PREFACE

This document is directed towards prospective buyers of Syzygy—and also as a reference document for the new owners. I am trying to include all the information that I wish I had at my disposal when considering Syzygy for the first time. Much of this is in the format of a survey; while it doesn't originate from a professional surveyor, it will provide a hundred times the value.

Syzygy is a 1978 Valiant 40. The seaworthiness and various attractive features of the Valiant 40 are well-documented elsewhere—if you are considering purchasing Syzygy you are probably well aware of their deservedly famous reputation. When we were shopping for a boat, we were new to sailing and knew very little about boats; to hedge our bets I wanted to buy a boat that was well known and well reviewed—the Valiant 40 fit this bill. I will not belabor the attractiveness of the Valiant 40, but will confine my discussion to the specifics of Syzygy.

Additionally, I will be candid to a fault about various outstanding problems and jobs that are still on the list. Keep in mind, however, that I am an extremely detail-oriented and fastidious (anal) boat owner. Syzygy just crossed the pacific last year and is still cruising at the moment, so the jobs on the list aren't critical. Plenty of boat listings will make the claim that the boat is "cruising-ready" and "ready to leave the dock" and whatnot, then you buy it, and then you end up spending a couple years after that still getting it ready. With Syzygy's ongoing, documented adventures, you can be confident of the claim.

HISTORY

The boat was built in Bellingham, WA, and was the first owners were local to the pacific northwest. To the best of my knowledge, they cruised it only around the pacific northwest, and also attempted to charter the boat on the side (there are old documents telling charterers how to use the boat). The second owners were an older couple who purchased the boat sometime around 1989, did a number of upgrades and refits, then sailed the boat down the coast to Mexico. They left the boat in Mexico, seasonally cruising around the Mexican coast and perhaps a bit farther south. The boat was named Sunshine at that time (perhaps from the beginning).

We are the third owners. At the time of purchase, the boat had been sitting on the hard in San Carlos, Mexico for a few years. We purchased the boat December, 2007, and had the boat trucked overland to the San Francisco Bay in April 2008. After a busy two weeks working on the boat in the workyard, we put Syzygy in the water and kept her at the Emeryville Marina for the next two years while performing enormous amounts of work on her. Therefore, nearly all of the upgrades, replacements, and equipment date from 2009 or more recently. February 2010 we departed the bay, sailed down the coast to Puerto Vallarta region, and crossed the pacific, arriving in Brisbane, Australia November 2010.

All work mentioned in this document that is not explicitly dated was performed during 2009 or more recently.

HULL, KEEL, and RUDDER

The underwater design is a medium-length external fin keel, skeg-hung rudder. It is plenty strong enough to careen without damage; plenty of owners on the Yahoo Valiant Owner's Group have done it and documented it on the forum. The skeg is all fiberglass, with a bronze boot at the bottom holding the rudder pintle.

The keel is an interesting design: the forward half is exposed lead while the aft half is foam-filled fiberglass. The vertical seam between the lead and foam is an ongoing issue for all Valiant owners with this configuration (in later years they redesigned the shape to be bottom-half lead and top-half foam—you can see it on some of the sailplans). The problem here is that fiberglass does not adhere well to lead. When the boat is hauled out and placed on a block, the yard usually puts the block right underneath the middle of the keel, which happens to be just far enough aft to cause the seam to develop a crack at the bottom. (so, when you have it hauled out, make them put the block forward slightly so it's entirely under lead!) However, even if it doesn't happen in the yard, the keel inevitably undergoes enough flexing while sailing to cause a small crack to open up at the very bottom of the seam. Once there's a crack water is able to penetrate the crack to soak into the foam. It's unclear how much of a worry this is. The water can't get into the boat—the keel is still separate from the hull and bolted on. But is the water damaging the keel bolts? When we first bought the boat I had the strong conviction that this was a terrible thing—that the water in the foam half could corrode the keel bolts and cause the keel to fall off. So I did a fastidious job of drilling holes in the bottom, draining the water out, drying the foam out, grinding down the seam, and re-glassing the seam with many layers (an overkill I thought), carefully prepping the lead as best as possible to accept the epoxy bond, etc. If the fiberglass was ever going to stick to lead, I was confident that my job would. The VOG was a great resource for this issue and the project. Of course, as soon as we started using the boat regularly, the seam developed a crack again, and went right back to the way it was. At which point I realized that EVERY single valiant out there with this keel design undoubtedly has the same slightly split seam at the bottom, admitting water to the aft half. And I haven't heard of any keels falling off a valiant. They have a ton of stout stainless keel bolts, so I think the worry over the water penetration is unfounded. Regardless, there is not a whole lot you can do about it, is there? So I stopped worrying about it and let it go. However, the reglassing job was redone when Syzygy was hauled out in June 2011. The same process was followed, meticulously grinding down the small crack, drilling holes to drain water from the hull, prepping the lead as best as possible and re-fiberglassing the joint between the lead and foam. The entire hull was then repainted.

The hull is solid fiberglass, quite thick in most places; the thinnest and least supported area of the hull is located in the engine room and care should be taken not to put a jack in the middle of this area during a haul-out (or the corresponding area on the opposite side). I used a hole-saw to cut out a sample plug from this area, thickness was approx. ¼".

Now to talk about blisters. As you surely have read, blisters are an ongoing issue with Valiants, and many prospective buyers hope to find a blistered one for sale so that they can get a great deal. Not to disappoint you, but Syzygy does not (currently) have hull blisters. In 2006 the previous owners ("PO" henceforth) had a "blister job" done in San Carlos, Mexico. The hull was stripped & ground down to bare fiberglass and heavy cloth was used to glass over the entire hull. Since then, no blisters have appeared on the hull. Numerous small, dime-sized blisters have appeared on the hull above the waterline and on the sides of the cabintop: aesthetically displeasing, but irrelevant to the integrity of the boat. Now, who knows whether the hull blisters will eventually return. I am of the opinion that the Valiant blisters can never be fully eradicated, because they take place due to the INTERNAL chemistry of the fiberglass used in the hull, and have absolutely nothing to do with water penetration. Spend a small amount of time mucking around the nether-regions of the boat (I have spent countless hours) and you will develop a feel for the black, sludgy ooze that seeps out of the valiant glass and is responsible for the infamous blisters. I think that if you do a strip-job, as we had in Mexico, and if they use a thick enough layup of extra glass over top of the original valiant glass, then even if some blisters form up underneath you can prevent them from ever "printing-through" and being visible on the outside of the hull. But the blisters are probably still deep inside there. . . Either way, this is another one of those things that doesn't matter in the slightest to the seaworthiness of the boat. Regardless, Syzygy doesn't have any of the hull blisters anyway.

The rudder showed signs of mild delamination when we bought the boat. After attempting to drain of water (none evident), I used the hole-drilling resin-injecting method to repair the delamination until the rudder was solid-sounding everywhere.

The hull contains 7 underwater through-hull fittings: two in the head, two in the galley, two in the salon for depth & speedo, and one in the engine room for seawater intake. All of these through-hull fittings were replaced in 2009, stout backing plates were added where necessary, and seacocks are solid bronze ball valves (also mostly replaced). The handles on all seacocks turn readily (not seized), and all of these underwater through-hulls are easily accessible in an emergency. There are a number of additional above-water through-hulls, all serviced and replaced as necessary in 2009.

The rubrail down the side of the boat is 3 layers of laminated wood: a teak strip against the hull, and two fir strips on top of that. The fir is softer and provides greater shock absorbtion. We painted the rubrail with epoxy primer, then single part polyurethane, and used non-skid grit on the top surface to prevent slipping when standing on it. The seam between the rubrail and hull was sealed with a bead of polysulfide (3M 4200UV) to prevent water intrusion.

DECK

The deck is a balsa cored construction. Over the course of 2009, every single deck fitting was removed, the holes cored and filled with epoxy, and the fitting was re-installed with a

polysulfide sealant (usually 3M 4200)—i.e. it was all done precisely "by the book". All deck hardware is mounted with backing plates, and any questionable backing plates were replaced. This includes all stanchions, padeyes, sailtracks, etc. Some water had penetrated the deck prior to purchasing the boat, so there were a few soft areas. These areas were repaired via the swiss-cheese hole-drilling and resin-injecting method. Additionally, it was discovered that the jib track on the port side was leaking water, so the entire side-deck on that side was cut out, the rotten core removed and replaced with plywood, and the deck glassed-over again.

The hull to deck joint is a glassed-over U-shape, making it structurally very strong.

Lifelines were replaced with ¼" blue amsteel.

We added a stout cleat amidships on the caprail which has proven extremely useful, both for attaching spring lines while in the slip and also various unexpected rigging uses (flopper stopper, whisker pole, etc).

The deck was refinished with epoxy primer, two-part white gloss polyurethane, and gray "kiwi-grip" nonskid in 2009. The kiwi-grip provides excellent non-skid traction.

Teak on deck varnished June 2011.

The liferaft is mounted just forward of dodger (more on the liferaft later). We built a stainless cradle for stowing the inflatable dinghy underneath the boom. Three dorade vents provide ventilation. Solid, custom built stainless arch in stern holds electronics, wind generator, and massive solar panels. Solid oak boards mounted on sidedecks for lashing gerry cans (water one side, diesel on the other). Oak cradles on port lifelines for stowing whisker pole.

Teak block for stowing outboard is located on stern pushpit. Danforth stern anchor for rapid deployment is mounted on arch.

COCKPIT

The cockpit fulfills all of the design requirements for seaworthiness: it is not overly large, there are six 1-1/2" drains (four on the cockpit sole, two on the seats) for rapid drainage, and the companionway is set high enough above the cockpit sole to avoid massive water intrusion. All of the scupper hoses were replaced in 2009, and re-routed as necessary to provide the most rapid, unimpeded flow path possible.

At the same time, the cockpit is long enough to comfortably lie down, and the distance between the seats allows one to brace the feet on the opposite seat while heeled.

There are two sets of dropboards. The original, two piece teak boards, and a single large piece of clear acrylic that we built to provide additional light. Neither of these has a method for locking them in place if the boat were to roll.

The top of the rudder-post is accessible through a hatch in the stern. There is an emergency steering tiller in the starboard locker which slips straight onto the top of the rudder post.

The cockpit locker lids have latches; we would keep either small carabiners or locks in the latches, so that the lids could not accidentally open during a knockdown.

There is a manual bilge pump mounted in the cockpit coaming.

There is a storage compartment in the cockpit coaming on each side.

There is standing headroom below the solar panels, even when standing on the cockpit coaming.

Both the dodger and the steel structure in the back provide numerous secure handholds for entering/exiting the companionway and holding onto the stern.

DODGER

The dodger is a "hard" dodger, with a fiberglass top and solid handrails. It's an extremely desirable feature, because it provides important security while entering and exiting the companionway and moving around the cockpit. The dodger provides protection for the forward seat of the cockpit in bad weather. There are various screens for the forward face of the dodger: mesh, clear plastic, and sunbrella canvas.

The clear plastic windows for the dodger are most commonly used, and were replaced in June 2011 with a superb polycarbonate, Makrolon. It is UV-resistant, extremely clear, and a strong, impact resistant variety of polycarbonate. It looks much better than the standard Strata-glass frequently found on boats.

RIG

The vessel is a cutter-rigged sloop. Take a sloop, and add a removable inner-forestay on which a staysail is flown—that's a "cutter-rigged sloop". A true cutter would have the mast farther aft, and the staysail would occupy a more prominent, often-used role in the regular sail configuration.
The inner-forestay on Syzygy is fastened to the deck with a "hyfield lever" type stainless ABI brand quick-release mechanism. It is quick and easy to unfasten it from the foredeck so that it can be stowed out of the way back near the shrouds; we did this often while sailing in the San Francisco Bay--tacking the jib through is much more easy (and fun) without the inner-forestay blocking the foretriangle.

All terminals are properly toggled to their mast tangs to prevent stresses.

There is a single set of spreaders, properly positioned to bisect the angle made by the cap shrouds.

STANDING RIGGING

All standing rigging with the exception of the rod backstay was replaced with 1x19 316 stainless wire, using Norseman compression fittings, in 2009. The forestay, cap shrouds, and lower shrouds are 3/8"; the inner forestay and intermediate backstays are 5/16". The turnbuckles were also replaced in 2009, they are bronze body, stainless screw construction (to avoid the seizing that can occur with stainless-on-stainless). Chainplates were replaced with 3/8" thick 304 stainless in January 2010. The portion of the chainplates above deck and the portion that passes through the deck were polished to a mirror finish to discourage crevice corrosion.

There is an ongoing debate regarding the intermediate backstays on the Valiant 40. There are two conflicting priorities: to properly strengthen the mast opposite the inner forestay, and to keep shrouds far enough forward so the boom can be sheeted out all the way. The intermediate backstays on the Valiant are a compromise between these priorities—there are secured to the deck a little ways aft of the shrouds, but not very far. Some argue that they have little effect on balancing the inner forestay—I myself have seen the mast getting somewhat bendy in heavy wind when flying just the staysail (no jib). However, most owners are of the opinion that the mast is so stout, and the rig generally overbuilt sufficiently that it is not a concern. I haven't heard of anybody experiencing a failure, for example. Personally, if I had more time to work on the boat I would have installed a pair of running backstays to a block and tackle at the stern on each side, with a piece of shock cord that pulls it forward and down to the deck for stowing. Few Valiant owners go to this trouble; it may be overkill. Although the running backstays might not get used frequently, in truly heavy wind they would greatly strengthen the rig when using the staysail and provide a significant margin of confidence.

MAST

The mast is extremely stout, keel-stepped, sitting on top of a piece of UHMW in the bilge to avoid galvanic corrosion. There is no corrosion on the bottom of the mast.

At the deck, the mast partner is secured with a poured plug of urethane—commercially known as "spartite". A rubber gasket is clamped above that for waterproofing, and a cloth cover is laced on above that to protect the rubber from UV damage.

LED trilight/anchor light installed on top of mast. Steaming light/deck light housing 2/3 way up. All mast wiring replaced with high-grade marine wiring, including VHF coax, trilight wiring, steaming light/deck light wiring. Mast sits on a UHMW polyethylene base, to protect against galvanic corrosion in bilge. Mast base shows no signs of corrosion. Mast partner where mast enters deck was replaced with cast urethane (i.e. "spartite") and sealed against rain with rubber gasket, protected from UV damage with cloth cover.

Custom mast steps are mounted up the mast—I designed them to be small, so that they won't catch lines, but big enough to be effective. Makes running up to the spreaders to watch for coral heads extremely easy.

A heavy-duty spinnaker pole is stowed on the forward side of the mast, with control lines for lowering the inboard end located on mast. A second, sliding, stout eye is mounted on the track for attaching the inboard end of the whisker pole.

The whisker pole bent in half in June 2011. A four foot long sleeve which fit perfectly around the pole was rivoted on.

The mainsail runs up and down a polyethylene "Strong" brand track, which mounts by sliding it over top the of the original, existing metal track (this Strong track was on the boat when we bought it). The Strong track is wonderful—the mainsail slugs slide up and down with very little friction in this track, making it far easier to raise and lower the sail than the standard stainless track on other boats. The lower dozen rivots fastening the original, existing metal track to the mast were replaced with larger rivots in May 2011.

RUNNING RIGGING

Running rigging was completely rerouted for efficiency, fair leads, and ease of use. All lines were completely replaced (sometimes more than once). All lines are lead aft to the cabin-top below dodger, except for the mainsail outhaul located on the boom. Lines lead aft to clutches include:

Port spinnaker halyard
Main halyard
Jib halyard
Staysail halyard
Boom topping lift (also doubles as spare main halyard)
1st reef clew
1st reef tack
2nd reef clew
2nd reef tack
Mainsheet
Vang

Lines that are cleated on the mast include:
Starboard spinnaker halyard
Pole topping lift

Having one of the spinnaker halyards and the pole topping lift at the mast is convenient for single-handed hoisting/dousing of the drifter and whisker pole while running downwind.

All winches were dismantled, cleaned, and re-greased. All winches are self-tailing. Mainsheet was reconfigured with additional blocks so that easing/sheeting main can be done by hand without winching (making it fast and convenient). Most blocks replaced with high-quality Harken blocks.

Blocks and fairleads are installed on the deck for running a spinnaker downhaul aft to the port cabintop winch (the line is kept labeled and ready in a bag in the lazarette).

Stout padeyes are mounted aft on the caprail for attaching snatch blocks for spinnaker sheets/guys. Strops are mounted on the side decks for the whisker pole bridle.

All sheets—indeed, ALL lines on the boat, are fairlead to their respective clutches and winches.

The handle for the outboard-most winch on each side of the cabintop interferes with the dodger pole, requiring one to winch first one direction and then the other. Fortunately, these winches are rarely used; they are used for the staysail sheets when flying both the jib & staysail simultaneously (otherwise the staysail sheets are run to the primary winch on the coaming), and for the spinnaker downhaul.

There is a rigid boom vang that is still in excellent shape. There is a potential issue to be aware of with the vang: because of the gooseneck construction, the boom is able to rotate. The vang is not articulated for this rotation. Other valiant owners have experienced broken vangs because of it; there is much discussion of this issue on the VOG. We have not yet experienced a failure, though I don't doubt that it could happen on Syzygy. We, however, decided to remove the rigid vang and replace it with a block and sheeted vang. The rigid vang is stored in the starboard cockpit locker.

SAILS

Mainsail: fully-battened main constructed by Port Townsend Sails, I believe in 1989. It was heavily overbuilt and is still in very good shape. The leather chafe guard on the tack and clew have been restiched. New chafe guards along the battons were added where the mainsail contacts the intermediate backstays when sheeted out.

Jib: a 120% jib, also constructed by Port Townsend Sails. Also still in very good shape. The sunbrella on the leech has been restitched where it occasionally chafes against the spreaders, and the leather chafe guard on the tack and clew were replaced 2011.

Staysail: this sail is a well-worn, hank-on sail. I am of the opinion that it is a bit large and should be replaced with something smaller when it wears out. The staysail is most often used to reduce sail area when the wind increases; once the wind increases enough to make the sail change (furling jib and hoisting staysail), the size of the staysail seems to already be a little too much.

Drifter: 140% 1.5oz nylon constructed in 2009 by Jon. Still in brand-new condition. Jon bought a sail-rite kit and made this sail himself. It's a beautiful sail and we made frequent use of it in light winds and downwind in light to medium winds. It's stowed in a genuine ATN spinnaker sock, and it's as easy to rig, hoist, and stow as a drifter can be. The luff has a strong, low-stretch line in it so the sail "flies free", i.e. isn't hanked onto a stay. We used this sail frequently in a downwind wing-on-wing configuration, with the jib poled with the whisker pole, and the sheet of the drifter running though a snatch block on the end of the main boom.

Spinnaker: An 1.5oz symmetric spinnaker also in like-new condition. It is stowed in its own sock (not as good as the ATN, but works fine). We only flew the spinnaker a few times, usually for the fun of it in very light winds. The spinnaker pole is extremely beefy and is stowed vertically on the forward side of the mast. The control lines for the pole have been replaced, and sheets and guys with snapshackles are made up and stowed in a labeled bag. Blocks and fairleads are mounted on the deck for running the downhaul.

Storm staysail: a like-new hardly ever used sail with no signs of use, extremely stout, made by Port Townsend Sails, that gets hanked on to the inner forestay. We actually used this once in very heavy winds, mostly to try it out. It is extremely small, high-clewed, for the most dire storm situations.

Storm trysail: A matching pair to the storm staysail; also like-new, extremely stout, made by Port Townsend Sails. Also only for the most dire of storm conditions. This sail is hoisted on its own dedicated, separate track on the mast. Rigging the sheets for this is not self-evident; be sure to practice and make notes about the setup. We never used it while sailing, but we practiced hoisting it in the marina. I believe secured the main boom hard amidships, then ran the sheet of the trysail through a snatch block mounted at the end of the boom, from there through a snatch block fastened to the padeye on the rail, then to the winch. It was difficult to find a lead for the trysail that maintained sail shape, without chafing across the dodger or lifelines.

REEFING

Jib is mounted on a Profurl brand roller-furler. In 2009 both the bottom and top units were completely disassembled, bearings were replacing and grease re-packed. It furls easily with little friction. The furling line is lead through fairleads down the starboard side and through a ratcheting turning block on the rail—the mechanical advantage of this block makes the furling process much faster and easier.

Two reefs are set up for the mainsail, with separate lines for tack and clew, (four lines in total) and all lines run aft to separate clutches on the cabintop. The resulting system makes it both simple and fast for one person to reef from the cockpit.

LAZYJACKS

We explored many different configurations before evolving to the current system. When not in use, the lazyjacks lines are snapped into a carabiner below the gooseneck, and the lines stowed on a cleat mounted on a shroud on each side.

BOOM PREVENTER

A block and tackle is rigged for each side, and the lines run aft to a cleat just outboard of the cockpit. There is sufficient mechanical advantage for one person to sheet or ease the lines without needing a winch. The preventers are fastened to both the boom and deck with snap-shackles, making it easy to remove and stow them out of the way.

SELF-STEERING

There is a Monitor Windvane (made by Scanmar) mounted on the stern. It was almost completely rebuilt in 2009, with new blocks, bearings, lines, bolts, etc, to the point where it consists of more brand new parts than original. We used the Monitor constantly and it performed extremely well. There are two standard fir vanes, and a light-air aerospace honeycomb material fabricated by the POs.

There is also a cockpit mounted electronic autopilot, the Autohelm 3000. This cockpit autopilot is not particularly strong compared to the modern, below-decks models, but it consumes very little power and worked very well for us. Actually we have two of these units, identical to each other, so it's easy to swap out for a spare if there's a problem. Currently, however, one of the spares needs to be repaired; the gear keyed to the motor shaft sheered and must be replaced. The operational unit was dismantled and serviced in 2009 and again in 2011.

BILGE

The bilge is accessible for its entire length via boards in the cockpit sole. The boards do not have a method for latching them down and could come loose if inverted. The bilge is painted with heavy-duty epoxy for ease of cleaning.

PROPANE

The propane locker is a 2009 custom built installation tucked into the port stern in the corner between the lazarette and the port cockpit locker, vented out the bottom of the stern with a ½" hose. It holds two 5 gallon (20lb) LPG tanks. There is a modern, quick release connecter that screws onto the bottles. The old copper tubing running to the stove was replaced with a single Trident propane hose in 2009; there are no fittings or connections between the sealed locker and the stove, and the hose is secured frequently along its length to prevent chafing. A y-fitting and shutoff valve located inside the locker provide propane to the BBQ mounted on the stern. Adaptors for alternative, (Australian styled) propane tanks are located with the spare plumbing fittings.

GROUND TACKLE

Anchors:
66lb bruce-style stowed on bow
44lb CQR plow in starboard locker
45lb danforth, mounted on stern
75lb fisherman storm anchor stowed in port locker
little 15lb mushroom jobby for the dinghy

Rode:
250ft of 5/8" chain in forward anchor locker
300ft of ½" twisted nylon with a 15ft chain leader for the stern anchor
a couple hundred feet of spare ½" twisted nylon
a couple hundred feet of stout 1" twisted nylon

There are 2 anchor snubbers made up: one with a chain hook. There is a cleat and hawsehole on each side of the foredeck.

There is a two-speed manual windlass with a both a rope and 3/8" chain gypsy. It was dismantled and serviced 2009. There is a spare handle for the windlass. There are two stout bow rollers, both substantial with no visible wear, and roll easily.

Windlass aside: this is a classic old manual windlass, and should be treated carefully. It is very important to limit the force transmitted to the gypsy—we broke the windlass once by backing down too hard on it. The windlass is plenty strong enough to haul in the anchor, and we never had a problem using it to break the anchor free, but any sort of sudden or excessive force could do it in. There is a short length of line with a chain hook on it—we hooked this onto the chain in front of the windlass and cleated it off on the deck, and backed down on this, and left it as a backup for the snubber as well while anchored.

ENGINE

Engine is a Westerbeke 40, which is a marinized version of the Perkins 4-108 (which means that the block/head is Perkins 4-108, and the externally mounted components were assembled from various manufacturers by Westerbeke). It is the original engine to the boat, and had an estimated 5,000 engine hours when we purchased it. We put on a total of 600 hours, so current total estimate is 5,600 hours.

The transmission/V-drive is a Warner-Paragon that exhibited no problems during the time we've owned the boat. We have changed the transmission oil three times since 2007. The seal on the V-drive leaks slightly, so the oil needs to be periodically topped off, and a heavier oil (80W) will not leak out as quickly.

The engine room is enormous (for a sailboat); access to the engine and the transmission is excellent. The engine room insulation was replaced in 2009 to reduce noise transmission to the rest of the boat.

The engine starts immediately and runs well, which is to say that it sounds good and doesn't smoke at all. The engine is no spring chicken, however, and we did plenty of work on it. The biggest ongoing issue for some time was an air leak in the fuel system, which causes the fuel pump to lose its prime and necessitates a bleed before the engine will start. Tracking down an air leak can be extremely challenging and it took us quite a while to find it. Additionally, we suffered a period of running too hot, which resulted in the replacement of every component in the cooling system, until we finally discovered a small blockage of detritus where the seawater passes through the V-drive. With these two issues resolved, the engine has been extremely reliable. Valves were adjusted 2009. The injectors were rebuilt in 2009. Coolant pump, thermostat, oil cooler, heat exhanger, transmission oil cooler, and all hoses (oil hydraulic and water) were replaced 2009. Gauge senders were replaced, exhaust fittings and raw water injector replaced, speedseal cover added to raw water pump, raw water pump impeller cam replaced. Secondary fuel filter replaced twice. We fastidiously replaced engine oil and primary oil fiters every 100 hours.
Coolant system was flushed with detergent; coolant replaced with propylene glycol (safe to dispose of in the sea, very much unlike ethylene glycol which is extremely toxic).

Everyone says that the Perkins 4-108 lasts forever. I don't know about that, but our engine doesn't seem to have any problems (currently). Undoubtedly engine wear over the past 30 years has reduced its power output, but until major problems develop there's no good reason to consider repowering.

There are dual racor primary fuel filters, so you can switch out a failing one without turning off the engine. There is a mirror behind the engine for better visibility.

The fuel tank is a 75gallon aluminum tank that sits underneath the cockpit sole. Other valiant owners have reported leaks developing in the corner of the tank that contacts the hull (due to corrosion). I have watched carefully for this and as yet there are no signs of leaking. It is something to watch for, however. The current practice on the Valiant Owners Group is to deal with this by applying some sort of high-tech epoxy coating to the inside of the tank, in order to avoid outright replacement.

There is a "Baja filter" in the starboard cockpit locker to pre-filter the diesel. It could stand to have the filter replaced—currently it is a slow process.

There is an electric oil transfer pump plumbed to the oil sump that makes oil changes extremely simple.

The prop shaft is sealed with a PSS dripless shaft seal; we cleaned up the graphite surfaces in 2009 to eliminate excessive leaking (it gets gunky when it sits unused for too long) and have had no leaks or problems since.

The oil pressure sender has been replaced. There is a light out in one of the other gauges. The tachometer gauge must be suffering from a loose connection somewhere, because it functions intermittently (this issue may have been repaired since writing this).

There is an extremely loud alarm to warn about low oil pressure or high coolant temperature; this is a useful extra that could save the engine someday. The alarm must be manually turned on inside the engine room after the engine has been started.

CABIN

The salon sole is solid teak & holly (not a veneered lamintate), refinished with polyurethane in 2010. The rest of the wood below is oiled teak.

The galley is to port (sticking with tradition), and has salt and freshwater faucets in the sink, both operated by foot-pumps.

The stove is a gimbaled stainless-steel propane with 4 burners and an oven. There are metal clamp arms to stabilize pots.

The icebox is 7.2 cubic feet, rebuilt in 2009 with 4" insulation on sides and top, and 6" insulation on bottom. Refrigeration was custom designed, and utilizes a Danfoss BD-50 compressor, air-cooled condenser, and extra large roll-bond aluminum evaporator plate. The system is extremely efficient, with a typical duty cycle around 25%. There is an externally mounted thermometer for monitoring the icebox temperature, a green LED indicating when the compressor is running, a red LED for any fault codes, and an hourmeter that keeps track of how long the compressor is running (for duty-cycle calculations). Inside the icebox, acrylic storage boxes slide to the side on rails.

HEAD

The head plumbing was completely redesigned and everything was replaced except the holding tank, including the toilet, houses, Y-valves, vents, etc.

The toilet was replaced with a Lavac brand toilet. This is a unique design that consists of a gasketed lid and a single diaphragm pump (same pump that is used for bilge pumps). To flush, one closes the lid and pumps; a vacuum forms inside the toilet that sucks in fresh seawater while pumping out the junk. It is an extremely simple, reliable, and powerful setup. The replacement hose used is the expensive stuff, the excellent Trident black reinforced hose, which doesn't (yet) smell whatsoever.

I designed the plumbing setup to fulfill the various needs: pumping the toilet directly into the sea; pumping the toilet into the holding tank; pumping the holding tank into the sea; sucking the holding tank from the deck fitting.

REFRIGERATION

Everything was rebuilt in 2009, including the icebox and the refrigeration system. The box was insulated with 4" on the sides and top, 6" on the bottom, with Dow Blueboard. The internal volume is 7.2cu.ft. The refrigeration system was custom designed, and utilizes a Danfoss BD-50 compressor, air-cooled condenser, and extra large roll-bond aluminum evaporator plate. The system is extremely efficient, with a typical duty cycle around 25%. There is an externally mounted thermometer for monitoring the icebox temperature, a green LED indicating when the compressor is running, a red LED for any fault codes, and an hourmeter that keeps track of how long the compressor is running (for duty-cycle calculations). Inside the icebox, acrylic storage boxes slide to the sides on rails, for efficiently accessing all areas.

On board, there is a refrigeration vacuum pump, gauge set, complete set of parts/accessories, and spare refrigerant for servicing the system. With the vacuum pump, all refrigeration repairs are possible.

FRESHWATER PLUMBING

When we bought the boat there was a decrepit pressurized freshwater system and leaking freshwater tanks. We ripped out the old tanks and built new ones; the capacity is 150 gallons: 75 gallons in each tank located under the settees. We removed the pressurized water plumbing and installed foot pumps in the galley for both fresh and seawater. The foot pump has two advantages over a pressurized system: it is much simpler and therefore far less maintenance, and it saves an enormous amount of water.

The foot pump in the head delivers freshwater. We replaced all the hoses as well (by now a common theme). The head has a shower tray that drains into the bilge. If the shower is to be used, a hose should be attached to the tray drain and run through the bilge to the sump, so that the shower water is pumped immediately overboard rather than running down the length of the bilge first. I would fit a hose to the faucet and use the foot pump to deliver freshwater. We always showered either in the ocean or in the cockpit using the deck washdown pump, followed by a freshwater rinse.

ELECTRICAL & CHARGING

Boat electrical is 12V DC, with 120V AC outlets, inverter, and dock plugin.

95% of the boat wiring was replaced in 2009. High-grade wire and terminals (Ancor brand) were used throughout; all connections were properly sealed with heat-shrink tubing and dielectric grease was used on all connections. Heavy duty 2/0 cables were all replaced 2009, including battery cables, engine starter cable, alternator cables, and wiring to electrical panel. Bus bars, terminal blocks, and fuse boxes are all new 2009. As mentioned elsewhere, mast wiring was replaced, including the VHF coax. All wiring is well-labeled. The electrical panel at the nav station was ripped out and completely rebuilt, with new terminal blocks, bus bars and a custom built panel.

AC outlets are GFCI ("ground fault circuit interrupter") outlets, all replaced and rewired with new wire in 2009. The GFCI feature makes them much safer against electrocution and slightly more finicky (especially the one in the quarterberth, which resists the reset sometimes).

Batteries: separate 720Ah house bank and starter battery. House bank is four Rolls-Surrette model S460, 6V 360Ah each, for a combined total of 720Ah. Starter battery is a standard automobile battery. All batteries were purchased in 2009 and rarely discharged below 70%. The batteries are secured with straps to prevent them from falling out during a rollover.

A battery monitor on the electrical panel provides helpful information about the state of charge of the batteries.

The alternator is a high-output 160A "Silver-Bullet" with a independent ground cable. Alternator regulator is a 4-stage "Quad-cycle" smart regulator. Neither alternator nor regulator are in production any longer. The company that made the quad-cycle sold to Xantrex, and the quad-cycle became the now-popular Link2000. The quad-cycle is currently adjusted to limit the upper output of the alternator to ~110A; the previous owners suffered two broken alternator brackets prior to limiting the max output.

The inverter/charger is a Xantrex Freedom Marine 20, which is a 2000W inverter and 4-stage charger. When 120V dock power is connected, batteries are "smart" charged while AC power is passed through to outlets. When dock power is not connected, inverter function provides AC power to outlets.

The starter battery is charged with a Xantrex Echo Charger; this acts as a one-way valve to siphon off a portion of the charging current (when present) from the house bank, but prevents the house bank from draining the starter battery.

There are two 180W 24V Mitsubishi solar panels, for 360W total. The solar panel regulator is a Blue Sky 3021 MPPT 3-stage.

The wind generator is a KISS brand. It is essentially an AC alternator, running in reverse; AC current is transmitted to the KISS brand regulator in the engine room, where it is rectified to 12V. There is an off switch for the wind generator on the regulator, which serves to short the windings of the generator, causing it to work against itself. However, there is also a temperature cutout in the regulator which trumps the off-switch: if the regulator gets too hot, it disconnected the wind generator and lets it freewheel. As a result, when the wind really picks up the wind generator will spend more and more time free-wheeling, which is not good for either the wind generator or your sanity. The solution is to use a cord attached to the fin to pull the KISS off too one side, either feathering it at an angle to the wind or else turning it 90 degrees to "turn it off". The cord runs through a block facilitating it being tied off in two different perpendicular directions.

Careful work was done to reduce power consumption of all devices onboard. Lights are Alpenglow white fluorescent/red LED low power fixtures. Fans are low power Hella or Caframo. Refrigeration was completely redone to consume minimal power (see refrigeration section). Foot pumps in the galley rather than pressurized water. Manual windlass rather than electric. The masthead trilight is a low power LED model, and has an auto anchor light function that only turns on when it gets dark. The AIS uses very little power. Even the cockpit lighting uses LED rope lights rather than incandescent.

Between the solar panels and the wind generator, we only had to run the engine twice to charge the batteries during our entire 9 months of cruising across the pacific. And we weren't particularly conservative with the power: we paid little attention to conserving energy and still didn't have to worry about running down our batteries. We regularly used the inverter to run our power tools or shop vac for various projects. With judicial use of electricity you'll never need to use the engine for charging.

ELECTRONICS

The VHF is a standard horizon. The coax for the VHF is one continuous run (no connections) from radio to antenna on the mast head. There is also a splitter mounted next to the radio that can be used to provide an FM antenna for the stereo.

The SSB is a Kenwood 707. The ground plane was completely replaced in 2009. Though the radio is an older model, we were consistently one of the top three highest-powered, longest-range radios on the nets. I attribute it to the new ground plane that was carefully tied into the keel, and the fact that our batteries were usually close to fully charged.

The AIS is a Nauticast B transponder; it both receives and transmits positions. Both the VHF and the gps antenna for the AIS are mounted on the arch at the stern. This VHF antenna could act as an emergency backup for the VHF radio if lightning were to fry the one at the mast head. There is a serial-USB adaptor connected to the AIS for use in connecting to a computer. An appropriate driver is necessary for the computer to read the AIS (download it from the web). We connected the AIS to a Mac laptop running MacENC navigation software. The AIS provided us with ship locations, and also acted as our primary shipboard gps, indicating our position on the charts as well, and negating the need for a separate gps system.

A garmin handheld gps is mounted in a holder at the binnacle, and a USB adaptor provides power to the gps from 12V. The garmin also runs on AA batteries.

A third, handheld Magellan gps (AA batteries) provides overkill backup in case the first two gps's fail.

There are two handheld VHF radios, an older Standard Horizon and a waterproof 2007 Icom. It's definitely waterproof. It was dropped in 20 feet of water and there remained for an hour while we searched for it before finding it in working condition.

DINGHY/OUTBOARD

The dinghy is an Avon 8ft inflatable which is quite old, quite worn, and has a tiny though effectively imperceptible leak form the aft starboard corner. You will take more water over the sides while dingying around then will leak in. A few patches were put on to minimize this leak even further. The dinghy can be lashed upside down on the deck just forward of the mast, or it can be deflated, rolled up, and stowed on the cradle under the boom that was designed for this purpose.

The outboard is nearly brand new, purchased 8/11. It is a Mercury Mariner 5hp two-stroke. Oil is mixed with gas. Runs perfect (it's still new). There is a small internal gas tank and also a fitting for an external tank (also on the boat)—the internal tank is a very convenient feature to not have to connect/disconnect a separate gas tank every time. The outboard is stowed on a teak block on the stern. There is a block and tackle made up for hoisting the outboard on and off the stern (hangs from the steel arch), allowing it to be accomplished by one person alone.

ADDITIONAL CONVENIENCES

There is a swim ladder that folds down off the stern.

There are seven fans in the boat, all low power consumption, to stay cool no matter where you are.

Bug screens exist for all hatches and the companionway.

LED rope lights ring the cockpit and greatly improve the evening mood for entertaining.

There is a custom-made flopper stopper to reduce rolling in anchorages, consisting of a milk crate with flaps. The dinghy mushroom anchor is suspended from the bottom, and the whole apparatus is suspended from the end of the whisker pole.

There is a saltwater deck wash pump that is convenient either for cleaning the boat or taking a shower in the cockpit.

There is a windscoop that can be used in either the V-berth or the salon hatch.

There is a forced air diesel heater system installed—it's an Ardic brand unit, manufactured by Volvo I believe. The heater unit is installed in the engine compartment. Ductwork was serviced and re-insulated in 2010. We only used it a few times in the bay area. I believe that the last time it ran I noticed a diesel leak coming from the small pump inside the heating unit—I suspect that either the hose clamp is bad, or perhaps the small

dieself pump itself. Clearly this should be carefully examined and repaired before using it.

There are custom, removable, high fiddles on the galley countertop, creating a number of surfaces on which items can rest while well-heeled. This was a crucial addition for passage-making comfort.

There are custom lee-cloths on both settees. They consist of panel of phifertex mesh (for air circulation) mounted to an aluminum bar that slots into wood blocks on the bulkheads. The design makes it very easy to get in and out—no complicated, time-consuming lacing required.

There is a custom slide-out for the port settee, which slides out to the mast and turns the port settee into a double bed—a luxurious amount of space for a boat berth.

The salon table was custom built to stow up against the bulkhead; most of the early Valiants have a fixed table in the middle of the salon which eliminates much of the available space.
The stereo system was installed in 2009, and it sounds fantastic. The stereo is satellite capable, and a headphone jack is mounted in the bulkhead at the nav station to accept an ipod input. There are two 7"x9" Rockford-Fosgate oval speakers in the salon, and two 6.5" Polk Audio speakers in the cockpit—these are high-end speakers and they're practically brand new. The exposed electrical parts in the back of the speakers have been periodically sprayed with T-9 for corrosion prevention; I recommend this practice be continued every other month or so, as the metal connections in the back of the speaker are vulnerable alloys.

Five additional fixed portlights were installed for additional light belowdecks. This is one of the complaints I had with the original Valiants as they come from the factory—it feels dark and cavernous down below. So I added two to each side in the salon, and one up forward above the v-berth, which has the added benefit of providing a view of the foredeck and jib.

All cushions were re-upholstered in 2009. Quarterberth and V-berth cushions have new, firm foam.

SAFETY & SEAWORTHINESS (considerations not mentioned elsewhere)

There are jacklines secured down each sidedeck and also on each side of the cockpit. The jacklines consists of a length of ¼" amsteel down the center of a piece of tubular webbing; this is a good design because webbing alone degrades in the sun and becomes weak over time.

There are two inflatable PFDs and four shock-corded tethers with carabiners for rapidly clipping on and off the jacklines, and a trigger shackle for the chest harness.

Lifelines are ¼" amsteel.

Lightning protection: 6 gauge cables run from each shroud chainplate, along the hull, and are secured to a keel bolt (installed 2009). The backstay also has a 6 gauge cable running to the bilge; the forestay is not tied in to the lightning system.

There is a carbon monoxide detector beneath the nav table.
There is a handheld "canned air" foghorn located on the ready rail just inside the companionway.

There are ample quantities of flares, dated 2009.

There is a waterproof ditch-bag filled with stuff and stowed in the lazarette.

There are three bilge pumps: a manual pump in the cockpit, a manual pump beneath the salon sole, and an automatic electric pump.

The manual bilge pumps were dismantled and serviced. The electric pump is new, with all new wiring. All bilge pump hoses were replaced.

There are six drains in the cockpit: four in the floor and two on the seats. All hoses were replaced (1-1/2").

There is a Lifesling brand device mounted to the port stern, and a standard horseshoe mounted to the starboard stern.

There is a plastimo TK person liferaft stowed in a cradle just forward of the dodger. This liferaft has not been repacked in many years; it should be repacked.

There is a Jordan Series Drogue stowed in the very bottom of the lazarette.

The opening portlights are old and slowly failing; the plastic is brittle and the hardware is breaking off. I doubt that they would survive a big wave coming from the side; during our trip we had plenty of weather that would put water aboard at the stern, and wash down the sidedecks, but we never came close to getting a direct hit from a wave coming up over the side. Nevertheless, for seaworthiness the old portlights should be replaced. I would look into the stainless ones by newfoundmetals.com. The fixed portlights that we installed are ½" thick polycarbonate and are bombproof.

The dropboards in the companionway have no mechanism for locking, so that could fall out during a rollover.

Similarly, the boards in the cabin sole have no mechanism for locking them down and could come loose during a rollover (though they fit in pretty snugly). I tried to come up with various ideas for accomplishing this and never settled on one as sufficiently practical and inexpensive.

One might want to fabricate running-backstays to further support the mast during heavy weather; see the discussion under “standing rigging”.

INCLUSIONS

There is complete scuba equipment for three people, including four dive tanks.

There are snorkeling masks and fins for three people.

There is a pair of high-quality binoculars.

There are two inflatable PDFs.

There is a hand-bearing compass and all navigation tools.

There is a substantial amount of fishing tackle, lines, and fishing rod.

There is an extensive sailing library with all the best books.

There is a boat hook.

There are deck brushes, bucket, and sponge.

There are thousands of dollars worth of tools & parts, including:
4” grinder
circular saw
orbital sander
belt sander
portable drill
refrigeration vacuum pump
refrigeration gauges
heat gun
shop-vac
all sockets, wrenches, screwdrivers, cutting implements, sawing implements, clamps, soldering iron, massive amounts of spare electrical wire, terminals, heat-shring, organized boxes of bolts/nuts/washers/screws