Vancouver November 23, 2016.

Pre-purchase survey report, 'xyz' 2001 Navigator 61.



Discovery Marine Surveys® November 23, 2016 DISCOVERYMARINESURVEYS.COM 604 318-1402 Vancouver, B.C Canada

Document version: v.6a

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Discovery Marine Surveys report no. 2016-113a. Report prepared for: Mr. John Doe	Vancouver November 23, 2016.
Fair market value	

MARINE GRADING SYSTEM OF CONDITION	

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Report Number

2016-113a Date of Survey November 16, 2016 Commissioned by Mr. Address E-mail Telephone Vessel condition (summary)

The vessel is in: Average condition.



Published specifications

Length Overall	61'6"
Beam	
Draft	
Weight	66,000lb
Headroom	6'5"
Fuel	800 gals.
Water	200 gals.
Waste	70 gals.
Hull Type	Modified-V
Deadrise Aft	15°

Engines (Port and Starboard): Engine Brand: Volvo Year Built: 2001 Engine Model: D12 Engine Type: Inboard Engine/Fuel Type: Diesel Engine Power: 675 HP Cruise at 18 knots WOT at low 20 knots

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General information

Vessel

Manufacturer/modelNavigator 61 Name of Vessel: Model year: 2001 Date of mfg.: 2001

Licence

BC

Note, at present time the vessel is not marked with the licence number on port and starboard bow. The licence is also issued to a H.I.N. that is incorrect (86456). The broker at M&P who has the listing for this vessel has confirmed the correction should be completed by him before the end of this week, November 25, 2016.



HIN/MIC

NVY111111

Located on starboard transom under the swim platform.

Survey site

Vessel inspected at:	Bayshore West ramp Vancouver BC &
-	Mosquito Creek Marina North Vancouver BC.
Vessel observed:	In slings and at dock.
Weather was:	17 C raining
Survey times:	09:00- 15:30hr.
The client attended:	yes
Client's broker attended:	yes.
Seller attended:	no
Seller's broker attended:	partially

Scope of survey

The purpose of this inspection and survey report, requested by and created for Mr. xxxxxx is to determine insofar as possible within the limitations of visual and physical accessibility, through non-invasive and non-destructive means, the vessel's condition at time of survey by reporting deficiencies against the standards quoted in the "comments" section of this report and to present the surveyor's personal opinion as to the vessel's condition. This type of survey is also known <u>Pre-purchase survey</u>. Certain parts of the structure, systems and equipment are inaccessible without removing decks, tanks, bulkheads and headliners etc. or in the case of cored structure, drilling core samples. This is not within the scope of this survey. Coatings build up, corrosion, marine growth, excessive gear on board or dirt may have hampered the surveyor's ability to inspect. Thick layers of anti-fouling paint may inhibit bottom inspection and therefore destructive testing is offered at additional cost.

Be advised that moisture meter readings and percussive soundings on frozen structure are not reliable and that if a survey must be conducted under these conditions the soundings and meter readings should be re-done at thaw. It should be noted that moisture meter readings are relative and these meters are affected by many factors other than moisture and that percussive sounding interpretations are subjective.

Components requiring access with tools or by disassembly are not inspected. A vessel's systems and component parts have a limited useful life and are subject to deterioration over time. Some conditions affecting useful life include original material specifications, fabrication techniques, environmental exposure and history of use. These systems and component parts often give no readily detectable external indication of deterioration or failure. Cosmetic or comfort issues may be addressed where there is a significant effect on the value of the vessel. Electronic and electrical equipment may be tested by powering up, only when power is already connected. A complete analysis of the vessels electrical systems would require the services of a qualified marine electrician. Only the external visual condition of wiring, connections and panels is reported. The surveyor recommends that a qualified marine mechanic inspect all engines, generators, V-drives, transmissions, sail-drives and or stern drives regularly. Loose gear and accessories are neither inventoried nor inspected. This survey is an opinion of the surveyor based on his knowledge, experience and following the ABYC standards, NFDA standards and the SAMS code of ethics. Within these parameters the surveyor will report on the hull, deck, vessel systems, running gear, cosmetic condition and provide a valuation based on the foregoing. This is surveyor cannot predict how the vessel or its systems will perform over time and therefore this report is valid only at time of survey. The surveyor has made neither weight calculations nor measurements. All dimensions and weights are from published specifications such as original brochures, the PowerBoat Guide, Mauch's Sailboat Guides, manufacturers or owners association web sites. Survey fees are based on such published L.O.A.

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Survey report

Structural components

General

All structural components that were inspected appear to be in serviceable condition

Hull

The hull is fibreglass. The hull is supported by a system of longitudinal stringers and transverse partial bulkheads. Visual inspection did not indicate any damage or repair to the hull. The keel, chine and stringers were tapped with a 12oz phenolic hammer where possible and returned clear crisp sound. All thru-hulls below the water line was tapped with a 12oz phenolic hammer

all appears secure with no signs of separation or leakage. A few of the plastic thruhulls at the water line squirted when tapped two at the bow on port and starboard are damaged, the 'mushroom head' are broken, all plastic thru-hulls deteriorate over time due to UV rays and salt water some of the plastic thru-hulls are fractured. The anti-fouling on the hull bottom appears in serviceable condition. **See comment B1.**

Structural changes

No structural changes were noticed.

Deck to hull joint

Deck to hull joint was inspected, where visible the joint appears in serviceable condition, no cracks, separation or sign of damage was noticed, and no signs of water intrusion were noticed. There is limited access to inspect the hull and the joint from inside the vessel due to panelling, cabinets etc.

Topsides

Topsides were visually inspected, no cracks or damage to the surface were found. No damage or sign of repairs at the bow. No hull deformation was noticed. No discolouration of the gel-coat, no scratches or 'nicks' or spider cracks in the gel-coat were noticed, above average condition. All port openings appear to be in serviceable condition, no separation from the topsides the chrome trims are in serviceable condition. Engine Vents appear in serviceable condition.









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Transom

The transom has an integrated swim platform in serviceable condition. The access gates are port and starboard, the hinges appear to be in serviceable condition, the pivoting bolt lock is secure the finish is in average condition. Cleats on port and starboard appear in serviceable condition, some stress hairline cracks were noticed on port side. A diver anode is located on centreline under the swim platform, approximately 20% depleted the anode has a layer of white soft material indicating that it might not be fully active. Trim tab anodes appear in serviceable condition. Two trim tabs are installed and secure, the Bennett type actuators are secure and the hoses appear in serviceable condition. The attachment points between the tabs and the actuators appear secure and in serviceable condition. The fluid canister located under the aft deck have proper amount of fluid, all connection appear dry. Exhaust tubes were visually inspected and the joints from tube to hose appear in serviceable condition no hairline cracks in the hoses were noticed. A re-boarding ladder, deployable from the water is not installed. Three underwater LED lights are

secure under the swim platform. The transom has a washdown station on port side in serviceable condition. The Transom has some storage space the emergency engine shut downs are located in that compartment. Port side has a fitting to plug-in to shore pressure water. **See comment B2, C1.**



Aft deck

A staircase to the fly bridge is to starboard. Large sliding glass doors provide access to the main cabin, the door functioned as expected with no damage to the glass, the frame or the track noticed. The aft deck has one hatch to provide access to the standing headroom engine room. The hatch has flush latch and hinges a hydraulic piston holds the hatch in the open position functioned as expected. The area was clean and dry. Some small hairline crack on the gunwale was noticed with a gelcoat repair the colour match is unfortunate on that repair. The sliding hatch to access the fly bridge was difficult to operate and growth of some sort was noticed on the track. The enclosure that separates the dingy storage area from the fly bridge does not appear to allow someone opening the enclosure from the dingy storage area side. **See comment C2.**



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Foredeck and cabin-top

Bow roller on bowsprit with electric windlass. Hatch appears in serviceable condition, some signs of leaks were noticed from the forward cabin. Cleats are secure, the stainless steel pulpit and stanchions appear secure no cracks were noticed in the gel-coat. The gel-coat and non-skid are in above average condition. Moisture metre readings with an Electrophysics GRP200 moisture meter, could not be taken due inclement weather. The deck did not appear to flex under weight of the surveyor. The side deck appears in serviceable condition. The windscreen glass panels have rubber seals in above average condition, the frame for the pilot house are in above average condition. The windscreen wipers operated properly. Wash down locker located at the bow appears in serviceable condition. Windscreen 'Lexan' type glass panels for the fly bridge appear in serviceable condition.



Flybridge

Access is from a staircase in the pilot house and from a stair case on the aftdeck. These appear secure and in serviceable condition, a large hatch gives access to the flybridge area from the pilot house. A large sitting area and the helm, with full instrumentation appear in serviceable condition. The sitting area doubles as storage space. The cushions are made with foam covered with a simile leather material in above average condition. No crazing on the splash guard windscreen was noticed. All courtesy lights appear in serviceable condition. The helm operates the rudders, throttle and transmission. Instruments are in working order rpm does indicate the same information from the main helm. The area has a Sunbrella type bimini in above average condition, the frames are stainless steel and appear secure, no stress cracks were noticed at the attachment points. A small bar area is located to starboard with bar fridge in serviceable condition a bar sink with cold pressure water in serviceable condition a hot plate is reported in serviceable condition. A R.I.B. dingy with outboard is secure on the aft section with an electric Brower davit, both are reported in serviceable condition but were not tested. The cover of the dingy is in poor condition. The dingy was not part of the survey and the information is provided as courtesy. See comment C4.



Interior

General comment

The interior is appointed with wood paneling and carpeting. All light fixtures and accessories appear to be original equipment or thoughtful addition.

Main cabin

Access to the cabin is via sliding doors from the aft-deck, the door and track are in serviceable condition. Immediately to port is a sitting area with leather sofa. The cabin sole is composed of carpet in average condition. Forward is the galley area, and then the pilot house, a corkscrew staircase to starboard lead to the forward sleeping quarters. Sliding in serviceable condition to starboard than access to fly bridge, staircase down to Master cabin and back to main cabin area with two leather chair facing the sofa flat screen TV is aft to starboard. All

equipment powered up but no signal for the TV. Panoramic windows are in serviceable condition with no corrosion on the frames. Wood paneling is in above average condition, leather covered ceiling and accents are in above average condition.

Galley

This is a 'U' shape galley-up with the galley at same level as pilot house has no signs of water damage around the panoramic windows. Double stainless steel sink is in serviceable condition. A full size fridge and freezer and a Princess electric stove powered-up and are in serviceable condition. Cabinets, Corinthian counter top, drawers and plumbing under the sink appear in serviceable condition. The hoses are clean and flexible. Garbage compactor was not tested.

Wooden floor in the galley is in average condition. A wire is not properly retired under the sink this should be attended to.

Pilot house

Helm station with full instrumentation all in serviceable condition with additional electronic equipment thoughtfully added. During the transit between marina and the yard for haul-out all instruments and controls operated as expected from the main helm. Controls from the fly bridge were observed and appear in serviceable condition. The fog horn did not work. First mate sitting area to port is 'L' shape with a small table in above average condition. Sliding doors on starboard operated easily and appear in serviceable condition. All linkages to the rudders system appear in serviceable condition with no leakage, flexible hoses, no play in the steering arms. Electric adjustable seat at the main helm function as expected. The wheel helm is encased in a custom wooden box some of the components have come un-glued. Light corrosion on the chrome

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was noticed. See comment C5.

Sleeping quarters

Access to the forward sleeping quarters is via a corkscrew staircase to starboard in the pilot house. Slight wood panel separation was noticed in the staircase. A small blemish in the wood at the bottom of the lower stair was noticed. Access to the Master cabin is via a staircase in the main

cabin. Some of the doors are 'sticky' possibly due to high humidity level. **See comment C5.**

Main guest cabin

The forward cabin has a queen size island type bed. Hanging lockers are clean with cedar panelling, in above average condition. All drawers operated properly with no sticking or signs of movement. Under the mattress the area that was accessible was clean and dry, no water was found in the bilge, limited access for inspection in that area. Port openings appear in serviceable condition, no signs of corrosion or water ingress around the frame of the hatches was noticed with the exception of one small sign of corrosion on one of the eye shape port. A door to port gives access to the head with separate shower, sink and head. A panel under the mattress provides access to the hull and the bow-thruster, the area was clean and dry. A panel at the head of the bed can be lifted to access the chain locker. Some water damage was noticed behind the door, this appears to be and older

condition during the survey the area remained dry. A small flat panel TV powered-up and is located to port the installation prevents one of the cabinet's doors from opening.

See comment C5.







Guest cabin

Small guest cabin with two bunk beds to port, aft of the main guest cabin, with apparently storage compartments under the lower bunk it was not possible to access that area, the cabin and the closet space was clean and dry.

Laundry

A washing machine and a dryer are located between the head and the guest cabin, powered-up and reported in serviceable condition. The back of the unit show signs of corrosion, the hoses are older and stiff.

Master cabin

Access from the main cabin the Master cabin occupies the mid-ship area of the vessel this would make it the most stable and comfortable area on the vessel. Large king size bed on centre-line access under the mattress was not possible all closet spaces were clean and dry. A vanity is to starboard and a full large private head is available. All wood paneling and carpets are in above average condition for a vessel this age. Flat screen TV powered-up.

Heating system

The AC could not be tested due to weather the system was tested for heat and functioned as expected. All pumps, compressors and ducks that could be sighted appear in serviceable condition.

Sanitation

Two heads are located in the sleeping quarter area. The heads are Vacuflush type with some water in the bowl and operated as expected vacuflush systems are constantly under vacuum condition. The forward head has a separate shower and sink with counter space in serviceable condition, was leak at the seal of the head was noticed. The master head has a separate larger shower, large Corinthian counter space and sink all in above average condition. Lots of mirror including a

ceiling mirror give an impression of a large space. All faucets and lighting fixture appear in serviceable condition. The showers appear to use sump boxes with pumps for drainage these were not accessible. An access panel opposite the guest cabin gives access to the two vacuum pumps of the sanitation system. The waste water holding tank was not accessible it is believed to be located on centreline under the cabin sole aft of the Main guest. A Sealand SaniGuard filter is installed no date or markings was found on the unit.

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Potable water

No leaks or sign of leaks were noticed under the galley sink or the head sinks. All hoses that were sighted appear in serviceable condition. System appears in serviceable condition. The water tank is not accessible located on starboard side a small section of it was visible, no leak or signs of leak was noticed. The filtration system is located in the engine room, no leaks was noticed. The filters will need replacement and the system should be flushed.

Water maker

Offshore Marine water maker is installed in the engine room appear in serviceable condition. The system could not be tested.

See comment C6.

Water heater

Located in the engine room, the unit appears in average condition no signs of corrosion were noticed. The tank is secure with brackets, the wiring is in serviceable condition and supported. All hoses appear in serviceable condition. Raritan model 172001, 20g.

Propulsion system

A separate mechanical inspection has being performed by: Please refer to the mechanical inspection report for details on the propulsion system condition.

Engine room

The engine room is accessible from lifting a panel on the aft deck. The room is clean and well lit. Large 'dock boxes' are install forward in the engine room and prevent opening two inspection hatches.

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Engines

Volvo D12 675 diesel. The serial numbers could not be viewed.

Port	682hr

Starboard 678hr

The engines were clean no signs of leaks on the oil

absorbing pads. No sign of over heating on the exhaust manifolds. The belt tensions could not be inspected due to protective grill. Oil was at proper level. ZF transmissions have minimal amounts of corrosion on the units. No signs of leaks were noticed in the bilge or on the transmissions. The transmissions engaged and operated as expected. The shaft couplings have slight surface corrosion. Oil was clean and at proper level. The oil filter on the port side transmission had the following marking '5-14-2012'.

See comment C7.

Strainers

Some debris in the strainers was noticed. Some vert-de-gris at the hose attachments some white powder (anhydrous copper sulphate) was noticed. **See comment C8.**

Fuel system

Equipped with Racor filters for each engine and generator, the filters' membranes were relatively clean the fuel was clear. The filters are secure and located in the engine room. There was debris in the bowls of all filters. The hoses are flexible with no signs of micro cracks or other damage the fittings show no signs of leaks or corrosions.

Two aluminium fuel tanks appear in serviceable condition, light surface rust was noticed.

Engine mounts

Engine mounts are original Volvo and appear in serviceable condition, they mounted on the strigners, no cracks or damage to the mounts the rubber isolators or the frp supports were noticed. No corrosion was noticed. The stringers around the engines were tapped with a 12oz phelonic hammer and returned clear crisp sound, they were also tested with an Electrophysics GRP200 moisture meter, the readings were low.

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Ventilation

Original system with blowers appears in serviceable condition, blowers powered up.

Cooling system

Original equipment, all hoses that were sighted appear in serviceable condition and were flexible, no cracks were noticed.

Exhaust system

Original exhaust hoses appear in serviceable condition, the clamps show small signs of corrosion. Fibreglass section appears in serviceable condition with no cracks or signs of stress. There is no evidence of corrosion or signs of overheating at the exhaust manifolds.

Alternator and regulator

These are original equipment and showed as charging while the engines were running.

Fire suppression

The vessel does not appear to have a fire suppression system in the engine room. **See comment B3.**

Propeller, shaft, struts

The propellers show no signs of dezincification, they have no dings or apparent hairline cracks at the tip of the blades or the root. The propeller shafts appear true with no signs of corrosion or pitting, the shafts enter the stern tube on centre, the cutlass bearings appear to be wearing

evenly. The shafts were easy to turn over, The struts are painted with antifouling, appear secure with no signs of stress or cracks at the hull. The stern tube areas were dry before and after the sea trial. The nuts are installed in reverse. **See comment C9.**

Ground tackle

Windlass

Muir electric windlass in working order, the wiring appears to be proper with boots over the terminal. The casing shows no signs of corrosion. The controls at the bow operated the windlass.





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Anchor(s) & rode

Anchor is a steel Delta type. The rode chain with a length of anchor line secured to the anchor with a stainless steel swivel shackle. The chain appears in serviceable condition. The shackle between the chain and anchor line could not be inspected. The bitter end of the rode should be secure to a strong point on the vessel. The anchor appears adequate for a vessel this size. The length of rode could not be estimated. See comment C10.

Bow thrusters

The installation is professional the area of the bilge is clean. Electrical wires are supported. The motor has what appears to be properly sized cabling supported along their way. Boots were at most connectors. The blades appear in serviceable condition but have some damage at the tip. The anodes are in serviceable condition. The bow thrusters should have a kill switch in case of emergency this was not confirmed by the surveyor. The thrusters operated as expected.

Stern thrusters

Side thrusters, the installation is professional the area of the bilge is clean has what appears to be properly sized cabling supported along their way. Electrical wires are supported. The motor has what appears to be properly sized cabling supported along their way. The blades appear in serviceable condition but have

some damage at the tip. The anodes are in serviceable condition. The thrusters operated as expected.

AC electrical system

AC panel

AC panel is original equipment 120/220VAC The gensets switch is on the side of that panel. All breakers that were turned on and off operated as expected with no breaker tripping. The wiring for the panel is not accessible the panel was clean and appears in above average condition. All breakers were monitored with a Fluke 561 IR thermometer, all breakers remained within proper operating temperature

(within 15 degrees of ambient temperature). The panel should have a label indicating that the circuit might be energized even if shore power is disconnected due to the inverter. See comment B5.













AC shore connection

50A shore connections located on starboard aft of the pilot house. The shore connectors show no signs of corrosion, shorts or arching. The 50A shore power cable shows no signs of ageing. The shore cable was clamped with a Fluke 376 true RMS and showed some signs of current leak or fluctuation. The shore cable is activated by a furling cable master.

G.F.C.I.

GFCI outlet was found in the vessel, one GFCI outlet per circuit. The test button tripped and reset as expected.

Other Outlets

Other outlets throughout the boat that were sighted appear in serviceable condition.

Bonding wire

The vessel has a bonding system installed. The wire was not followed throughout the vessel, all fittings appear to be bonded.

Battery charger

Multiple battery chargers are used for the different battery banks all appeared to be in serviceable condition. They are not labelled to identify which battery bank they are servicing.

Generator

Kholer 20kw (2036.3hr.) is starboard side in a sound proof box. The box shows minimum signs of corrosion. The generator was dirty with diesel soot, some corrosion was noticed. That unit was started and generated 110V. The drip pan has some rust. The impeller does not appear to have been inspected or change recently paint covers the nut heads with not a scratch on them. The belts appear loose and older. All hoses were flexible when squeezed.

DC electrical system

DC panel

The DC panel is original equipment shared with AC panel, appears in serviceable condition. The back of this panel is not accessible. No signs of corrosion or heating were noticed. All breakers were monitored with a Fluke 561 IR thermometer; all breakers remained within proper operating temperature (within 15 degrees of ambient temperature).

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Ship's batteries

Multiple batteries banks are serviced by the battery chargers and the alternators. The house battery comprises of Davidson 8D 12VDC deep cycle batteries. Three pairs of 6VDC Interstate lead acid in series to provide 12VDC service the inverter. The one of the six volts battery has it cap removed and the battery vented inside the wooden box, this is battery acid and should be handled with caution, some of the cabling exposed to the acid show signs of corrosion. This battery bank should be tested after being cleaned, remember the batteries will adjust to the weakest battery in the bank. The wire connections are made using proper nuts or wing nuts. The batteries are in wood box or battery boxes with covers and the boxes are not secure, this would not meet ABYC standards. There are no boots over the battery post. Battery switches are located in the engine room original equipment and appear in serviceable condition. Starting batteries are 8D type.



The vessel is equipped with an inverter that was not tested. The inverter battery bank should be inspected, cleaned and repaired before testing the inverter to prevent possible damage to the batteries.

Electronic, Navigational Equipment

Engine controls

The engine controls are original at the main helm and on the flybridge, control worked as expected.

Rudder controls

Hynautic type hydraulic system, no signs of leaks were noticed. The controlling arms are secure. The rudder posts and mounts appear secure, no cracks or signs of damage on the rudder posts that could be inspected.

Stabilzer

The vessel is equipped with Wesmar stabilization system the system powered-up but due to calm sea in the harbour it was not possible to fully test the unit. The foils appear in serviceable condition with no movement at the shafts.









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Navigation Lights

Navigation lights, located port starboard and stern, and the anchor light appear in working order.

Electronics

All units and their repeaters on the fly bridge powered-up and appeared in working order.

Sea connections

Bilge & bilge pumps

All bilges were relatively dry. A high water alarm was not found on this vessel, this should be confirmed. All pumps appear to be in serviceable condition. Bilge pumps should be wired to be readily available in any situation. The bilge pumps that were sighted are in working condition. The exact capacity could not be read due to marking fading with time. Ensure that limber-holes are always clear of debris so water that reach the closest bilge pump. **See comment C11.**

Thru-hulls and seacocks

Some seacocks were difficult to work. **See comment C12.**

Safety equipment

Safety equipment that is not integral to the vessel or permanently installed has not been inventoried or inspected by the surveyor. The Transport Canada "Safe Boating Guide" TP5111E, should be consulted for requirements specific to the vessel.

The vessel should comply with the regulations for the area in which it is intended to be used. Fire extinguishers that were sighted are due for inspection. Some life vests were sighted. Carbon monoxide detectors were noticed and appear in working order. Flares are expired. The liferaft located on the fly bridge is due for inspection **See comment B5.**











Comments

Comments based on a specific authority are cited as such. Other comments are based on the opinion of the surveyor as being of "good marine practice".

A: Issues in need of immediate attention.

n/a

B: Issues that may enhance safety and/or value of vessel.

B1. Bronze thru-hulls and other bronze underwater fittings should not remain painted with anti-fouling. The anti-fouling paint contains copper and other biocide, we now have copper and bronze in contact, when we immerse them in water (an electrolyte) we have an anode and a cathode and possibility of galvanic corrosion has been introduced, it is minuscule but why not avoid it. Replace thru-hulls at the water line that are damaged and monitor all thru-hulls at the waterline, bronze thru-hull fitted with seacocks are the preferred method of replacement. The only reason this is not a 'B' recommendation is due to the fact the broker agreed to have these replaced before a sales is concluded.

B2. The underwater LEDs were tested only the port side is working. Anodes should be inspected regularly and replaced as necessary the anodes currently used are zincs adequate for salt water. The galvanic connection between the anodes and the part they are protecting should be inspected, the metal to metal connection should be cleaned to insure proper conductivity. A re-boarding ladder deployable from the water should be installed (in can be installed under the swim platform) this is an ABYC requirement.

ABYC standards H41 section 9.1 state:

Means of unassisted reboarding shall be provided on all boats, and must be accessible to, or deployable by the person in the water.

41.9.2 Reboarding ladders mounted on the stern of boats shall be installed as far as practicable from the propeller(s).

41.9.3 The top surface of the lowest step of a reboarding ladder, if installed to meet the requirement of this standard, shall be at least 12 inches (304.8 mm) below the waterline with the boat in the static floating position.

41.9.5 The strength of a reboarding means, and its attachment to the boat, shall comply with H-41.8.2.

B3. A fire suppression system is the better solution should be considered. At the minimum ABYC standards A4, section 4.5.2.2 state:

A single suitably sized clean agent portable fire extinguisher provided and installed in proximity to a port to permit discharge directly into the engine compartment without opening the primary access. (See Table IV for determination of the minimum portable clean agent fire extinguisher size for this usage.)... 'is acceptable'.

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B4. The use of wing-nuts is prohibited with wire this size carrying that much amperage, four wires on one terminal is the maximum permitted, a better arrangement would be the use of a bus bars where applicable. Boots should be over the terminals to prevent possible dead short if a spanner or other tool is dropped on a battery. Again please refer to ABYC E-11AC and DC electrical systems on boats.

E-11 (partial):

10.7.7 To prevent accidental contact of the ungrounded battery connection to ground, each battery shall be protected so that metallic objects cannot come into contact with the ungrounded battery terminal and uninsulated cell straps. This may be accomplished by means such as:

10.7.7.1 Covering the ungrounded battery terminal with a boot or non-conductive shield, or

10.7.7.2 Installing the battery in a covered battery box, or

10.7.7.3 Installing the battery in a compartment specially designed only for the battery(s).

10.8.3 Battery cables and other conductors size 6 AWG (13.3 mm²) and larger shall not be connected to the battery with wing nuts.

10.8.4 Multiple conductors connected to a battery shall be installed with the highest ampacity conductor terminal closest to the battery, followed by successively smaller ampacity conductor terminals.

10.8.4.1 A maximum of four conductor terminals shall be permitted to be installed on a single battery stud.

NOTE: Terminal insulation or battery covers do not provide compliance with this requirement since, during installation or removal of a battery, these protective devices are usually removed in order to connect the cables.

B5. The boat should be compliant with CCG and TC TP511E, these are minimum requirements for flares, horn, lifejackets, etc. The vessel should be compliant with the regulations for the water in which it will operate. Labels requirement in the USA is slightly different then in Canada. A label should be affixed at the AC / DC panel indicating that an inverter might be energizing the vessel, this is an ABYC requirement and a USCG requirement.

C: Offered for information or suggested as maintenance or upgrades.

C1. The cracks in the gelcoat should be opened and new gelcoat should be applied. Try colour matching in a less obvious location first.

C2. Shore pressure water fittings have fallen out of fashion for the very good reason that if the boat water system is pressurized by the shore water supply the water pressure is usually much higher than under the ship's system, in the event of the failure of a component of the vessel's water system the vessel will be filled with an endless supply of fresh, potable water. If the fitting is to be used at all make certain that the latest safest automatic shutoff system is installed and never leave the vessel unattended with the shore water pressure valve at the dock in the open position.



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C3. The gel-coat on the cabin top and other non-walking areas could be polished with a cutpaste like 3M finesse or other similar product, two or three coats of hard wax could be applied for UV protection and a few coats of liquid wax could then be applied for shine and as sacrificial coats. This enhances the beauty of the vessel but also protects the gel-coat from oxidization. The leak from the 'Bomar' type hatch should be investigated further and the situation remedied.

C4. The sliding hatch from the aft staircase is difficult to operate this should be investigated further and adjusted to operate properly. It does not appear to be possible to operate the zippers of the 'Sunbrella enclosure from outside the enclosure. The bar fridge has moulds on the seal area and will need to be cleaned.

C5. The wheel helm custom box should be clamped, re-glued and revarnished. The chrome could be cleaned with product like 'Never Dull' this to prevent pitting and the need for re-finishing. These two conditions are likely due to the boat not being used and humidity level getting high in the vessel. It is the opinion of your surveyor that the vessel should go through a period of time with heathers/ air conditioning and possible dehumidifier running to dry the wood paneling and accessories as well as carpeting and furniture.

C6. Water maker contain filtration membrane if the water maker is not used these filter can get clog attempting to test the system with a clogged filter can burn the pump. The filter should be replaced and the system tested. It is good practice from time to time to clean and sanitize the water tanks and cold and hot water systems. The systems must first be emptied, cleaned or rinse thoroughly and finally sanitized, this can be done using Sodium metabisulphite or potassium metabisulphite that can usually be bought at home making wine and beer stores it usually comes in the form of a pink powder. Mix the powder with water according to directions pour into the water system, fill-up the system and tanks with water open the taps for a few seconds so the mixtures flows through all the pipes and then rinse, the system is now clean of all possible bacteria.

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C7. It is good marine practice to write the date and engine hrs directly on the oil filters. Routine maintenance should be performed as per Volvo recommendations. Oil in a diesel engine if mixed with diesel fuel creates toxic acidic substance that eats the metal in the engine. Diesel engine oil has more additives per volume, the most prevalent are over base detergent additives. This additive has several jobs, but the main ones are to neutralize acids and clean. 'Dirty' oil also has small abrasive particles in suspension in the oil, these particles literally act like sand-paper inside your engine. Finally 'dirty' oil has moisture in it and forms sludge at the bottom of the engine crankcase. Only use oil specified for diesel engines and meeting the Volvo recommendations, look for the API (American Petroleum Institute) doughnut logo on the bottle. In the top section of this doughnut will be a service designation. This designation will either start with an "S" (spark ignition) for gasoline engines or a "C" (compression ignition) for diesel engines. I suggest that the impeller be checked every year and if possible replaced at the same time since they do dry-up, keeping a replacement onboard is also a good marine practice. Marking the oil filters with the date of the oil change is good marine practice. Using an oil absorbent mat under the engines, collect any fluid dripping and give an indication of location and type of fluid leaking they absorbs oils, fuels and petroleum-based products but repels water. A starting alarm is recommended, the surveyor does not recall one being installed, the duration of the alarm also serves as a wait time when glow plugs are used.

C8. The fitting should be cleaned and the fitting could be brushed with some diluted baking soda, the soda will neutralize the acidity.

C9. Remember, 'there are two nuts holding the propeller on the shaft: A full-height nut and half-height locknut. Which nut goes directly against the propeller hub? Most boats have it wrong, with the full-height nut against the prop. It seems intuitive that the larger nut against the prop would be doing most of the work and that the smaller nut should go on second. In fact, the smaller nut should always go against the load. This is because when the second, outer nut is tightened down, it compresses and deforms the lower nut a tiny bit, and rotates the lower nut a fraction of a turn. This effectively unloads the threads of the lower nut and engages the threads of the upper nut. Thus the top or outer nut actually takes all the load. You can search an illustration from Engineering Drawing and Design (by Jensen/Helsel, McGraw Hill, 1985) that shows how this is standard practice for all lock nuts; and an illustration from SAE standard J756 and J755, for propeller shafts, which clearly shows the half-height nut against the hub. If you go to any marina with the boats hauled in winter, 99% of the prop nuts will be on the wrong way. I wouldn't worry too much about the nuts being on backwards. It has proven sufficient, but you might as well put them on correctly next time you install a prop. Dave Gerr". The struts have been painted with antifouling, it is the opinion of your surveyor that they should not be painted unless a coat of paint is first apply to separate the antifouling paint that contain copper from entering in contact with the bronze struts, when immerse in water (an electrolyte) this created a possible electrical currant, the paint also prevent inspection for dezincification of the bronze.

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C10. Confirm that the bitter end of the rode is secure to what can be considered a strong point on the vessel. The shackle should be moused with proper seizing wires.

C11. 'The most common mistake in wiring pumps is to wire them after the shutoff switch"... the FRCS guideline is to wire the pump-circuits and any alarm circuit to the "battery-side" of a battery-switch (as to avoid the bilge-pump circuit from being disconnected ...as one shuts off the battery switch). The circuit to the automatic switch should remain active regardless... even when the battery switches are turned off (most quality vessels are wired in this manner). This can easily be accomplished by a dedicated power-supply coming from either the battery-side of the main battery distribution switch and/or separate buss for just those items (alarms & bilge-pumps) providing them with circuit protection at the source and then for each device (providing separate bilge-pump switches, with their own circuit protection. The small bilge pumps in the engine room represents a minimalist approach to removing water from the vessel.

Note I. Water intrusion from a small 1" seacock located in the hull 3 ft below the physical water line will invite 34g/min aboard a vessel. That is 2040g/hr (Naval Sea System Command, US Navy sailor's handbook ISBN 0-87033-248-1). That is usually more than most submersible pumps that are installed in small vessels can handle.

Note II. Nothing good ever comes from water in the bilge.

Note III. There is no better bilge pump than a scared sailor with a bucket.

C12. Seacocks should be worked regularly to prevent them from gripping and seizing.

Note1. With more and more AC current used on boats the risk of encountering stray current has dramatically increased in recent years. The use of a galvanic isolator or isolation transformer practically eliminates this risk to your vessel. If a leak is found it could be coming from a nearby boat, if the vessel is moved to a different location check the AC shore cable for electrical current leak that could indicate that the leak is coming from this vessel or a nearby one.

Note2. The use of an ELCI in the AC shore power is now part of the ABYC Standards recommendation it is a wise addition if the items in Note1 are not implemented.

*High resolution versions of these pictures are available upon request.

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Standards used

Standards used are the most current editions and may not have been in place when this vessel was built.

ABYC standards are voluntary but generally accepted throughout the marine pleasure craft industry and counts as the reference standard. Transport Canada "Construction Standards for Small Vessels, TP1332 are mandatory to the date of manufacture and states "existing pleasure craft shall comply with this standard insofar as it is reasonable and practicable to do so". TP1332 frequently refers to and is in the process of being harmonized with ABYC Standards. Compliance with "Collision Regulations" is mandatory. NFPA 302 is a voluntary standard. Standards quoted may have been paraphrased in the interest of brevity. A 100% accurate survey to the aforementioned standards would require complete disassembly of the vessel and inspection by several specialists and is not within the scope of this report. Canada Shipping Act, CSA Small Vessel Regulations. TP127 "Ships Electrical Systems". TP10739B "International Regulations for Preventing Collisions at Sea, ed.1972 with Canadian Modifications".

American Boat and Yacht Council "Standards and Technical Information Reports for Small Craft". National Fire Protection Association. NFPA302 "Fire Protection Standard for Pleasure and Commercial Motor Craft" might be referred to as necessary.

Certification statement

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, opinions and conclusions are limited only by the reported assumptions and limiting conditions and are my personal unbiased professional analysis, opinions and conclusions. I have no present or prospective 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 contingent upon reporting of a predetermined value or direction in value that favours the cause of the client, the amount of the value estimate, the attainment of a stipulate 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 should be considered as an entire document. No single section is meant to be used except as part of the whole.

This report is submitted without prejudice and for the benefit of whom it may concern. This report does not constitute a warranty, either expressed or implied, nor does it warrant the future condition of the vessel. It is a statement of the condition of the vessel at the time if the survey only.

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Valuation

Valuation is primarily determined through www.yachtworld.com and others but may also be derived from consultation with knowledgeable boat brokers, other marine surveyors, personal experience, current listings of similar vessels in the area and available pricing sources such as Computer Boat Value Guide, N.A.D.A. Marine Appraisal Guide or the BUC Value Guide. Boat values vary considerably due to local market demands and premiums may be paid for fresh water vessels in exceptional condition. Currency conversion is done on date of survey using www.xe.com Universal Currency Converter. Valuations do not include taxes.

Vessel condition

The vessel 'HIN xxxxxxx, surveyed on, is in "Average" condition.

Fair market value

"Current fair market value" is the price, in terms of currency or its equivalent that a willing seller will accept for property from a willing buyer, neither part being under undue pressure to act in the matter. The assigned value assumes that components, systems, sails or equipment not inspected during the survey are in serviceable condition commensurate with age. This valuation opinion is intended for insurance and financing purposes. The surveyor has no interest in the vessel financially or otherwise.

The current fair market value is: \$xyz,00.USD*.

* This valuation considers that the damaged thru-hulls will be replaced to the satisfaction of Mr. Stewart Christensen, that the davit and inverter will be tested and proven to be in working order. The tender and its outboard are not part of this valuation.

Prepared without prejudice.

Captain Alain Pascal Routhier Discovery Marine Surveys.com® Cpt. Licence A104769 CDN# 142164M SAMS-SA member ABYC member

Marine grading system of condition

The following is the accepted marine grading system of condition used:

"BRISTOL CONDITION"	Vessel is maintained in mint or Bristol fashion, loaded with extras. Maintenance is performed as 'restoration' projects – a rarity.
"ABOVE AVERAGE CONDITION"	Has had above average care and is equipped with extra gear. Maintenance is done as 'improvement'.
AVERAGE CONDITION"	Ready for sale requiring no additional work and normally equipped for its size. Maintenance is done as 'repair of faults'.
"FAIR CONDITION"	Requires usual maintenance to prepare for sale.
"BELOW AVERAGE CONDITION"	Yard work required and/or maintenance previously performed was sub-standard.
"RESTORABLE CONDITION"	Enough of hull and engine exists to restore the boat to usable condition.