

Report of Marine Survey

on the

2017 Ranger Tug R-27

“**[REDACTED]**”



By

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I. INTRODUCTION

Scope of Survey

The surveyor attended aboard the 2017 Ranger Tug R-27, [REDACTED]', at the request [REDACTED] [REDACTED], beginning [REDACTED] and finishing on [REDACTED]. The Survey was requested to determine the condition prior to potential purchase, a Pre-Purchase Survey.

This Survey Report is provided as a result of the Contract attached as an Appendix to this Report is for the exclusive use of the Client identified in this Contract and cannot be duplicated or disseminated, in whole or in part without the written consent of Oceanic Yacht Surveys. The Survey Report is protected by Copyright, ©. Should any third party rely, under any circumstances, on the contents of the Survey Report there will be no liability offered or expressed by Oceanic Yacht Surveys.

The survey will be conducted in accordance with generally accepted marine standards and criteria utilized in the marine surveying industry.

Oceanic Yacht Surveys or any of its employees or agents shall have no liability for consequential damages, no liability for personal injury damages, no liability for property loss damages and no liability for punitive damages, all of which shall be deemed to have been knowingly and voluntarily waived upon use of the survey report.

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The standards presented by Transport Canada in notice TP1332E (04/2010), '*Construction Standards for Small Vessels*', will be used as guidelines while conducting the survey.

The vessel should be prepared for survey by unlocking all compartments, unfastening all covers and removing all stores and excess equipment. Surveyor will not unfasten any covers. Locked compartments will not be inspected.

Machinery and equipment, including engines may be inspected while operating only when Client, Owner or Owner's representative is available to operate. Where an opinion on the internal condition of the engine(s) is required, engaging a qualified marine mechanic is recommended.

No destructive testing will be performed unless by written request of the Owner.

Sailing vessel rigging and spars will be inspected from deck level only. Working sails will be inspected during a sea trial from deck level only. Furled or bagged sails will not be inspected unless separate arrangements are made. Additional, more detailed inspection by a qualified rigger or sail maker may be recommended.

Determining the inherent stability characteristics of a vessel is outside of the normal scope the Survey Report being provided under this Contract. Unless specifically noted otherwise, there were no measurements or calculations performed during the Survey. The specifications listed within the report are believed to be correct; however, accuracy is not guaranteed. Recommend obtaining accurate measurements and performing calculations as desired or verifying all vessel specifications and capacities with the vessel's builder.

The Survey Report being provided under this Contract is not to be considered as any type of warranty, either expressed or implied and will not in any fashion express or provide any type of guarantee of the future condition or value of the vessel.

The Survey will include a thorough visual examination of the hull, machinery, systems, hardware, equipment and, rigging. The resulting Survey Report will contain a comprehensive description of the vessel and its systems, with photographs and will include a listing of '**Findings and Recommendations**' required for correction to reasonably ensure that the vessel is fit for its intended service.

Based on the type of survey provided, in this case a Pre-Purchase Survey, a statement of the vessel's '**Condition**' only will be included. The contents of the Survey Report represent findings at the time of Survey and are provided in good faith, without prejudice.

I. INTRODUCTION (cont.)

DEFINITION OF TERMS

The terms and words used in this report have the following meanings as used in this Report of Survey:

APPEARED:

Indicates that a very close inspection of the related item was not possible due to constraints imposed upon the Surveyor (e.g. no power available, inability to remove panels or requirements not to conduct destructive testing, etc.).

SERVICEABLE:

Fulfilling its function adequately (usable at the time of Survey).

POWERED UP:

Power was applied only. This does not refer to the operation of any system or component, unless specifically indicated.

DEMONSTRATED:

Owner or owner's representative was available to demonstrate the operation of a system or component.

USE OF "A", "B" or "C":

Use of the letters "A", "B" or "C" in the body of this report will indicate that a finding will be listed in the "Findings and Recommendations" Section pertaining to the lettered item. Deficiencies, recommendations and observations will also be contained in the body of the Report. A refers to an item that may represent a safety hazard and requires immediate attention. B refers to an item that could over time become a hazard or reduce the vessels value or usability. C refers to an item that should never evolve into a safety concern but may reduce the usability or convenience of the vessel.

The number of asterisks in this General Information section refers to the source of related information as follows:

** Per Manufacturer's Documentation

*** Per Registration Documentation

I. INTRODUCTION (cont.)

VESSEL DESCRIPTION

The vessel is a Tug style design with an aft deck, enclosed cabin that includes a small aft cabin/desk, galley, settee, helm, head and 'V' berth forward as shown in the layout below.

Upon boarding the vessel on the swim platform where the RIB is stored vertically with a Weaver Davit and the propane/dinghy fuel cabinet resides, there is a gate on the starboard side leading to the cockpit on the same level as the swim grid. The vessel has the optional factory extended canvas. Entering the cabin through the center locking door presents a center walkway through the cabin with the head immediately to starboard and the aft quarter berth cabin immediately to port. Forward of the head compartment on the starboard is the galley beginning with the Force 10 oven w/two burner stove, sink w/hot and cold water and counter space to the helm seat. The helm seat can be folded forward when not in use to increase available counter space. The port side forward of the aft cabin top which doubles as a shelf when closed, has a settee. The forward settee bench is reversible to act as a companion seat to the helm when underway. The settee is convertible to a berth as well and the table can fold in half when not fully needed to provide more space in the galley. There are no overhead cabinets but there are numerous separate cabinets in the lower section built in and around the appliances. There is a refrigerator with freezer at the forward end of the galley, under the helm seat. There are two steps down and forward into the 'V' berth master which has over six and a half feet of length.

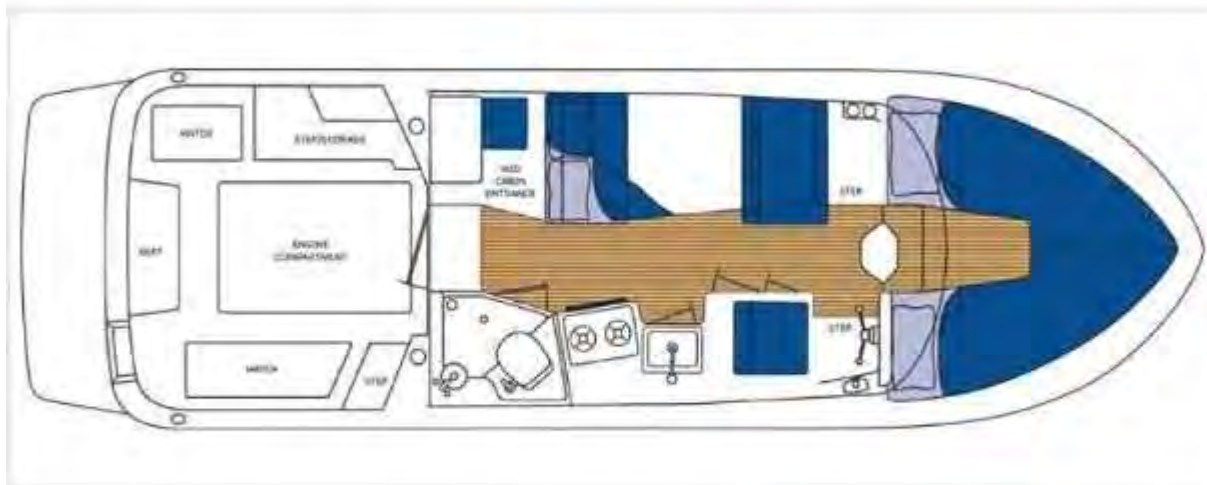
The side decks, although narrow, are passable and there are hand rails along the cabin top roof. The foredeck provides access to the anchor locker and the windlass with foot switches.

There is a flat screen TV mounted on a locking hinge, forward and centered above the steps down into the master berth. This screen is integrated into the Garmin navigation system or can be used to watch television. The Garmin navigation system includes factory option upgrades to the 7612 touch screen plotter with autopilot, radar and rear view camera.

The electrical panel that controls both the 12V and 120V systems is at the helm on the starboard wall along with controls for shore-power, the bus heater and the main breaker for the windlass mounted adjacent to this, below the helm seat is the remote switch for the inverter. The vessel is not equipped with a generator but does have the factory installed optional solar panel with an inverter. Another option installed on this boat is the hand held remote for the thrusters aimed at aiding with single hand operations.

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The vessel is two years old with 54 hours of engine time registered. Records indicate the 50 hour service was recently completed including oil changes on both the main engine and transmission. During an interview with the current owner, he indicated that the boat has never been slept on.



Vessel is designed and constructed for coastal cruising.

Courtesy of Ranger Tugs

II. GENERAL INFORMATION

FILE NUMBER..... Ranger R-27 Bell

NAME OF VESSEL..... [REDACTED]

TYPE OF SURVEY..... Pre-Purchase

OVERALL VESSEL RATING..... Bristol

ESTIMATED MARKET VALUE..... N/A

ESTIMATED REPLACEMENT COST..... \$265,000 Cdn (O/B model, diesel model no longer available)

YEAR/MAKE/MODEL..... 2017 RANGER TUG R-27

DESIGNER/BUILDER..... Dave Livingston/Ranger Tugs

HULL IDENTIFICATION NUMBER..... [REDACTED]

PROVINCE OF LICENCE..... British Columbia***

LICENCE NUMBER..... [REDACTED]

REGISTERED OWNER..... [REDACTED]
[REDACTED]***

OWNER'S ADDRESS..... [REDACTED]***
[REDACTED]

PLACE OF SURVEY..... Salt Spring Sailing Club, BC

DATE OF SURVEY..... [REDACTED]

HULL MATERIAL..... FRP (Fibre Reinforced Plastic)

LENGTH OVERALL..... 30' 1" (9.17 m), excl. dinghy

BEAM..... 8' 6" (2.6 m)**

DRAFT..... 26" (0.66 m)**

CLEARANCE..... 12' (3.66 m)** mast up

DISPLACEMENT..... 6,950 Lbs (3,152 Kg) Dry**

PROPULSION..... Single Diesel with Shaft Drive

III. CONSTRUCTION AND SYSTEMS

HULL & DECK

Hull Identification Number:

- [REDACTED]



Hull Type and Construction:

- Modified V, semi displacement hull.
- Solid FRP (fiber reinforced plastic).
- Hull's first two layers use Vinylester resin**.
- Red gelcoat. Hull colour and Gelcoat are in excellent condition.

Hull Bottom:

- Vessel was on a trailer for short lift.
- Hull bottom and sides below painted areas were percussion sounded with no irregularities discovered.
- No visible irregularities could be seen.
- Bottom paint is in serviceable condition with a few areas in the outer edge that appear to have been rubbed off of the corner from straps on a previous lift, (C1).



On the port side near the stern (above) and on the starboard side mid-ship (below)



-External anodes that weren't new were changed during the lift and are all in serviceable condition. Internal anodes, if any, on the engine raw water side of cooling system should be checked (B1). There is typically one or two pencil zincs in the engine components. Likely locations are in the heat exchanger and after cooler. The 50 hour service should have addressed this but was not found on record. Recommend checking owner's manual and records to see if there is a maintenance requirement and if it was completed, (C2).

-Water intake strainer was clean and intact with only minor exterior corrosion present. Recommend spraying with silicone or corrosion block spray to prevent further damage, (C3).



-As hull had been out of the water for less than one hour, no moisture readings were attempted. No evidence of blistering was seen nor, with a Vinylester outer layer, was expected

Bilges:

- Bilges were viewed in engine room and forward beneath the lockers in master stateroom.
- Bilges beneath the forward in-floor lockers are spotless and look to have never seen water.
- The forward bow thruster tube can also be viewed here and is also spotless with absolutely no indications of flawed joints to the hull.



-The bilge pump powered up via the helm switch and the high-water level alarm is functional.



-The engine bilges are spotlessly clean and dry with the exception of a small accumulation of water at the bottom of the keel.



-The dripless shaft seal was observed with the vessel at rest and during operation with no leaks or drips. The seal and adjoining apparatus was felt during operation and was cool to the touch, inferring proper lubrication while running. The shaft seal nut should be sprayed with silicone or another corrosion block spray, (C4).

-Other components in the engine bay include the raw water wash-down pump (demonstrated) and macerator pump (powered up, not demonstrated) with 'Y' valve. Both pumps are the same brand as the fresh water system pump, SPXFLOW, and the raw water pump appears interchangeable with the freshwater pump. See photos below.

- The top of the 'Y' valve is visible below the raw water pump with the hole for a lock (gray plastic piece at the bottom of the photo below left). When in US waters a padlock is required by law to be placed on the 'Y' valve, locking it closed, (C5).
- The macerator pump is shown in the photo below right.



- The aft bilge can be accessed by removing the storage tub beneath the aft bench seat on the aft deck. The tub has drainage into the bilge.
- The aft bilge contains the stern thruster, rudder post and steering actuator.



- The stern thruster mount is intact with no leaks and appears as new.
- The rudder was checked for leakage, none was found, and for play when the vessel was on the service trailer. Play was minimal.
- Rudder actuator was viewed during sea trail and is serviceable.
- Note the grounding strap, green grounding conductors and stainless steel double clamps.

Swim Platform:



- Fixed white gelcoat finished platform.
- Has three stern fenders permanently attached horizontally across the stern edge**.
- Factory optional stern rails on platform.
- Integral 5 step concealed swim ladder**.
- Propane and tender fuel locker. Propane tanks are to be fixed into place. The base of the locker has a plate with cut-outs to match the base of the propane tank (see above) and when locker lid is closed, the tanks should not be able to move, however, code dictates tanks to be firmly fixed in place. Recommend installing a hold-down bar to hold tanks firmly in place (A1).
- Weaver davit installed for dinghy is removable with locking pins in plates.



-Highfield Ultralight 260 (8.5') dinghy appears as new.



-Yamaha 2.5 Hp, four stroke liquid cooled O/B on stern storage mount appears as new. Engine was not fired but starter cord was pulled to confirm free engine movement and compression. Dinghy and motor serial numbers are shown above.

Deck:

- Deck is FRP sandwiched core with white gelcoat and diamond textured non-skid finish.
- Toe-rails are moulded in on bow. Side decks have limited toe rail contours but hand rails on top of cabin are well placed.
- Rub-rails are black composite compression rail with stainless insert over the hull to deck joint.
- Hull to deck joint is reportedly a shoe box type fit but not visible from anywhere within the vessel. External examination did not reveal any flaws or damage.
- Deck has master stateroom hatch and anchor locker.
- Anchor locker under hatch at bow contains 50' chain**, and 200ft** of rode. Rode is tied on to vessel in the anchor locker. On deck is a Lewmar 12V windlass and foot switches. Anchor controls are also available at the helm (circled in red below) as is the main breaker for the windlass. Anchor is a 16.5 lb claw. Windlass was demonstrated with foot switches and helm control.



- Stainless steel safety rails run from the bow to the front of the cabin. Rails are in serviceable condition.
- Deck was percussive sounded with no irregularities found.

Cabin Exterior:

- Handrails along the top sides of cabin are solid and reasonably well placed.
- Railings are around the foredeck only and do not extend aft along the cabin.
- Antennas mounted include Garmin radar dome, TV and VHF. The Ranger Tug stainless steel antennae is also present. Mounting appears serviceable as viewed from standing on the side deck.
- Factory optional Kyocera 140 Watt** solar panel is mounted on cabin roof. Demonstrated via indicator lights on solar controller panel. Batteries were fully charged but shore power was also connected with the automated battery charger powered up and serviceable.



- Four segment windscreen all equipped with wipers on separate controls, demonstrated.
- Six opening hatches are in the cabin roof, one of which is located in the head ceiling and the other five are accessible from inside the cabin. See solar panel photo above for aft most four hatch locations on roof. Snap-in screens for the hatches were sighted in the aft quarter-berth.
- The vessel has three large opening windows with screens on each side of the cabin.
- There a window in the aft wall of the cabin, port side and an opening port hole in the aft wall, starboard side, for the head compartment with the locking cabin entry door between them.
- The Garmin GC-10 rear-view camera is installed above the aft cabin door, demonstrated.



Comments and Recommendations:

- The vessel has no visible list when at rest in the water or when in motion.
- As this hull construction reportedly** uses vinylester resin in the outer layer(s), the chance of osmotic blistering would be very rare after two years of service. No evidence of blistering was detected and no further investigation using more involved methods is recommended at this time.
- A1, recommend installing hold down bar on propane tanks.
- B1, recommend checking internal anodes, if any, on the engine raw water side of cooling system and replacing if necessary.
- C1, recommend touching up worn edges on bottom paint next time vessel is lifted.
- C2, recommend checking owner's manual for location(s) of internal anodes on engine components (if any) and confirming if replacement is necessary.
- C3, recommend spraying silicone or corrosion block spray on intake water strainer.
- C4, recommend spraying silicone or corrosion block spray on shaft seal nut.
- C5, recommend having padlock for 'Y' Valve available if voyaging into US waters.

EXTERIOR EQUIPMENT

Cockpit/Aft Deck Equipment:

-There is a Dickinson propane grill mounted on the starboard railing of the aft deck. The grill was not demonstrated but appears in nearly new condition.



-The aft deck is pre-wired with Scotty downrigger plugs on port and starboard sides. Both were tested and both were live with 12.8V DC. Breakers or fuses were not located. No downrigger mounts were installed.

-There are rod holders in the aft gunwales, both port and starboard.

-The aft bimini is the factory optional full length extension.

-Two person bench seat centered against the transom has removable table and mount (both sighted on board) with under seat stowage in removable bin with drainage (into bilge).

-Courtesy lighting on the stern above the swim platform can be activated at the helm. Lower sets of lights were demonstrated but upper lights were not functional (C2).



These twin lights (shown on port side) on each side of the transom were not functional. Because all four appeared non-functional, these bulbs are likely functional. Ranger Tugs has a patented lighting system for trailering. These lights are likely part of that system.

-Six fenders were sighted and deployed (four on starboard, dockside, two on port),

-At least three mooring lines were sighted.

-Three stainless steel cleats per side plus cleats on aft edge of the swim platform plus a center bow cleat with fair leads on each side. All were solidly mounted and serviceable.

-Shore power is via a 30 Amp Furrion cord and plug which was operating at the dock during the in water portion of the survey. A blue LED on the plug indicates power is available.



-The aft deck lockers contain numerous system components including the batteries, battery switches, solar panel (shown next page) and inverter interfaces, grounding bus, trim tab hydraulic pump, Garmin auto pilot motor, inverter, charger (shown next page) and water pump and heater (shown next page).





Connections at the ends of wires and splices in the middles are the most frequent points of failure for any wiring, especially in boats. Corrosion, stress, vibrations, and movement are the enemies here as well. ABYC standards are explicit. Also, electrical tape is not acceptable as a permanent wrap.

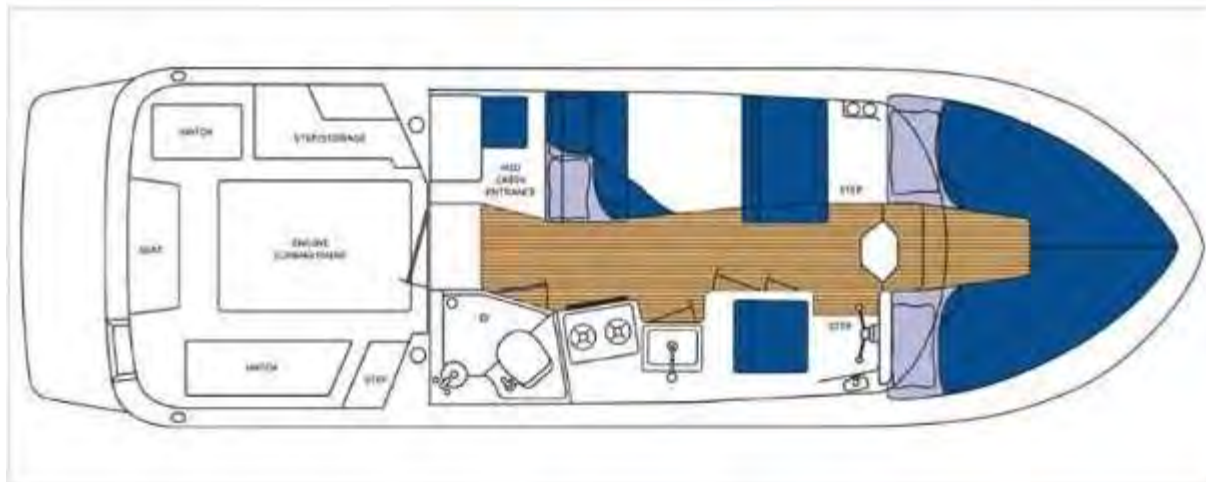
-All of the above noted equipment was demonstrated and proved to be serviceable.
-While the construction techniques used on this vessel almost universally appear acceptable and up to relevant standards, the electrical connection for the water heater power supply is uncharacteristically substandard. Electrical tape is not impervious to water, often loses its stickiness when wet, shrinks and comes loose over time as can be seen in the photo above. The electrical connections beneath the tape were not viewed but should be crimped butt connectors capable of withstanding 30 pounds of tension without separating. The individual crimped connections should be sealed with heat-shrink tubing for corrosion resistance and the entire connection should be contained in larger heat-shrink tubing, not electrical tape, for additional corrosion protection. The wiring should be supported to the hull near the connection to minimize movement, (A2).

Comments and Recommendations:

A2, recommend removing electrical tape from water heater electrical supply wiring, inspect connection for proper connection installation (as described earlier) and installing and supporting a permanent outer coating. Installation of a proper heat-shrink tubing outer layer, even if the remainder of the connection(s) have been installed to code, will require disassembly of the connection or the supply wiring at the heater. If not familiar with the required procedure, contact qualified personnel to have this done.

INTERIOR EQUIPMENT & FINISHING

Layout:



Layout drawing is courtesy of Ranger Tugs

- Cabin with convertible dinette to starboard and galley to port. Master stateroom forward with guest quarter berth aft port and day head aft starboard.
- Forward bench of dinette is reversible into helm companion seat.
- Master stateroom as shown above has two berths and is convertible with supplied filler cushions in one large berth.
- Aft quarter berth extends from aft quarter cabin to beneath the settee.
- Dinette is convertible to a berth.
- Head includes blue vessel sink, toilet and is convertible into a shower stall.
- Galley includes two burner stove with oven, sink with hot and cold running water, microwave and refrigerator with freezer.
- The helm seat flips forward to provide additional counter space.
- The aft deck measures 50 sq. ft.** with an aft bench seat and a removable table.
- The swim grid is accessed through a gate in starboard side of the transom.

Equipment:

- Head is electric macerator pump, demonstrated, with blue vessel sink.



-Refrigerator is a Nova Kool with freezer inside. Both sections were operating properly.



-Galley sink is single basin stainless steel with single lever faucet.

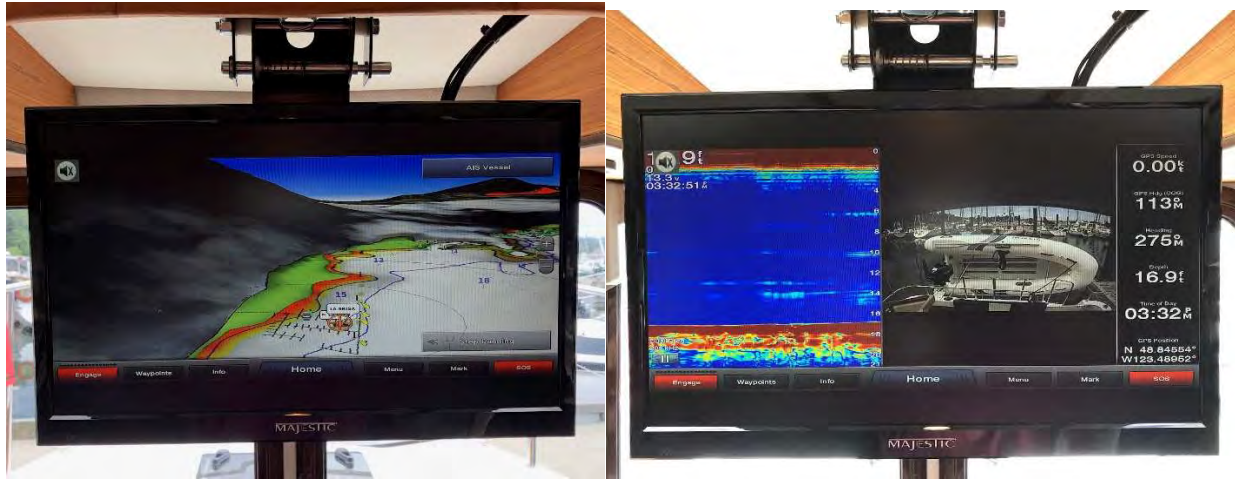
-Stove/oven is Force 10 with dual propane burners and oven beneath. Both burners and the oven were demonstrated.



-There is an electric actuated propane solenoid valve (shown above). The control is mounted in the galley, demonstrated.

OCEANIC YACHT SURVEYS

- Below the forward dinette seat is a Muave microwave oven, demonstrated.
- Fold down TV with ceiling mounted speakers, demonstrated with free TV antennae. Screen is also integrated with the Garmin system, demonstrated, as shown below.



- Salon is equipped with a Wabasto diesel furnace, demonstrated, and bus heater (extracts heat from the engine coolant), also demonstrated during sea trial when engine was up to temperature.
- Fusion sound system with Bluetooth demonstrated on FM radio.
- Aft quarter berth has small desk with a folding chair normally mounted on the wall however, folding chair was removed from mount but remains on the floor of the quarter berth.
- All interior lighting powered up. When 'Chart Light' breaker is engaged on the 12V side of the panel, main cabin lights on/off switch is used to switch lights from white to red (preferable for night navigation). To extinguish cabin lights the 'Chart Light' breaker must first be turned off.
- All faucets sealed with no drips and sufficient water pressure was developed by the SPXFLOW 12V on demand pump located in the starboard aft deck locker. Hot water was available, demonstrating the water heater, as noted in the previous section.

Finishing:

- Interior wood finished cabinetry with friction latches throughout in serviceable condition.
- Cabinet doors (5) and frames are solid wood with a satin, natural finish.
- Counter tops have solid wood fiddled edges.
- Center walkway floor is synthetic teak with ebony inlay strips.
- Galley has corian type, granite look counter tops.
- Dinette teak table is center hinged to fold in half with, when folded, cup holders and grabrail exposed, and, unfolded, can be lowered to convert into a bunk.
- FRP walls and seat bases are part of the module that comprises the cabin and, where not finished in wood, make up the finishing.

- The back side of the FRP sections that are exposed, as in the quarter berth and master berth, are finished with semi plush material.
- There are no headliners in galley and dinette. The ceiling is smooth FRP.
- Dinette seating and all materials on the berths are in serviceable condition with no tears or wear sighted. The (previous) owner indicated that the vessel has never been slept on.
- There are wall mounted 12V lamps over the galley and dinette and in the quarter berth as well as several in the master berth.
- Master stateroom hatch has screen and shade in serviceable condition.

Comments and Recommendations:

- The interior of the vessel shows as new and the cabin still smells as new. All of the fabrics and appliances appear as new with only some discolouration on the propane stove grill from heat of the burners and the oven appears unused.

ENGINE & DRIVE

Main Propulsion Engine:

- Single Volvo D3-200-H series inline five cylinder turbocharged and aftercooled 200 Hp (147 Kw) diesel engine.
- As shown below, engine serial # is: [REDACTED]. Also note manufacture date is Oct 3, 2016. Vessel is a 2017 model which would correspond to the factory acquiring the engine late in 2016. This engine should carry Volvo warranty on all installed Volvo systems (engines, drives, controls and instrumentation) for five years from purchase, until early 2022 (C6).



- Engine oil was near full and clean on the dipstick.
- Based on the (previous) owner's comments the 50-hour service had recently been completed and there were 54 hours on the engine at the time of survey which included oil and filter change.
- Engine fired up immediately with no excessive smoke or vibration.
- No oil, coolant or seawater leaks were observed.
- Numerous data sets, including but not limited to, engine speed, hours (54), oil pressure and temperature and coolant temperature, can be displayed on the Volvo EVC (Electronic Vessel Control) display at the helm (demonstrated) as well as a multitude of alarms**.
- Engine has closed cooling system with seawater cooled exhaust that exits just below the line waterline on port side aft near the stern.
- Drive belt guards were not removed.

- Engine can be shut down at the helm with the keys and typically directly on the engine with 'Auxiliary Shut Down' button on the engine** (not sighted).
- Engine mounts are serviceable with no apparent wear or observed movement. Aft engine mounts can be viewed as shown in photo below.



The engine mounts on this vessel transfer all of the thrust from the propeller via the propeller shaft through the transmission to the engine to the engine mounts into the hull stringers. For this reason, the condition of the engine mounts is critical.

- Engine require 12V starting circuit.
- Engine was demonstrated extensively from the marina to the trailer lift and back to the marina under full load and fully up to operational temperature.
- Engine is rated up to 4000 rpm and at sea trial would reach 3990 rpm steadily, touching 4000 rpm on occasion.

Transmission:

-Transmission is integral with the Volvo drive system and are matched to an engine serial number for warranty purposes. The serial number of the transmission (referred to by Volvo as 'Reverse Gear' as can be seen on the engine ID plate as well as on the transmission. The numbers should match. As can be seen on the photo of the engine ID plate at the top of the previous page, the transmission ID and serial number are: [REDACTED], matching those on the transmission plate as required and shown below (with a 2.034 gear ratio). This is therefore the original transmission installed with this engine.



- Based on the information relayed by the (previous) owner regarding the 50-hour service, the transmission oil was changed at that time.
- Oil level was on the dipstick's full mark. Oil was clear and had no unusual odor.
- Oil cooler, mounted on rear of the engine, above the transmission, shows no sign of overheating or leaking.



Shaft and Propeller:

- Propeller shaft seal, as noted earlier, is dripless and functioned accordingly with no indication of overheating.
- Propeller is bare metal, appears as Nibral (Nickel Brass Aluminum alloy) and is without any imperfections.



- Propeller is serviceable but required cleaning. Photo is after pressure washing.
- There was no spare propeller found on board.

Engine and Transmission Controls:

- This vessel is equipped with Volvo electronic throttle/shift controls and Volvo EVC (Electronic Vessel Control) Panel.



- These controls have provisions to include the Low Speed Mode and Cruise Control Mode. Neither option was demonstrated as the pilot was unaware if they have been installed or not. Pushing the appropriate button on the controls to activate the function (at an appropriate time, operation and safety wise) will determine if the option has been installed.

Steering:

- Hydraulic Steering demonstrated during sea trial. Steering connection in helm can be viewed by removing panel in master berth, as shown below. The rudder post and actuator can be viewed beneath bench seat on aft deck, also shown below.



-Drive steering angle provided by Volvo EVC rudder position indicator gauge and the Garmin autopilot display can also show rudder angle.

-Trim tabs are Bennet electric/hydraulic 12V with underwater lights mounted on them. Both were demonstrated.

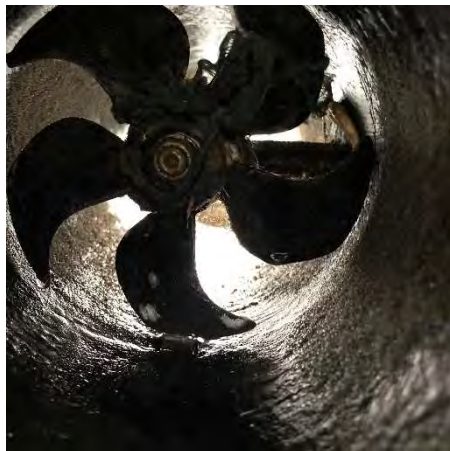
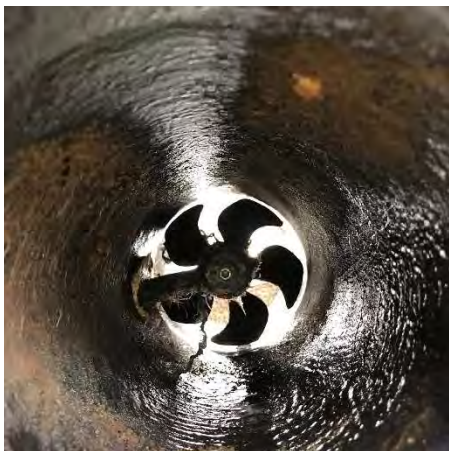


-Vessel is equipped with Side Power bow and stern thrusters.

-Thruster zincs were changed during lift.

-Thruster tubes and impellers have minor growth but are serviceable.

-Bow shown here.



-Stern shown here.



-Thrusters are complete with helm mounted controls and optional wireless remote. Both controls were demonstrated.



Comments and Recommendations:

- Steering system operated properly at all speeds from marina to service yard (for trailer lift) and back. Vessel was sea trialed on return trip.
- Confirm remaining Volvo Penta warranty and transferability. Also contact certified Volvo technician to determine if there are any factory recall/warranty items requiring attention.
- The (previous) owner has record of the Volvo recommended 50-hour service completed that includes oil changes in the main engine and transmission (reverse gear, as referred to by Volvo).

FUEL SYSTEMS

- Main engine and furnace run on diesel from one tank.
- Tank holds 100 US Gallons (approx. 379 litres)**
- Tank is a type of plastic, possibly cross-linked polyethylene but limited viewing access makes identification impossible. Bracing is not viewable.
- Diesel supply pump for Wabasto furnace is viewable in fuel tank inspection port.



- Fuel fill is located on transom, properly grounded with integral venting.
- Fuel fill hose grade was not viewable. Fuel supply lines are SAE J1527, ISO 7840 A1, USCG Type A1-15 ABYC compliant, shown below.



- Primary fuel filter for main engine is Volvo Penta 877763 fuel/water separator installed with shut-off valves, shown above.
- Main engine has Volvo engine mounted secondary filter and fuel priming button.
- Digital fuel gauge and fuel flow rate data included in the EVC system.

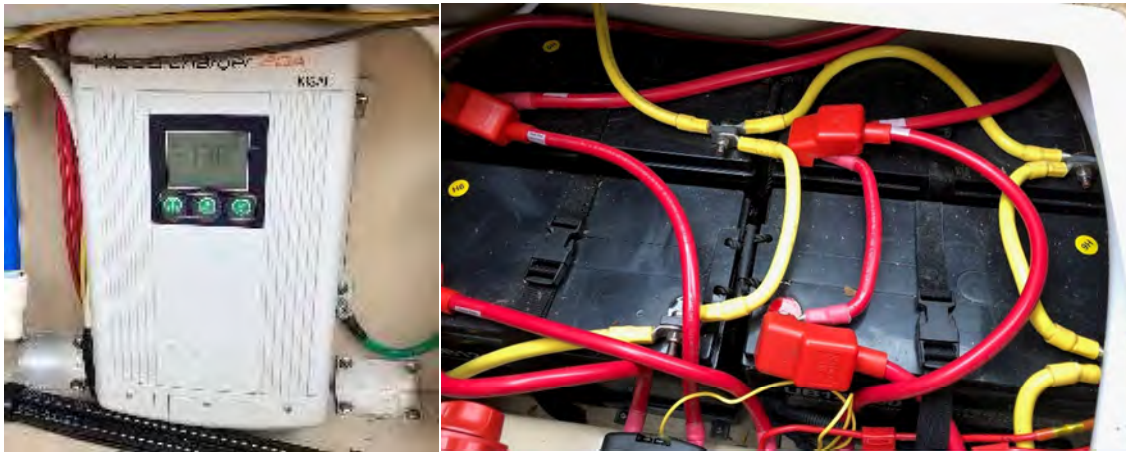
Comments and Recommendations:

- Spare primary and secondary fuel filters should be stored on board, none were sighted.

ELECTRICAL SYSTEMS

DC System:

- Ships DC systems are 12V with 12V main engine starting circuits also.
- House batteries are three Universal Battery UB121100 Group 30H AGM (Absorbed Glass Mat) 110 Amp Hour each.
- Main engine starting battery is also a UB 121100 AGM battery.
- There is typically another 12V battery for the windlass but was not sighted. The windlass may be powered from the house batteries.
- Battery charger is 3 bank, 20 Amp Kisae with digital display.

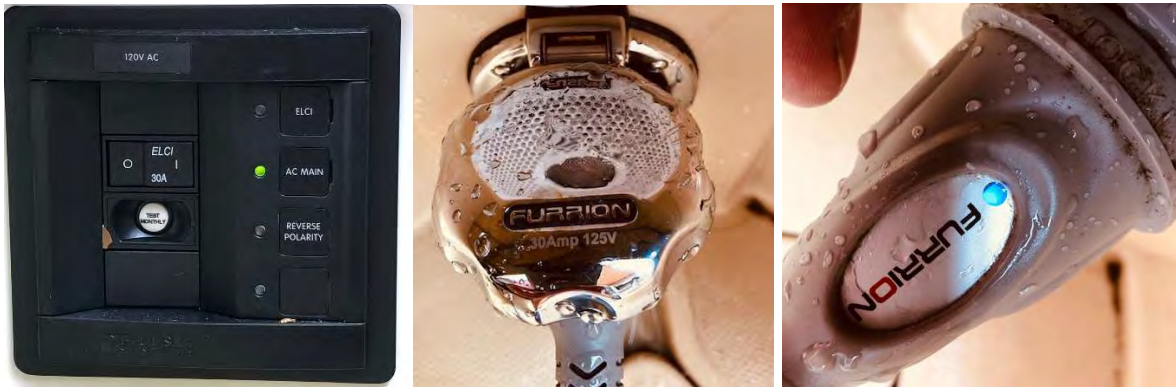


- Charger display indicate proper operation. Display shows batteries at 13.8 Volts.
- Volvo ECV display indicates main engine is equipped with 12V alternator operating properly at +/- 14V.
- 12V wiring appeared to be well supported and secured, where sighted. Chafe gear was sighted at key friction points where viewable.
- 12 Volt outlets at the helm and in the cabin tested at 12.8 volts as did the two downrigger plugs on aft deck.
- The main DC breaker switches were installed in the main panel located at the helm. All breakers and switches were labelled with breaker size and switch function.
- DC is the left side of the panel with AC on the right.
- Toggle switch at top of DC panel section to read voltage from house battery 1, 2 or 3.



AC System:

- The main AC breaker is installed in the main electrical panel at the helm with all branch circuit breakers and voltage gauge. All breaker sizes and function are labelled.
- There is a rotary selector switch beside the main panel to turn off and/or select power source between shore power, inverter and generator (not equipped)
- AC outlets were tested using a UL Listed Circuit Tester.
- AC electrical outlet polarity was checked and found to be wired correctly.
- Appeared serviceable for intended use, where sighted.
- Vessel employs Blue Seas Systems, 30A AC ELCI (Electrical Leakage Circuit Interruption) Main Residual Current Circuit Breaker, (leakage trip amperage - 30 mA). ELCI provides overcurrent and leakage protection per ABYC E-11 for whole boat shore power protection.**



- Blue Seas panel, 30A, 120V shore power inlet with cord with blue LED indicator, port side of aft deck.

Generator:

Vessel is not equipped with a generator.

Inverter:

-Kisae SW 1220, true sine wave 2000 watt inverter demonstrated by powering microwave oven. Inverter connections are via rotary switch and inline fuse with activation switch at helm.



Comments and Recommendations:

None other than **A2**, as previously noted on page 19, systems demonstrated as new.

WATER SYSTEMS

Fresh Water:

- There is one 50 US gal** (189 litres) freshwater tank located centreline amidships (not sighted).
- Pressure is provided by a SPXFLOW 12V demand type pump with an in-line strainer.
- Fresh water piping is red & blue plastic PEX type (Cross-linked Polyethylene) tubing.
- The water level gauge at helm appeared serviceable.
- Water fill on transom.
- Water pump is serviceable.
- Fixtures are all single lever in head, shower and galley.

Hot Water:

- Six US gallon (23 litre) water heater, brand not sighted, 120 volt (A2 from page 19) with integral heat exchanger connected to engine with isolation valves.
- Water heater is relief valve protected.
- Water heater is serviceable.

Gray Water:

- Drains overboard via through hull fittings above waterline.
- Blue glass vessel sink in head. Head compartment doubles as shower stall.
- Single basin rectangular stainless-steel sink with wood cutting board cover in galley.

Black Water:

- Type III MSD Waste System (utilizes a holding tank or similar device that prevents the overboard discharge of treated or untreated sewage).
- Electric head with integrated macerator pump.
- Blackwater (sewage) holding tank with 30 US gal** (114 litre) capacity.
- Macerating type SPXFLOW 12V overboard discharge pump, and deck pump-out fitting. Powered up, not demonstrated.

Comments and Recommendations:

- The vessel's operator is responsible for determining what type of MSDs (marine sanitation devices) and allowable discharge, if any, are prohibited & permitted by law in the location of the vessel's intended use. Laws in the Pacific Northwest of the USA differ from Canadian law. See earlier note **(C5)** regarding locking off 'Y' Valve.

NAVIGATION EQUIPMENT & ELECTRONICS

Cockpit & Helm:

-Garmin 7612 XPSV, 12" Multi Functional Touch |Screen Navigation Display, with GPS Chartplotter, Sonar/Fishfinder, Radar overlay and 3-D charts and rear-view camera. Demonstrated.



-Garmin 18", 4 KW HDX radar. Demonstrated.

-Garmin autopilot with hand held remote. Demonstrated.



-Garmin multi-function display. Demonstrated showing autopilot heading (above).

OCEANIC YACHT SURVEYS

-Volvo EVC display. Demonstrated during sea trial at fast cruise (3610 rpm/16.3 kts) and WOT (3990 rpm/19.2 kts).



-Ritchie compass is backlit at night. Serviceable.

-Garmin VHF200 VHF radio with DSC button (A3). Serviceable.



-Fusion AM/FM stereo with Bluetooth, two (2) speakers. Powered up.

-Fold down 19" centerline TV/DVD with antennae for 'free over air' TV. TV display is also integrated with Garmin system. Demonstrated.



Comments and Recommendations:

-A3, register vessel for DSC (Digital Selective Calling) on cockpit VHF radio if not already completed. Complete an MMSI application form available from Industry Canada. Contact the Industry Canada District Office nearest you for more information.

- DO NOT TEST this Distress Alerting feature, there is no test feature, and in fact it is an offence under both the Canada Shipping Act and the Radio communication Act to send a false distress message.

SAFETY EQUIPMENT

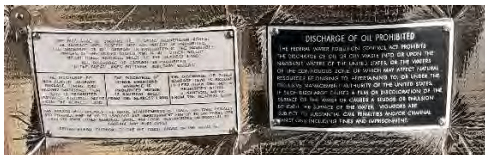
- Two (2) fire extinguishers onboard, one in on a shelf in the master berth and one on the floor in the quarter berth. Both were sealed with tags from the factory indicating neither had ever been used. Both are fully charged into the green area on gauges but no current annual inspection tags were observed, (A3). The white fire extinguisher is a 'K' type (Kitchen) and should be mounted in or within easy access of the galley. The red extinguisher is an 'ABC' type, multipurpose extinguisher and should be easily accessible near the engine compartment.



-Day/Night Visual Distress Signals and Gun sighted in quarter berth. An adequate number of current dated flares were observed.

-12V Electric Dual Trumpet Air Horn. Powered up.

-'No Oil Discharge' placard was found properly displayed in the engine room alongside 'Garbage Discard' placard.



-The engine/machinery space appeared to have adequate ventilation as built. Provided by a power blower in the engine compartment and by cowl vents.

-First Aid kit was observed onboard. Highly recommend renewal of any outdated medical supplies (B5).

-Fireboy Xintex Carbon Monoxide Detector. Test sounded.

-One (1) Bilge High Water Alarm. Test sounded.

-Two (2) 750 gph, 12V bilge pumps with automatic float switches and manual switches at helm, pumps powered up on manual switches.

-Helm is equipped with two (2) electric heated defogging units for windshield. Starboard side shown below. Demonstrated.



Comments and Recommendations:

-A4, fire extinguishers have mounts attached but are not mounted. Both extinguishers should be mounted and should have inspection tags.

-A5, an adequate number of life jackets should be readily available on the vessel, none were sighted.

-B2, recommend renewal of any outdated medical supplies.

IV. FINDINGS & RECOMMENDATIONS SUMMARY

DEFINITION OF CATEGORIES

'A' Category:

- Recommendation to correct an important, critical safety concern.
- To be completed prior to the vessel's next use.

'B' Category:

- Recommendation to correct a non-safety deficiency that may, as an example be either an issue that may affect the performance of the vessel or an issue that may negatively affect the value and/or insurability of the vessel over time.

'C' Category:

- Recommendation to correct an issue that may be considered minor or cosmetic in nature and should not affect the vessel's performance, usability or insurability.

'A' CATEGORY RECOMMENDATIONS

- A1**, as noted on pages 16 of the report, recommend installing hold down bar on propane tanks.
- A2**, as noted on page 19 of the report, recommend removing electrical tape from water heater electrical supply wiring, inspect connection for proper connection installation (as described earlier) and installing and supporting a permanent outer coating. Installation of a proper heat-shrink tubing outer layer, even if the remainder of the connection(s) have been installed to code, will require disassembly of the connection or the supply wiring at the heater. If not familiar with the required procedure, contact qualified personnel to have this done.
- A3**, as noted on page 38 of the report, the vessel's cockpit VHF radio DSC function should be registered with Industry Canada. Complete an MMSI application form available from Industry Canada. Contact the Industry Canada District Office nearest you for more information.
- A4**, as noted on page 40 of the report, fire extinguisher mounts should be properly fixed in place for fire extinguisher storage.
- A5**, as noted on page 40 of the report, no life jackets were sighted on board. An appropriate number of life jackets should be readily available on board prior to any voyage.

‘B’ CATEGORY RECOMMENDATIONS

- B1**, as noted on page 16 of the report, recommend checking internal anodes, if any, on the engine raw water side of cooling system and replacing if necessary.
- B2**, as noted on page 40 of the report, outdated medical supplies should be replaced.

‘C’ CATEGORY RECOMMENDATIONS

- C1**, as noted on page 16 of the report, recommend touching up worn edges on bottom paint next time vessel is lifted.
- C2**, as noted on page 16 of the report, recommend checking owner’s manual for location(s) of internal anodes on engine components (if any) and confirming if replacement is necessary.
- C3**, as noted on page 16 of the report, recommend spraying silicone or corrosion block spray on intake water strainer.
- C4**, as noted on page 16 of the report, recommend spraying silicone or corrosion block spray on shaft seal nut.
- C5**, as noted on page 16 of the report, recommend having padlock for ‘Y’ Valve available if voyaging into US waters.

V. RATING

CONDITION

Discussion and Rating:

It is the Surveyor's (in training) experience that develops an opinion of the OVERALL VESSEL RATING OF CONDITION, after the Survey has been completed and the findings have been organized in a logical manner.

The grading of condition developed by BUC RESEARCH is accepted in the marine industry for a vessel at the time of Survey.

The following is the accepted Marine Grading System of Condition:

"EXCELLENT (BRISTOL) CONDITION", is a vessel that is maintained in mint or bristol fashion (usually better than factory new, loaded with extras, a rarity).

"ABOVE AVERAGE CONDITION", has had above average care and is equipped with extra electrical and electronic gear.

"AVERAGE CONDITION", ready for sale requiring no additional work and normally equipped for her size.

"FAIR CONDITION", requires usual maintenance to prepare for sale.

"POOR CONDITION", substantial yard work required and devoid of extras.

"RESTORABLE CONDITION", enough of hull and engine exists to restore the boat to usable condition.

As a result of the Survey, as shown in the REPORT OF MARINE SURVEY & FINDINGS AND RECOMMENDATIONS sections of this report and by virtue of my (soon to be acquired) experience, my opinion is:

Bristol Condition

This vessel is in Excellent or Bristol condition. The vessel shows as new and even still smells as new. The vessel has, reportedly, never been slept on. The vessel has been owned by a conscientious owner just long enough to have any bugs remaining from the factory ironed out or eliminated. Every system works as intended and the vessel was well optioned from the factory. The vessel is only two years old with 54 hours of running,

leaving time on certain components factory warranty. Most notably, Volvo Penta warranty should be available until 2022.

Surveyor's Certificate

I certify that, to the best of my knowledge and belief:

The statements of fact contained in this report are true and correct.

The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased, professional analyses, opinions and conclusions.

I have no present interest in the vessel that is the subject of this report and I have no personal interest or bias with respect to the parties involved.

My compensation is not dependant upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result or the occurrence of a subsequent event.

I have made a personal inspection of the vessel that is the subject of this report.

This report is submitted without prejudice and for the benefit of the client only, as outlined in the Scope of Survey section beginning on page 3 of this Report and as outlined in the Term and Conditions of the Survey Contract, a copy of which is included in the Appendix of this Report.

M. M. (Murray) Kirzinger
(Signature)

APPENDIX

Marine Survey Contract (copy of signed original)

Date: [REDACTED] **Job reference** Ranger Tugs R-27

Client: [REDACTED]

Address:

Phone #: [REDACTED] **Cell #:** [REDACTED] **Email:** [REDACTED]

Vessel's Owner: [REDACTED]

Address: [REDACTED]

Vessel Location: Salt Spring Sailing Club Marina, Salt Spring Island, B.C.

Proposed Survey Location (1): Harbours End Shipyard, Salt Spring Island

Agreed Survey Date (2): [REDACTED], **Survey Type/Purpose (3):** Pre-Purchase

Year/Make/Model: 2017/Ranger Tugs/R-27t

Power X or Sail__, **Engine(s): # 1**, **Fuel: Gas__ or Diesel X** , **LOA (4):** 32 ft

Vessel Access Particulars: Owner and broker representative to meet at marina

Survey Report Requirements (5): e-mail on or before [REDACTED] [REDACTED]

Quoted Fee (6): [REDACTED] **(Acceptance of Contract on Last Page)**

Contract Information Notes:

- (1) Client is responsible for all arrangements and payment of vessel movement to, and haul-out at, the agreed survey location. Client's presence during the survey is recommended.
- (2) Cancelling of an accepted Contract within 15 days or less of the Agreed Survey Date is subject to a charge equal to 50% of the Quoted Fee.
- (3) Types of survey available include; Condition & Valuation, Pre-Purchase, Insurance, Damage, New Build or Incident Investigation. If not familiar with of survey types, specify reason survey is required.
- (4) Vessel LOA is a factor in the Quoted Fee. If stated LOA differs from manufacturer's published LOA, manufacturer's published LOA will be used.
- (5) Our standard reporting practice is to provide a report emailed to the Client in PDF format within 3 to 5 business days of the vessel survey date, providing the Quoted Fee has been paid. Notice is required of a report delivery deadline, if one exists. Hard copy of the report can be provided at a cost of \$35 per copy. The delivery will leave our office within 3 to 5 business days of the vessel survey date, providing the Quoted Fee has been paid. Other report publishing requirements and costs can be discussed and quoted separately.
- (6) Quoted Fee is valid for 30 days. Quoted fee is in Canadian Dollars and is exclusive of all taxes (GST/HST and where applicable PST). Quoted Fee is due and payable prior to commencement of the physical survey of the vessel. ***Survey Report will not be issued prior to receipt of payment.***

Terms and Conditions

The Survey Report provided as a result of this Contract is for the exclusive use of the Client identified in this Contract and cannot be duplicated or disseminated, in whole or in part without the written consent of Oceanic Yacht Surveys. The Survey Report is protected by Copyright, ©. Should any third party rely, under any circumstances, on the contents of the Survey Report there will be no liability offered or expressed by Oceanic Yacht Surveys.

The survey will be conducted in accordance with generally accepted marine standards and criteria utilized in the marine surveying industry.

Oceanic Yacht Surveys or any of its employees or agents shall have no liability for consequential damages, no liability for personal injury damages, no liability for property loss damages, no liability for punitive damages, all of which shall be deemed to have been knowingly and voluntarily waived upon use of the survey report.

In no event shall the legal liability of Oceanic Yacht Surveys or any of its employees or agents exceed the fee paid for this Survey Report, regardless of claims or suits and regardless of whether under theory of tort, contract, products liability, admiralty, or otherwise.

The standards presented by Transport Canada in notice TP1332E (04/2010), '*Construction Standards for Small Vessels*', will be used as guidelines while conducting the survey.

The vessel should be prepared for survey by unlocking all compartments, unfastening all covers and removing all stores and excess equipment. Surveyor will not unfasten any covers. Locked compartments will not be inspected.

Terms and Conditions (continued)

Machinery and equipment, including engines may be inspected while operating only when Client, Owner or Owner's representative is available to operate. Where an opinion on the internal condition of the engine(s) is required, engaging a qualified marine mechanic is recommended.

No destructive testing will be performed unless by written request of the Owner.

Sailing vessel rigging and spars will be inspected from deck level only. Working sails will be inspected during a sea trial from deck level only. Furled or bagged sails will not be inspected unless separate arrangements are made. Additional, more detailed inspection by a qualified rigger or sail maker may be recommended.

Determining the inherent stability characteristics of a vessel is outside of the normal scope the Survey Report being provided under this Contract.

The Survey Report being provided under this Contract is not to be considered as any type of warranty, either expressed or implied and will not in any fashion express or provide any type of guarantee of the future condition or value of the vessel.

The Survey will include a thorough visual examination of the hull, machinery, systems, hardware, equipment and, rigging. The resulting Survey Report will contain a comprehensive description of the vessel and its systems, with photographs and will include a listing of '**Findings and Recommendations**' required for correction to reasonably ensure that the vessel is fit for its intended service. When required based on the type of survey provided, a statement of the vessel's '**Fair Market Value**' will also be included. The contents of the Survey Report represent findings at the time of Survey and are provided in good faith, without prejudice.

The Quoted Fee is for service provided up to and including the delivery of the Survey Report. Delivery of the Survey Report to the Client represents the completion of this Contract. Minor clarifications of the Survey Report contents may be provided upon request at no additional charge within 5 business days of the Client receiving the Survey Report. Any other additional services can be provided for an additional fee at industry standard rates.

If the Client wishes to terminate the Survey prior to completion of the physical survey due to unsatisfactory findings, the Contract can be terminated at that point upon payment equal to 60% of the Quoted Fee and no Survey Report will be issued.

The parties agree that in the event of a dispute arising from the terms of this Contract or from the survey resulting from this agreement, that the parties shall submit themselves and their dispute to binding arbitration to be conducted by an arbitrator selected by the parties. In the event the parties are unable to agree upon such selection, then each party shall select an arbitrator and those two arbitrators shall select a third arbitrator. Any person who is not a member of the International Institute of Marine Surveyors shall be disqualified to serve as an arbitrator. The cost of arbitration shall be borne between the parties as determined by the arbitrator(s) in its (their) sole discretion.

Any legal matters arising as a result of this Contract will be addressed in and according to the laws of British Columbia, Canada.

Terms and Conditions (continued)

By signing below the Client acknowledges that the Client has read, understands and agrees to the Survey Contract, the Contract Information Notes and the Terms and Conditions as presented above.

Client's Signature: _____ Date: _____

Printed Name: ██████████