panel or the inverter is running this unit should be ready to run. On rare occasions the GFI switch can be tripped. To restore power reset the GFI socket below the amidships settee

   3. **BARBECUE.** The propane BBQ is plumbed to the propane tank which is stored in the port hatch on the forward deck. (See Cooking section 6 for turning on propane) Cleaning the unit after it cools will be easier than waiting to do it prior to the next use. If the unit has not been used for awhile it may take a minute or so for the propane to reach the burners. If it seems to take too long light the galley stove to check that propane is flowing.

7. **DINGHY/DAVIT**.
"Kittiwake" has a 9.2 ft. inflatable "Lancer" dinghy with an aluminum bottom. We use a 3.5 hp Nissan 2 cycle outboard engine. The dinghy is rated for a maximum load of 5 people or 485 lbs. (We suggest you limit the maximum to 4) We leave the motor on the dinghy when it is brought onto the swim platform with the davit system. The motor bracket swivels when the bracket handle is loosened, allowing the motor to remain vertical while the dinghy is on its side on the swim platform.

A. **To drop the dinghy** in the water, loosen the 2 straps securing the dinghy and remove the stand off rods (pushing the clips inside the dinghy releases the stand off rods). This is best done with 2 people. Slowly lower the dinghy into the water. When in the water check to see the outboard is vertical and secure its position by tightening the bracket handle. One person should maintain control of the dinghy while others board from the swim platform. It's best to have lines secured to the bow and stern of the dinghy while people are boarding, particularly if the water is rough.

B. **To retrieve** the dinghy, bring the dinghy alongside the swim platform with the bow facing the starboard and stern facing port. Secure the dinghy to the boat and disembark passengers and equipment to the swim platform. Position the straps underneath the dinghy and move the dinghy into position for retrieval. Loosen the handle on the motor bracket, prepare the outboard for retrieval (see notes below) 2 persons should slowly pull the dinghy into a vertical position in the curved davit holders. Then secure the lines to the boat and reattach the stand off rods.

C. **Outboard Motor Procedure** Check the fuel tank to ensure it's full. **CAUTION –Make sure the gear lever on the left side of the engine is in the neutral position (all the way back)** Open the air vent on the fuel tank lid. Move the black fuel lever on the left side of the engine to the **ON** position. Move the throttle (on the front of the engine) about ¼ of way up and move the choke up. Pull the cord. The engine should start with 1-5 pulls. Lower the throttle lever and allow the engine to warm up about 3 minutes. Move the choke down to the run position. When ready to proceed move the gear lever forward. The outboard has a neutral gear and a forward gear. Reverse is obtained by turning the motor around 180 degrees. **CAUTION Remember to take a portable gas tank with extra gasoline**. Full instructions and pictures are in a book in the amidships cabinet bottom shelf.

D. **Fuel Mixture:** 2 cycle engine oil must be added to regular gas at a ratio of 50:1. A measuring device and 2 cycle oil are provided. A small portable tank is provided for the mixed gasoline.

E. **Shallow Water/Going Ashore:** When you enter **shallow water, shut off the motor (press and hold the red shut off button) then raise** the outboard shaft to avoid hitting rocks or the bottom. **CAUTION:** If the prop hits a rock or the bottom the shear pin will likely break to protect the drive from damage. As a result the drive is not connected to the prop and there is no propulsion. **NOTE** To replace a broken shear pin either bring the motor aboard the dinghy (or boat) or move to the beach where the following operation can be done on land or very shallow water. Using pliers remove the cotter pin securing the prop. Remove the prop, remove the 2 pieces of broken shear pin & replace new pin. Put prop back on and secure with cotter pin. **NOTE** You should keep a few tools and spare shear pins in the dinghy, a repair kit is provided.
To secure motor shaft in "out of water" position, push in lever on the left side just below the tank. To release the motor pull up the motor and pull out the pin holding it up then lower the shaft into the water.
If you plan to go ashore in the dinghy, remember to bring sufficient line to secure the dinghy on a rock or tree and secure motor shaft in up out of the water position.

F. **To prepare the outboard for retrieval** ensure the air vent in the gas tank cap is closed. The fuel lever is moved to the **OFF** position. Loosen the handle on the motor bracket so it can swing freely. Tighten handle on the motor bracket after the dinghy is secured.

8. ELECTRICAL PANELS: 3 panels: Cockpit, Main Panel (Passage Way near Master Suite), Bridge

A. COCKPIT PANEL All switches at the panel board are identified. **NOTE** some are to always remain on, others remain off until needed.

Battery Charger. The Shore Power breaker switch at the cockpit electrical panel must be turned "on" for shore power to charge the batteries. The inverter should always be on & the monitor (passage way panel) will indicate whether AC current is being received. If not receiving check the connections of the shore power cable and verify that the off /on switch ashore is on. A volt meter can be used at the power cord connection on the boat to determine if the problem is ashore or aboard.

Inverter (converts battery DC voltage to AC Voltage). The inverter off/on switch is in the cockpit battery panel. It should remain on at all times. Inverter controls are located in the passage way electric panel (near the master suite). Lights on the unit and the monitor in the passage way provides information on how the inverter is operating - receiving AC power from shore/generator or is drawing power from the house batteries. Complete information on Inverter operations are contained in the operations manual found in the cabinet mid-ship & forward portion of saloon. Usually the only action needed at the Inverter control panel is to make sure the inverter is operating in the correct mode. It is recommended that the inverter monitor panel be checked periodically to ensure the desired operation is being carried out. This panel provides the status of the voltage of the 2 start batteries and the 4 house batteries. Should voltage be less than 11.5 volts it's likely the power cord has stopped providing power. At anchor or underway low battery voltage requires the generator be started to charge the batteries. (See generator below)

B. **PASSAGE WAY ELECTRICAL PANEL** Switches are marked to remain off, or to be turned on as needed.

Turn on switches so marked. Note status of Inverter Monitor (AC power, Inverter status). Check the voltage of start & house batteries.

Generator Controls – Prior to starting the generator check the oil level for the unit located in the port hatch adjacent to the BBQ grill. Remove the door to the generator. Locate the oil dip stick & measure the level. Do not overfill. Visually verify that the electric connection atop the engine is connected. Should this connection become loose because of vibration the generator will not run.

To Operate the generator –Turn the switch to the start position. The generator should start quickly. Note the needle indicates when the unit is running. After start up and the unit is stable turn on the toggle switch to start generating power. Note the affect on the battery voltage. **NOTE** If the unit does not start check the following: generator start battery in cockpit must be on and the battery in a charged condition (turn on the emergency by-pass if the start battery is not charged), unplug and reconnect the electrical connection atop the generator engine. If the generator still does not start check the operation manual, located in the salon cabinet adjacent to the forward portion of the settee.

To Shutdown the generator, turn off the power switch. The engine may run for a minute or two before it shuts off.

Bridge Electric Panel Located on the port side of the Navigation Console. Turn on switches as marked.

9. ELECTRONICS. (NOTE first turn on BRIDGE appropriate switches at passage way electric panel AND turn on the appropriate switches on bridge electric panel)

A. CHARGING TELEPHONES. Both a cigarette lighter socket and an AC outlet are available on the fly bridge. An AC outlet is present in each stateroom & the galley. Additional cigarette lighter sockets are adjacent to the aft steering station and adjacent to the computer cabinet where they are used for the portable VHF radios.

B. DEPTH SOUNDER): Cruz Pro Digital 1000 ft depth sounder. This unit is activated by turning on the depth sounder switch on the bridge electric panel. A depth alarm can be activated on the unit which is located on the port side of the navigation console. At cruising speed the depth reading is sometimes lost. Just turn the switch off & on to reestablish depth readings.
CAUTION: *The key to avoiding rocks is NOT the depth sounder – but* ***knowing where you are at all times****. (Rocks are a navigational and safety hazard in the islands – but they are all clearly marked on the charts.)*
We do not use the depth sounder's alarm at night. Instead we suggest you consider tide data to determine whether you're anchored in a safe location, considering how shallow your depth will become when the tide is out and where the boat will swing in the anchorage as the tide changes.

C. **GARMIN 162 GPS** – turn on the GPS – small button in red at bottom of unit. Press enter when requested. You should get a triangle representing Kittiwake and showing its location with other information such as speed etc.

D. **RADAR**: We do not use Radar 24/7. We use it when we encounter fog that affects our ability to navigate safely.
Fog in this area usually burns off by mid-day. If we can see ¼ miles (about 4 football fields) we feel comfortable departing the dock or anchorage and cruising with the radar. In open seas without nearby hazards we are willing to cruise in more dense fog but it's always necessary to be able to see logs or crab pots in time to avoid them. Traveling at a slower speed is necessary to avoid these potential problems. Cruising in fog requires full concentration of the skipper and assistant. Distractions must be avoided and extra look outs would be helpful since the skipper must pay close attention to the radar and navigation chart and will not be able to devote as much attention to the waterway.

E. NAVIGATION & CHARTS We use Nobeltec Visual Navigation Suite ver 9.2 for navigation & route planning. The software is installed on the computer (cabinet next to stairs to fly bridge) and is controlled by using the track ball mouse to operate the software using the 2 bridge monitors. Nobeltec Radar (16 mile range) is used in conjunction with the Nobeltec program.
To Activate Nobeltec. All appropriate passage way electric panel switches must be on. The bridge electric panel AC power switch should be on, the 2 monitors turned on (if Radar is being used it should be turned on before the computer) and the computer should be booted up. (See pictures of computer screens & details of computer operation on the fly bridge Nav. Booklet) Using the mouse, click on the Nobletec icon which will bring the program up. You should see on the port monitor both a chart and a radar screen, on the stbd monitor a chart. Both charts show Kittiwake in green, the port monitor is used by the navigator to create or modify routes and is a larger scale while the stbd monitor chart is more detailed and is used by the skipper for close in navigating. The scale of both charts can be adjusted individually. If the radar had been turned on prior to starting the computer it should be warming up (2 minutes) and then showing various targets in red. If you did not turn on the radar before booting the computer it will be just a screen showing no red targets. While it's unlikely you will need to use Radar to depart your moorage it's a good idea to do so with the radar operating. When you are clear of the moorage note the

radar images and correlate the images with actual boats or land positions. This experience will give you more confidence if you need to use radar at some point. As you get underway you will note the green Kittiwake symbol moves on the chart. You will also note that shallow water is blue and deep water is white.

We recommend that in addition to using the Nobeltec program & charts that you follow your progress on the Maptech waterproof chart book or the roll charts (with the most active "killer rocks" marked in red particularly when the Nobeltec chart colors indicate shallower water is close by. This dual approach provides an extra measure of safety in case the GPS or computer shuts down unexpectedly. Since Kittiwake is a fast boat precise understanding of your position is even more important. We also suggest a 2nd person be on duty on the bridge to keep a look out for crab pots & logs. Either one can turn a pleasant cruise into a costly and unsatisfactory experience. We also suggest that when underway persons on the bridge should be careful to not distract the captain or the person on watch.

E. MONITORS 2.

To Operate Monitors At the bridge electric panel turn **ON AC** power switch. Press **ON/OFF** button for each monitor. **NOTE** Computer must be on for monitors to display computer programs.

To Shut Down Monitors Press off switch on each monitor, shut off AC power switch on bridge electric panel.

F. VHF Radios (3): The VHF radios are located on the bridge navigation console (stbd side), in the salon (adjacent to computer cabinet) and at the cockpit aft steering station.

We suggest monitoring channel 16 (the hailing and distress channel) while cruising and check the weather channel frequently. On the weather channel listen for the "inland waters of western Washington" or "Camano Island to Point Roberts". Both cover the San Juan Islands. You will also hear "Strait of Juan de Fuca" (south of the San Juans), "Georgia Strait" (north), and "Rosario Strait" (runs through the eastern part of the San Juans). After establishing contact on channel 16, switch to working channels 68, 69, or 80. San Juan Yachting monitors channel 80 during office hours (closed Sundays). By phone you can reach the San Juan Yachting office at (800) 670-8089 or SJS's owner, Roger Van Dyken, at (360) 224-4300 (cell) or (360) 354-5770 (home).The VHF also has an emergency button which connects your directly to the Coast Guard if necessary.

G. ***AUTO PILOT being developed***

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10. EMERGENCY / SAFETY

Flares. 3 Visual day/night distress signals are located in the forward compartment of the port stateroom

Fire Extinguishers 2 - cockpit & galley

Life Jackets. 2 children, 6 Adults- located on the fly bridge annex under the settee and on the shelve forward in cockpit

11. ENGINES.

A. **STARTING ENGINES**

a) **Check the oil level**. The dipstick is accessed by opening the engine hatches in the cockpit. The dipstick is on the starboard side of the engines. The stbd engine dip stick is not visible but by observing the location on the port engine one can find the stbd engine dip stick by reaching over the engine to its stbd side. **CAUTION Do not overfill.** Overfilling can cause serious problems.

Expect the oil to be blacker than that of a gasoline automobile engine…this is normal for a diesel after only a few hours of operation. Most likely you will not need to add oil as the oil is checked before you board.

b) **Check the coolant level**… From time to time you may need to add extra coolant which is located inboard of both engines in a small plastic container. This is also checked before you board.

c) **Inspect the engine compartment** noting whether excess water is in the bilge (if so operate the bilge pumps at the cockpit electric panel in manual to remove the water- check for rags or other debris that may have been inadvertently left in the bilge. Return the bilge switches to automatic when finished) After this visual inspection close the hatches.

d) **Start Batteries, Cockpit Panel turn on the port & starboard start batteries.** Check that all other switches are set per the colored dots.

Proceed to the bridge to start the engines. Examine the gear shifts and ensure they are in the neutral position. Verify the engine alarm switch is on. Turn on each engine separately by moving the key to the start position. Expect the engine to start in 2 seconds or less. If the engine doesn't start after 5 seconds of cranking, release the key, wait 15-30 seconds and try again. The engines normally start on the IST try.

After the engine starts, release the key. Next, you need to idle the engine to warm it up. On each throttle press and hold the round button to disengage the gears. This allows you to increase the rpm's by pushing the throttle carefully & slowly forward. We usually warm the engines up for 5 minutes at 700-800 rpm's. You'll find the correct rpm by listening for a smooth running engine. Either now or when clear of the dock or anchorage it's a good idea to open the engine hatches in the cockpit and visually observe that all is well while the engines are running.

While the engine warms observe the flow scan meters on the Navigation Console. They show how many gallons have been consumed for each engine since the last time the tanks were filled. These meters will show a very small or 0 usage as the fuel tanks should be full when your board. If they show any significant fuel usage you should contact AYC before departing. (Either the fuel tanks were not filled after the last usage or the gauges were not zeroed out after the refueling.)When full the starboard tank holds 133 gallons diesel and the port tank holds 117.5 gallons. These meters are much more accurate than the fuel gauges which we basically ignore. It's also helpful to know when refueling how much each tank should take.

NOTE after **refueling it's necessary to zero out the flow scan meters by opening the door below the steering column and locating the 2 toggle switches inside on the port side. Push & hold the switches open until the both flow scan meters register 0 –this takes about 10 seconds**. See notes below regarding flow scan meters.

e) Periodically observe the temperature and pressure meters for each engine. We have on occasion had the engine alarm activate. Checking the gauges will indicate which engine is involved. Overheating shortly after departing the dock or anchorage usually indicates the cooling water inlet to the engine is closed. That's easy to fix. Shut down the engine involved & if safe put the other engine in neutral. Open the engine hatch with the problem. Just aft of the engine you will fine a lever and valve that opens & closes the cooling water inlet. Move the lever to open the

inlet. Restart the engine and observe whether the engine temperature drops back to normal. When it does you can proceed.

Another cause is a blockage of the raw water strainer when cruising by eelgrass plugging the strainer. This is easy to fix. Shut off the engine indicated and put the other engine in neutral if in a safe location. Open the engine hatch of the affected engines and note a round 6 inch glass covered device which holds water. You should be able to see what it clogging this device. These devices are inboard of the engines and about in the middle. Open the strainer, remove the debris and reinstall the cover. Restart the engine and observe if the temperature returns to normal. On occasion there is a false alarm on an engine during startup. Shut off the alarm switch and observe the temperature gauge while the engine is idling. If the temperature continues a slow increase (check other engine for reference) after 5-10 minutes it's a false alarm. Return the engine alarm to the on position. You are more likely to have an eelgrass problem if your course takes you through lots of eelgrass.
If the above fails to solve the problem, call AYC for assistance. Note Kittiwake can run on 1 engine at about 10 knots.

B. **OPERATING ENGINES:**

The 2 Yanmar 315 HP diesel engines are very reliable, fuel efficient, compact & quiet. They are turbo-charged, fresh water cooled, with six cylinders. We normally cruise at 18-20 knots and find that an estimate of 1.1-1.3 miles per gallon (depending on fuel, water, passenger, equipment, food loading) is reasonably accurate. The flow scan gauges will show fuel consumption per hour but we prefer the miles per gallon measurement, which is calculated by noting the GPS speed and the flow scan fuel consumption.

You can control fuel consumption by 1) speed – Kittiwake can be very efficient at speeds as low as 12-14 knots and at 25 knots consumption increases significantly, 2) Arneson Drive adjustments (for various sea conditions and total weight of the boat) can also optimize fuel efficiency. This is done by incrementally raising or lowering the drives with the tilt switches located on the Navigation Console. Note the affect of these changes on fuel usage for each engine and find the position where fuel consumption is the lowest. 3) Lowering the total weight you bring aboard and perhaps cruising with less than full fuel and water tanks also reduces fuel consumption.

C. **ENGINE SHUTDOWN**.

Move the throttle controls to neutral. If you have been running hard allow a couple of minutes for the engines to cool off. Then turn the engine keys to off. We usually do not take the keys out in order to not misplace them.

D. **FUELING SUGGESTIONS.**

Prevent fuel from entering the water (you are liable for fuel spills & can be fined by the Coast Guard) by refueling carefully. Note fuel consumption for each engine on flow scan meters. Slow down the rate of fueling as you approach the expected volume or if you detect a change in the sound perhaps reflecting an air bubble (filling too fast sometimes creates an air bubble which causes a burp with fuel shooting out of the tank) or nearing the top of the tank. When close to the estimated fill hold an absorbent cloth over the vent just below the filling cap. This collects any fuel that exits via the vent from going into the water. When finished fueling use the absorbent cloth to clean up any drips from the hose.
We have found it helpful for one person to be stationed at the fuel pump and verbally advise the person filling the tank how much fuel has been taken, allowing the person controlling the

fill rate to slow down as fueling nears completion. If you choose to not fill the tanks keep a good record of how much fuel you added to each tank, add that to tank capacity and by watching the total fuel consumption you can keep a more accurate measurement of how much fuel you have than using the fuel tank gauges. Do not zero out the flow scan meters when only partially filling the fuel tanks.

E. **ARNESON DRIVES**

These are surface piercing drives which provide more efficient propulsion by having a portion of the props out of the water. The theory is that only ½ of the prop is working and the other ½ creates drag.

Adjusting Vertical Drive Position: Drive position should have been checked by AYC and should not need adjustment prior to departing. The Arneson drives can be raised or lowered with the trim adjusters present on the bridge Navigation Console or at the Aft Steering station. Gauges on the bridge & aft steering station show the position of the drives. The drives should be positioned in the middle of the up/down direction. This is done by incrementally pressing the trim switches up or down. There are trim adjusters for both the stbd & port drives.

Aligning Drives: Drive Alignment should have been checked by AYC and should not need adjustment prior to departing. If drives do need alignment -there is also a switch at the Aft Steering station that decouples the 2 drives allowing them to be moved independently. Prior to starting the engines determine if the drives appear to be aligned in parallel by looking at the drives from the swim platform. If they do not appear to be parallel or when cruising the signature "rooster tails" are not parallel an adjustment should be made. It's best to make these adjustments with 2 persons. The engines need to be started for the aft steering to function. One person is stationed on the swim platform observing the drives. The other is at the aft steering column and presses the switch marked "Uncouple Drive". The wheel then positions one of the drives (according to instructions from the person on the swim platform) to be in parallel with the non-moving drive. When the switch is released the drives will be re-coupled and will move in unison when the wheel is turned. On rare occasions the fuse controlling this switch has blown. To replace the fuse open the cabinet containing the passageway electric panel. Look toward the aft section and find an in line fuse marked Arneson fuse and replace it. If for some reason the drives cannot be perfectly aligned, not to worry, it's just a little less fuel efficient. While checking the "rooster tail" underway also note the height and shape of the tail. They should be parallel, about the same shape and height. If not incrementally move one engine tab up or down to improve symmetry. Again, not to worry, this is just optimizing fuel efficiency. The flow scan meters will also help finding the best alignment. The lowest fuel consumption is the objective.

Lubricating Oil: Each Arneson drive has a plastic tank attached to the stern section inside the engine compartments. These tanks contain the lubricating oil for the drives and should be about ½ full which can be seen visually. You should not need to add oil to these boxes. However, if you see that the boxes are very low oil should be added. Additional oil is located under the grill. Sometimes the lid is difficult to remove because of its location. Tapping with a hammer will loosen it up. A very full tank indicates the Arneson seals have failed and water has entered. This will require a haul out to replace the oil, remove any salt water in the drives and replace the seals. Please report this problem to AYC ASAP. Cruising can continue for a couple of days but extended cruising requires a repair.

CAUTION Fishing line & crab pot line caught around the props is the most likely cause for seal failure. It's best to try to remove these lines by bringing the drive up as high as possible, or if that is not possible, consider anchoring in shallow water and putting

someone over the side to remove the lines. Another option is to continue to the nearest moorage running on 1 engine and getting a diver to remove the lines.

13 HEADS, TOILETS & HOLDING TANKS.

The 2 heads contain Sea Land Vacu-Flush toilets, a fresh water shower, sink and vanity cabinet. We have been very pleased with the toilets. They use fresh water instead of salt water (to minimize odors) are efficient and trouble free. There is a foot pedal to operate the toilet. Raising the pedal adds water to the bowl and depressing the pedal quickly empties the bowl due to the vacuum created by unit. The whooshing sound you hear is the vacuum doing its job. Do not hold the pedal done more than necessary to empty the bowl. The bowl will refill automatically for the next use. The holding tank is 40 gallons. There are colored lights on the cabinet next to the stairs to the bridge which shows the status of the holding tank – empty thru full. When permitted by regulations you can empty the holding tank at sea or at a dump station at the marina. The switch for dumping at sea is inside the computer cabinet (top, port side about opposite the tank indicator lights. The switch is contained in an electric box. When the switch is on an alarm will beep on the bridge and the tank gauges will indicate the holding tank is dumping. When complete turn off the switch and check that the tank indicator lights show empty. When you board the holding tank should indicate empty. If not empty I suggest you call AYC before you depart. Several moorages have facilities to suck out the holding tank. Instructions on how do to this are described at the moorage. *Remote cruisers have a rule: "Never put anything down a marine toilet that hasn't been eaten first." And that, of course, includes feminine items. In fact, remote cruisers do not even put soiled toilet tissue down a marine head. They simply deposit soiled toilet tissue (and feminine items) in a receptacle such as a waste basket with a liner bag or a zip lock baggie, but not down the toilet. We and AYC highly recommend you follow this rule. This is a good way to avoid problems and unexpected costs.*

14. HEAT.

Heat is supplied throughout Kittiwake by a Webastco forced air system.

a) **Prior to starting the heater** check the fluid levels underneath the settee on the deck aft of the bridge. Add fluid if the overflow container is low. If empty open the cap and check that the metal tank is full. If the heads do not receive heat it usually means there is not enough fluid in the system – so recheck the fluid when the head is not heated. A container of the proper fluid should be in that compartment.

b) **To Turn on the Heat** The heater & heater fan switches in the passageway electric panel must be on. The inverter or shore power must be providing power. The thermostat above the computer cabinet needs to be on and temperature set. If there is any problem with the heater system a Webastco alarm system near the thermostat will display blinking lights. Please review the operating manual to determine what problem has been identified. It's unlikely you will have a problem. The unit takes a couple of minutes to start up.

c) **To Shut off the Heat** Turn the thermostat down and shut it off. Don't shut off the switches at the passage way electric panel as the unit prefers to shut itself down. They can be turned off later. The start up noise is strange but not to worry, there's no problem.

d) **Fan switches –** As mentioned in berths, each fan unit has a 3 way switch on the unit off/low/high. In addition to the staterooms there is a unit in the salon – forward and near the settee.

14. HOT WATER /SHOWER / SUMP PUMP.

A. **HOT WATER**: There are 3 methods to heat water. When underway water is circulated in the engine and will be hot quickly. While at anchor it will be heated by the Webastco system or by shore power when at a moorage. For small amounts (like coffee or morning washing) you can use the stove or the micro-wave. We suggest you shower shortly after anchoring or mooring when the water is hot and doesn't use the house battery.

B. **To Heat Water**

a) When operating the engines there are no controls that need to be activated.

b) When docked the water heater switch at the passage way electric panel must be turned on. It's best to check that power is coming from shore power not the house batteries by observing the inverter monitor and the battery volt meters after turning the heater on.

c) Micro-wave & stove heating of water is just like at home. The micro-wave can be powered by shore power or the inverter.

B. SHOWERS Each head has a shower that provides both hot & cold fresh water. A curtain is provided to contain the shower water but anything you don't want wet needs to be removed. The shower heads are portable and can be adjusted. There is a sump pump switch that is used to remove the water from the shower and send it overboard. Use this when water needs to be removed and then turn the switch off. A pump noise will alert you to when the pump is running. We suggest you leave the curtain open to drain off the water and put it back into position awhile later.

C. AFT COCKPIT SHOWER. On the port side of the unit you will find a small sink with a removable spray head with hot & cold faucets. This is a fresh water system that can be used as a shower. It also provides a good way to rinse off salt after swimming or dirt/sand after going ashore.

15. REFRIGERATORS / FREEZERS. A Norcold Electric fridge/freezer is located in the Galley. It runs on both AC & DC. There is a cooler under the seat on the fly-bridge near the aft door. A fridge/freezer is near the aft steering station.

16. STORAGE SPACE - Lots & lots of storage space. Be sure to remove the carpet in the Galley to check the under floor storage. There also is storage in the cockpit bait tanks aft but that's not dry storage – good for bags of ice or crab, clams, oysters.

In the staterooms the forward closet, inside the steps, & lockers beneath the Queen beds are convenient for your clothes. There are also hooks on the bulkhead to hang clothes. A good place to store food, cans, paper towels etc are under the stairs leading to the galley. There is additional storage under the Galley deck – just pull up the carpet. The cabinet below the microwave we use for wine, liquor, garbage bags, and towels. A large cabinet just above the steps to the Galley is where we like to store spare parts. The lower portion of this cabinet holds all the operating manuals in several numbered notebooks. Taped on the door is a listing of the manuals, alphabetically as well as by notebook number.

17. WATER TANKS.

There are 2 independent water tanks each with their own pumping system and off/on switches. The starboard tank is 90 gallons and the port tank is 75 gallons. The water pressure switch must be on at the passage way electric panel. In addition an off/on switch must be turned on depending on which tank is being used. There is no transfer between tanks so water throughout the boat is fed by either the port or starboard tank depending on which one is turned on. The starboard tank switch is on the cabinet near the door to the cockpit. The port tank switch is on the pillar (wire raceway) on the port bulkhead near the fridge in the galley. In most cases this is plenty of water. We usually do not cruise with full water tanks as a way to improve fuel efficiency. Water tank gauges are on the bridge Navigation Console. You may find from time to time that the boat takes a small list to the side with a full tank when the other tank is low. If this bothers you just switch the low side tank on and switch off the higher side tank. Both tanks should be full when you board. You can check this on the bridge tank monitors. **Caution** When refilling starboard water tank be careful to put water into the proper tank. One time we put water into the holding tank by accident and wondered why one of our water tanks was empty and the holding tank was full.

18. LIGHTING

A. **CABIN LIGHTING;** The lighting switches on the passage way electric panel must be on. The individual light switches are on a panel in the stairwell going to the bridge. The salon and cockpit overhang have recessed Zenon lights. The reading lights in the salon and staterooms are individually controlled. The bridge and aft bridge deck lights are turned on at the bridge electric panel. The bridge does have red night lights but cruising after dark is not permitted by the charter agreement. **Caution** Cruising at night in this water almost guarantees hitting a log or picking up a crab pot with your props.

B. **ANCHOR LIGHTS** If needed (some anchorages do not require anchor lights) the off/on switch is on the bridge electric panel.

19. BAIT TANK

The large unit just before the swim platform has a bait tank that can be filled with salt water. We very infrequently used this to store our excess crab catch for a couple of days. The water needs to be replaced daily to keep the crab alive. (Crabs can also be kept for a day or 2 without water in the fridge/freezer by the aft steering station). **Caution** Too much water will add significant weight to the stern which will affect fuel efficiency. Use the least amount of water necessary.

FEEDBACK

Jean and I would appreciate your feed back on our efforts to provide you with information that should ensure an enjoyable cruise for you, your friends and your family. We know many very experienced mariners will think we overdid these notes. For sure some “new” mariners will say things are lacking. Both may find some information this is wrong, misleading or not clear.

With That Said We would very much appreciate any comments you wish to make that will help us make the corrections, additions or subtractions, and clarifications needed. We want to do all we can to make Kittiwake a cruise to remember and hopefully welcome you back aboard.

We wish you smooth cruising, sunny skies, warm weather, glorious sunset & sunrises and good crabbing.

Bob & Jean Pier