Vessel Assess

A marine surveying, training and consulting company.

1976 Hatteras 48 Long Range Cruiser 48.8 LOA (w/o pulpit)

"Sample Vessel"

(561) 866-5662
www.VesselAssess.com
Michael@VesselAssess.com

"Sample Vessel"

1976 Hatteras 48 Long Range Cruiser 48.8 LOA (w/o pulpit)

CONDUCTED BY

Michael Woodring - Marine Surveyor

VESSEL ASSESS

PREPARED FOR

John Boat Owner

September, 21st and 22nd of 2022

INTRODUCTION

PURPOSE & SCOPE

The attending Surveyor attended aboard the 1976 Hatteras 48 Long Range Cruiser "Sample Vessel", at the request of John Boat Owner, beginning September, 21st and 22nd of 2022. The Survey was requested to determine the physical condition and value of the vessel. No reference or information should be construed to indicate evaluation of the internal condition of engines, transmissions, drives or generators, nor the propulsion system's or the auxiliary power system's operating capacities. Electrical and electronic equipment was powered up and some electrical equipment may have been tested for basic and/or limited function only. The wiring was inspected where accessible and was found to be in generally serviceable condition, unless otherwise noted. A significant amount of wiring could not be observed due to the wiring looms and conduits that transit areas which would require dismantling and removals for their inspection. If a detailed report as to the condition and capacities of the wiring and electrical components is desired, it is recommended that a qualified ABYC Certified Marine Electrical Engineer be engaged. Vessel tankage was visually inspected where accessible. No obvious leakage was observed, unless otherwise noted; however, the tanks were not confirmed to be full at the time of inspection. If a more thorough assessment is desired, the tanks should be filled and checked under full tank status or pressure tested to attest to their condition.

The vessel was Surveyed without the removal of any parts, including fixed partitions, fastened panels, fittings, headliners & wall-liners, heavy furniture, tacked carpeting or other fixed flooring material, appliances, electrical equipment or electronics, instruments, anchors line & chain, spare parts, personal gear, clothing, miscellaneous items in the bilges, cabinets, lockers or other storage spaces, or other fixed or semi-fixed items. Only installed items were inspected, including but not limited to enclosures, covers and tops. Locked compartments or otherwise inaccessible areas would also preclude inspection. Survey requester is advised to open up all such areas for further inspection. A visual inspection was conducted only on accessible structures and no destructive testing was performed. Naval architecture and engineering analysis were not a part of this Survey. Furthermore, no determination of stability characteristics or inherent structural integrity has been made, and no opinion is expressed with respect thereto. Complete compliance with, identification of, and reporting on all standards, codes and regulations is not guaranteed. This signed report represents the findings of the Survey and supersedes any and all conversations, statements and representations, whether verbal or in writing. This Survey Report represents the condition of the vessel on the above date or dates and is the unbiased opinion of the undersigned, but it is not to be considered an inventory, warranty or guarantee, either specified or implied. The Survey Report is for the exclusive use of the client and those lenders and underwriters that will finance and insure the vessel for this client only, and is not assignable to any other parties for any purpose.

CONDUCT OF SURVEY

THE MANDATORY STANDARDS PROMULGATED BY THE UNITED STATES COAST GUARD (USCG), UNDER THE AUTHORITY OF TITLE 46 UNITED STATES CODE (USC); TITLE 33 AND TITLE 46 CODE OF FEDERAL REGULATIONS (CFR), AND THE VOLUNTARY STANDARDS AND RECOMMENDED PRACTICES DEVELOPED BY THE AMERICAN BOAT AND YACHT COUNCIL (ABYC) AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) HAVE BEEN USED AS GUIDELINES IN THE CONDUCT OF THIS SURVEY.

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.

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.

A) Safety Deficiencies that should be addressed as soon as possible.

B) Other deficiencies requiring attention within a several month period.

C) Surveyors notes and observations. No requirement to address.

PLEASE BE ADVISED THAT SOME DEFICIENCIES, OBSERVATIONS AND SUGGESTIONS MAY ALSO BE CONTAINED IN THE BODY OF THE REPORT.

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
**** Per BUC Book Data

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.

SURVEYOR NOTES

SURVEY SPECIFICS

The owners requested an in-water survey of their vessel in anticipation of placing it on the market for sale. There was engine and systems maintenance being performed before and after the survey which prevented a sea trial and haul for bottom and running gear inspection.

The vessel is incredible well built and although many systems are original, they preformed very well. The systems installed by Hatteras were ahead of their time and of excellent quality. Once the "Findings and Recommendations" are addressed this vessel will serve the next owners very well.

TRIAL RUN COMMENTS

A trial run was not performed during the Survey inspection.

OUT OF WATER INSPECTION COMMENTS

An out of the water inspection of the hull's wetted surfaces and running gear was not performed during the Survey inspection.

HIN (HULL IDENTIFICATION NUMBER) VERIFICATION COMMENTS

The vessel's HIN (Hull Identification Number) was verified during the Survey inspection.

ENGINE/MECHANICAL SURVEY

It is highly recommended and understood that all propulsion & auxiliary power systems (engines, transmissions, gears, drives, generators) be inspected by their respective Manufacturer's Certified Technician to determine their condition.

GENERAL VESSEL INFORMATION

TYPE OF SURVEY REQUESTED:	Pre-purchase Condition and Value
DATE AND TIME OF SURVEY:	Starting at 9:00am on September 21st and 22nd of 2022
VESSEL TYPE:	Raised Pilothouse Long Range Cruiser
VESSEL BUILDER:	Hatteras
VESSEL DESIGNER:	Jack Hargrave
HIN (HULL IDENTIFICATION NUMBER):	000000000000
MODEL YEAR:	1976
YEAR BUILT:	1976
HAILING PORT DISPLAYED:	Sometown, Florida
OFFICIAL NUMBER:	000000
U.S.C.G. DOCUMENTATION NUMBER:	000000
U.S.C.G. DOCUMENTED FOR:	Recreational
VESSEL MATERIAL:	Fiberglass Reinforced Plastic (FRP)
LENGTH OVERALL (LOA):	Reportedly, 48.8 feet (w/o pulpit)
REGISTERED LENGTH:	48.80 ft
LENGTH WATERLINE (LWL):	Reportedly, 43.3 feet
BEAM:	Reportedly, 14.2 at waterline and 16.5 at maximum.
REGISTERED BEAM:	16.6 ft
DRAFT:	Reportedly, approximately 4.5 feet
OVERHEAD CLEARANCE:	Reportedly 18 feet 10 inches with folding mast lowered.
DISPLACEMENT:	Reportedly, 54,000 pounds
DEPTH:	8.0 ft
GROSS TONNAGE:	42 Simplified Gross Ton
NET TONNAGE:	34 Simplified Gross Ton
LOCATION OF SURVEY INSPECTION:	Boat Owners Marina
VESSEL OWNER:	John Boat Owner
PERSONS IN ATTENDANCE DURING SURVEY:	John Boat Owner

RATING & VALUATION

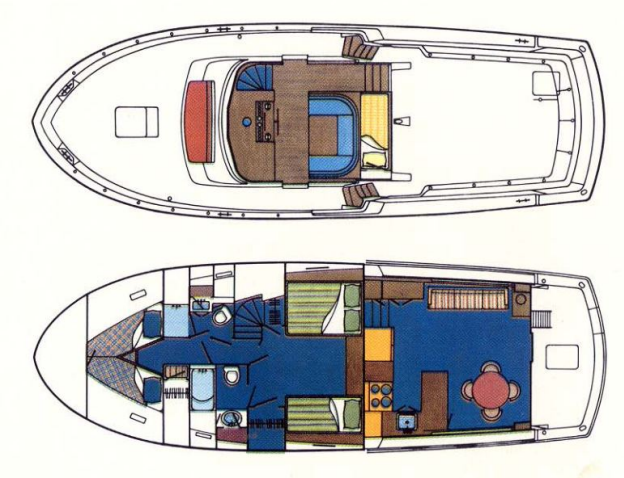
VESSEL OVERALL RATING:	****FAIR
ESTIMATED MARKET VALUE:	$265,000
ESTIMATED REPLACEMENT COST:	$1.250,000

VESSEL CONSTRUCTION

HULL ARRANGEMENT

VESSEL DESCRIPTION AND LAYOUT

Sample Vessel was a full displacement raised pilot house passage maker with flybridge. The galley and saloon were aft of the pilot house with the owners stateroom including ensuite head below with V-berth and second head forward.



HULL DESIGN TYPE

Full displacement with keel and skeg rudder.

HULL MATERIAL

Reportedly, solid FRP (fiber reinforced plastic) below the waterline, with End-Grain Balsa Wood sandwich core above the waterline.

EXTERIOR FINISH

Painted Jade Green hull with White painted super structure.

FINDING C-1

A) Hull and deck had areas where the paint showed cracks.

B) Hull paint showed weathering.

RECOMMENDATION

A) Investigate further, and repair in accordance with good marine practice as necessary.

B) Investigate further, and service, repair or replace as necessary.

GENERAL EXTERIOR CONDITION

General wear & tear and oxidation was observed on most of the exterior surfaces. Some spider cracking was observed.

FINDING C-2

The exterior of the vessel required general cleaning. Most of the vessel's exterior surfaces were oxidized from UV exposure.

RECOMMENDATION

Clean vessel to maintain aesthetics, as necessary. Polish/detail the oxidized surfaces with buffing and waxing, as necessary.

TRANSOM

Reportedly, cored transom with starboard transom door.

SWIM PLATFORM

Cored fiberglass swim platform.

BOARDING SWIM LADDER

Fold down stainless steel boarding ladder installed on swim platform.

BULKHEADS

Athwartships reinforcement enhanced by bulkheads, bonded/tabbed to the hull with FRP (fiber reinforced plastic).

STRINGERS/TRANSVERSALS

Hull stiffness was reportedly provided by cored fiberglass longitudinal stringers and athwartships transversals.

KEEL

Reportedly the keel was molded into hull's layup schedule.

BALLAST

Cement ballast added to replace weight after removal of the port side generator.

BILGES

A painted surface was used in the bilges. Recommend keeping the bilges clean & dry.

GENERAL BILGE CONDITION

Some bilge areas required general cleaning/detailing and some of the bilges were due for paint refinishing.

CHAIN LOCKER DRAINAGE

Reportedly drained directly into the bilge.

BILGE LIMBER HOLES

The limber holes appeared to be appropriately sized and clear, where sighted.

VESSEL LIST

The vessel did not have any significant listing, during the survey (a nearly straight waterline was observed).

DECK ARRANGEMENT

DECK MATERIAL

Reportedly, cored FRP (fiber reinforced plastic) with white painted textured non-skid.

FINDING B-1

A) One area of deck delimitation with elevated moisture content was observed near the seating in front of pilot house on the starboard side. (Indicated by brown circular stain shown in photo)

RECOMMENDATION

A) Investigate further, and repair in accordance with good marine practice as necessary.

FINDING C-3

Nonskid painted surface showing wear on locations.

RECOMMENDATION

Investigate further, and repair in accordance with good marine practice as necessary.

TOE-RAILS

Molded fiberglass toe-rails (part of the deck's layup).

RUB-RAILS

Hull to Deck joint acted as rubrail with stainless half round protection. Approximatly the aft third of vessel had a large fiberlass encased rub rail with stainless steel rounded rub strip.

HULL-TO-DECK JOINT TYPE

Reportedly an overlap "Shoe Box" type joint.

HULL-TO-DECK JOINT FASTENERS

Reportedly, stainless steel.

HULL-TO-DECK JOINT REINFORCEMENT

The hull-to-deck joint was fiberglass tabbed internally, where sighted.

HULL-TO-DECK JOINT BEDDING COMPOUND

Reportedly, Elastomeric Polyurethane compound.

SUPERSTRUCTURE ARRANGEMENT

SUPERSTRUCTURE MATERIAL

Reportedly, End-Grain Balsa Wood cored FRP (fiber reinforced plastic).

SUPERSTRUCTURE-TO-DECK JOINT TYPE

The deck house and deck were molded seamlessly with no joint.

FORWARD COCKPIT BULKHEAD

Fiberglass structure as part of the house superstructure.

BRIDGE ARRANGEMENT

BRIDGE MATERIAL

Reportedly, cored FRP (fiber reinforced plastic).

BRIDGE TYPE

The flybridge provided the upper helm station and crew seating area.

BRIDGE TOP

Welded aluminum tube structured with strung vinyl top and full glassine enclosure.

BIMINI TOP

Bimini structure observed that reportedly covers upper aft deck.

FINDING C-4

Bimini canvas cover needs repairing.

RECOMMENDATION

Refinish or replace the canvas as necessary.

MAST

Folding mast with radar dome, tv antenna, WiFi extender, weather station, anchor light, video camera, spreader lights was observed. Reportedly it folds down 18 feet 10 inches.

EXTERIOR EQUIPMENT

EXTERIOR BRIDGE EQUIPMENT

Flybridge had two captain chairs and aft settee.

COCKPIT/AFT DECK EQUIPMENT

Cockpit had two custom made cabinets, one on the port side with a combo washer dryer inside and on starboard with a built in chest freezer. A teak sitting bench was observed adjacent to cabinet on port side. Electric shore-power cable connections were on the starboard side. A Grill was secured in the port side rod holder in the cockpit gunwale with external LP tank below. Lazarette access an aft boarding door and hatch to upper deck (with no ladder) was observed.

EXTERIOR SEATING

Built-in seating was located at the front of the pilot house exterior along with two captains chairs and a bench in the flybridge. Built in seating had cushions.

GENERAL EXTERIOR SOFT-GOODS CONDITION

The vessel's exterior soft-goods appeared serviceable with no significant wear or weathering.

EXTERIOR BRIGHT WORK

Some of the exterior Teak bright work varnish was weathering, lifting and discolored.

FINDING C-5

Some of the exterior Teak bright work varnish had UV weathering, lifting, and lightening or moisture darkening.

RECOMMENDATION

Refinish the bright work, as necessary.

GENERAL CAULKING/SEALANT CONDITION

General weathering has developed on some of the vessel's exterior caulking sealants, including the window seals.

FINDING B-2

General weathering, lifting, separation or staining has developed on some of the vessel's exterior caulking sealants.

RECOMMENDATION

Renew the caulking sealants, as necessary.

EXTERIOR LIGHTING

Cockpit lighting in ceiling and an upper deck flood light were observed.

EXTERIOR WASHDOWNS

Raw water anchor wash down was observed and demonstrated.

FINDING B-3

Port side bow faucet on hatch housing was inoperable. Starboard hose bib on hatch cover reportedly was never used or tested.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.

CABIN VENTILATION

Provided by the foredeck hatch, the portholes and the main companionway door.

DECK HATCHES

24 inch hatch in forward cabin large enough for escape was observed.

PORTHOLES/PORTLIGHTS

Forward cabin had two opening ports. Owners cabin had two opening ports, one to port and one to starboard with sufficient size for crew to escape through.

FINDING C-6

General UV/heat yellowing has developed on the porthole's portlight glass.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

EXTERIOR DOORS

Aft sliding door from cockpit into saloon, starboard and port side pilot house doors.

WINDOWS

Two large saloon windows, with aft sections that slide open to provide ventilation were observed. Just forward in saloon were two round windows with fixed glass. The Pilot house had port and starboard opening windows, and an additional opening window to the aft upper deck.

FINDING B-4

Both aft sections of the saloon windows have cracks in glass. Starboard side window in saloon shows signs of previous water leak.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.

WINDSHIELD

Pilot house windshields consisted of three tempered glass windshield with three individual windshield wipers. Flat panels and a curved panel at each side. Signs of previous water leakage and window crazing.

FINDING C-7

Signs of previous water leakage at base of windshield and some crazing of the curved glass section.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

SPRAY-SHIELD

Tinted acrylic flybridge spray-shield.

DECK RAILINGS

Teak caped deck railing supported on 26.5 inch tall x 1.25 inch stainless steel tube stanchions with approximately 1/4 inch stainless steel vinyl covered cable horizontally at 13.5 inches ran from amidships around the forward perimeter of the vessel.

SAFETY RAILING

Upper Deck had 35 inch tall, 1 inch stainless steel tubing safety railing with no middle horizontal member.

FINDING B-5

To prevent a crew member from slipping under safety railing on upper deck, a horizontal wire or cross member should be installed.

RECOMMENDATION

ABYC H-41.6.4.2 Intermediate rails, lines, wire mesh, or equivalent shall be installed wherever the space between rails, deck, or toe rails exceeds 24 in (610mm). Refinish the stanchions, as necessary.

HAND RAILS/GRAB RAILS

Stainless steel handrails were located at convenient locations to upper deck and into flybridge.

BOARDING STAIRS/BOARDING LADDER

Six Step MarQuipt Anodized Aluminum, removable side boarding ladder was observed. It reportedly would fit on port or starboard side midship.

DAVIT/CRANE

Reportedly 750 pound lifting capacity. Reportedly manually operated with 1/4 inch stainless steel cable and welded aluminum tube structure. Was not tested.

DECK DRAINAGE

Self bailing deck drains at the port and starboard aft cockpit corners. Self bailing deck drains at the port and starboard aft of pilot house on toe rail near bottom step leading to upper deck.

CLEATS

14.5 inch stainless steel cleats were located bow, midship forward, midship aft, aft just before the cockpit and in cockpit on the side gunwale on both port and starboard.

LINE CHOCKS

Two 4.5 inch stainless steel line guide chocks and line chafe rub-strakes installed on the bow toe-rails.

LINE HAWSE PIPES

Line hawse pipes were installed port and starboard at the transom.

ANCHOR PLATFORM

Molded fiberglass bow pulpit with stainless steel fairlead anchor roller chute.

EXTERIOR STORAGE

Storage was located under seating area in both the flybridge and the seating in front of the pilot house.

DECK BOXES

Two approximately 38 inch long dock boxes were located on port and starboard bow.

ROD HOLDERS

The cockpit ceiling had the ability to hold four fishing poles in overhead storage rack. The aft cockpit gunwale had three recessed rod holders.

EXTERIOR COVERS

Canvas covers for forward of pilot house seating, davit, flybridge seating, flybridge helm and two flybridge captain chairs.

SUN SHADES

Windshield had sunshade along with pilot house doors and opening windows in helm and saloon.

FENDERS

Six approximately 11 inch x 32 inch fenders. Upper deck had twin fender holders, one on port side and one on starboard.

MOORING LINES

Dock/mooring lines were observed onboard and at the vessel's mooring (amount included unknown).

TENDER / AUXILIARY WATERCRAFT

TENDER/WATERCRAFT

Achilles Corporation HB-350 DX with built in seat and steering station.

MODEL YEAR

2015

HIN (HULL IDENTIFICATION NUMBER)

ACH000201415

ENGINE MODEL

Tohatsu 25 HP Four Stroke Outboard (MFS25C).

ENGINE SERIAL NUMBER

011140AE

TENDER COMMENTS

General wear and tear and weathering was observed on the tender, which appeared to be consistent with its age and use.

COMMENTS

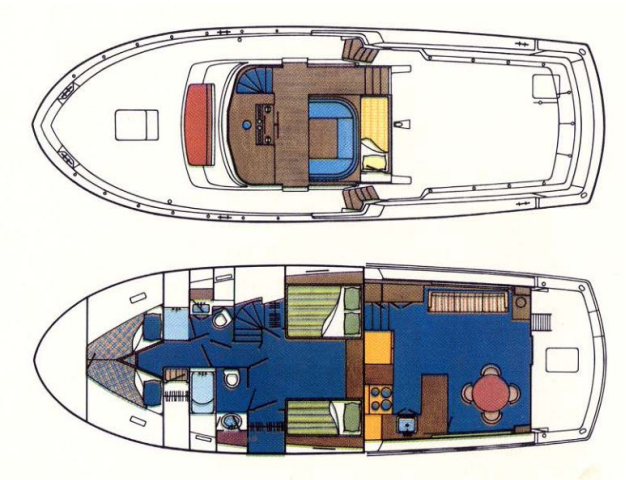
The tender was not surveyed/inspected. Recommend inspection by a qualified tender service facility, as necessary.

INTERIOR OF VESSEL

INTERIOR CONFIGURATION AND FINISHES

INTERIOR LAYOUT

Sample Vessel was a raised pilot house Long Range Cruiser. Three steps down and aft of the pilot house was the galley, saloon, and cockpit. The below deck companionway was accessed from a curved stair on the starboard side of the pilot house. The companionway led aft to owners stateroom including an ensuite head. Moving forward in the companionway was the V-Berth with private access to the day head with shower.



SALON ARRANGEMENT

The saloon had a custom made settee on the starboard side with storage underneath and a built in table aft. Forward of the settee was a built in with a counter top and built in storage. The port side had a large leather and wicker chair with bookshelf against the aft bulkhead. The center of the space had a trunk shaped table.

GALLEY ARRANGEMENT

The galley was defined by a "U" shaped granite countertop with an opening facing the starboard side saloon built in. A sink was located on the port side with a cooktop and microwave on the forward bulkhead. There was overhead storage over the aft countertop.

FINDING C-8

There appeared to be condensation damage to the wood below the drawer refrigerators.

RECOMMENDATION

Repair as necessary.

DINING ARRANGEMENT

There were two bar stools situated at the aft edge of the galley countertop, making the galley "dine-in". Dining for larger parties was available in the pilot house.

OWNERS STATEROOM

The owners stateroom had a double berth to starboard and a twin to port. These were separated with an eight drawer built in dresser cabinet with large mirror on the aft bulkhead. Forward of each berth were full height closets. Forward of the port side closet was the ensuite head with small tub, Galley Maid head, vanity and medicine cabinet. The floor was carpeted with area rugs.

ADDITIONAL STATEROOM

The forward stateroom was configured as a V-Berth with closet to the port side. There was a day head adjacent to the forward stateroom with Galley Maid head, vanity and medicine cabinet.

PILOT HOUSE

The pilot house was separated forward and aft with a multipurpose space between the starboard and port pilot house doors. This multipurpose space had a captain's chair on a long slide that could be centered on the navigational helm or moved to port to provide better access to the "U" shaped seating area with large table including seating for six. Aft and higher than the seating area was a berth for an off-watch crew member. The starboard side of the pilot house had a walkway from the saloon stairs to the stairs leading below decks.

INTERIOR CABINETRY & TRIM

The interior satin finished teak cabinetry and trim appeared serviceable, except where noted.

INTERIOR DOORS

Satin finished teak cabin doors.

INTERIOR STORAGE

Storage in addition to external facing cabinets and closets was available within the saloon settee and under both berths in the owners stateroom.

CEILING HEADLINERS

Headliner material was perforated vinyl throughout the vessel.

WINDOW TREATMENTS

Levelor cellular shades in the saloon. Fabric drapes in the owners stateroom.

FLOORING

The saloon and galley had simulated wood vinyl floor tiles with an area rug. The pilot house was primarily teak stripped with an elastomer covered with carpet runners. The stair leading below, lower companionway and staterooms were carpeted.

CABIN SOLE FOUNDATION

Plywood cabin sole foundation with Douglas Fir support beams.

INTERIOR MIRRORS

No significant de-silvering was observed on the interior mirror's reflective coatings.

GENERAL INTERIOR & SOFTGOODS CONDITION

The general maintenance of the vessel's interior appeared serviceable.

INTERIOR BULKHEADS

The interior bulkheads appeared serviceable, where sighted.

INTERIOR SYSTEMS & EQUIPMENT

LIGHTING

Hatteras 12 Volt DC ceiling lighting fixtures throughout the vessel.

HVAC/AIR CONDITIONING SYSTEM

Four compressors were observed in the engine room with five air handlers throughout the vessel (three Cruisair and one Dometic compressor). The saloon had two air handlers, in addition there was an air handler in the pilot house, owners stateroom, and forward stateroom. Units powered on and produced cool air.

FINDING C-9

A slight musty odor was observed inside the vessel when the air conditioners were started.

RECOMMENDATION

Inspect ductwork and clean as necessary.

CABIN HEATING SYSTEM

The air conditioning throughout the vessel was capable of reverse cycle heat.

CABIN VENTILATION FANS

A 12 Volt DC electric ventilation fan was installed in the owners stateroom and in pilot house.

HEAD EXHAUST VENTILATION FANS

Exhaust fans were installed in the heads. Powered up.

LAUNDRY SYSTEMS

Splendide 2100XC Clothes Washer/Dryer located in a custom built cabinet in the cockpit.

AUDIO/VISUAL EQUIPMENT

TELEVISION SYSTEM
32 inch television with DVD player in the saloon.

STEREO SYSTEM
Jenson cassette Stereo was observed in built in end table next to saloon settee. Operation was not confirmed.

ONBOARD WIFI SYSTEM
Rogue Pro by Wave WiFi receiver with wireless router observed onboard.

GALLEY EQUIPMENT

REFRIGERATION
Two custom made drawer refrigerators were in the galley. They were running when inspected.

FREEZER
A custom built chest freezer in a custom built cabinet was in the cockpit. Was running when inspected.

ICE MAKER
Ice Maker built-in to galley cabinet facing saloon. Demonstrated.

STOVE
General Electric Profile four burner stove with touch control and ceramic glass cooktop. Powered up.

MICROWAVE OVEN
General Electric Profile stainless steel combination microwave oven and convection oven. Powered up.

GALLEY SINK
Stainless steel sink.

GALLEY ACCESSORIES
Miscellaneous counter appliances observed.

PROPULSION & MACHINERY SPACE

PROPULSION SYSTEM

ENGINE MODEL
Twin, Detroit Diesel 4-53 (212 CID)

MANUFACTURE DATE
Reportedly 1976

ENGINE HORSEPOWER
Reportedly, 112 horsepower each.

NUMBER OF CYLINDERS
Four (4) in-line configuration.

ENGINE STARTER VOLTAGE RATING
12 Volt.

ENGINE HOURS
Reportedly, 9000 approximate hours - meters have been changed and are not acurate.

ENGINE SERIAL NUMBERS
4D134228 Port and 4D134210 Starboard.

ENGINE LABELS & NOTICES
The engines were painted. One readable label were observed on starboard engine, all other removed or painted over.

ENGINE DISPLAYS
Tachometer, volts, temperature, oil pressure and transmission oil pressure - duplicated at flybridge

ENGINE ALARM SYSTEM
Hatteras Systems Monitor, Audible/Visual Monitoring Alarm System.

ENGINE EXHAUST SYSTEM

Raw water cooled with stainless steel exhaust mixing risers, and flexible hoses to fiberglass mufflers, exiting through transom mounted discharges.

FINDING A-1

Port side engine raw water hose to exhaust injection elbow is missing a hose clamp and may have slipped as compared to the starboard side configuration.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

ENGINE COOLING SYSTEM TYPE

Engine coolant is contained in closed reservoir system with raw water heat exchanger to cool engine. Raw water exits the heat exchanger and is used to cool the exhaust.

FINDING A-2

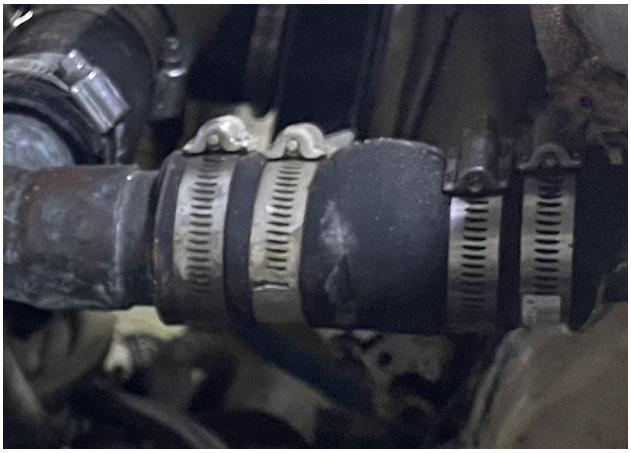
A) Several cooling hoses on both engines were bulging and showing stress. in addition, many of the hose clamps were showing rust and cracking.

B) Corrosion was observed on both engine's raw water impeller pumps, heat exchangers and transmission coolers.

RECOMMENDATION

A) Investigate further, and service, repair or replace as necessary.

B) Investigate further, and service, repair or replace as necessary.



ENGINE DRIVE BELTS

Engine had twin 3/8 inch drive belts.

FINDING B-6

Engine drive belts were dried and cracked.

RECOMMENDATION

Investigate further, and replace belts as necessary. Properly tighten belt adjustment.

THROTTLE & SHIFT CONTROLS

ZF Marine Mathers MicroCommander Electronic Throttle & Gear Controls.

ENGINE SYNCHRONIZER

ZedF _electronic controls single lever with reportedly auto syncriraztion

EMERGENCY ENGINE SHUT-DOWN

Engine shut-down pull cable in the pilot house. Engine shut-down buttons at the flybridge.

ENGINE BED MOTOR MOUNTS

Adjustable motor mounts on cored fiberglass longitudinal engine bed stringers with aluminum stringer caps.

FINDING B-7

The engine mounts are showing rust and the outboard aft mounts on both engines are adjusted to their maximum hight, which imparts extra stress on the components.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

ENGINE BED SUMPS

Integrated drip sumps under the engines.

FINDING B-8

The engine sumps and engine bilge pumps showed signs of oil contamination.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary to prevent the overboard discharge of oil contaminated water. It is recommended to use oil absorbent pads under and around the engines to make spotting leaks easier and to absorb pollution.

MAIN ENGINE OIL LEVEL

Starboard level were above the high mark, Port were observed in operating range.

FINDING B-9

The starboard engine oil sump appeared to be overfilled.

RECOMMENDATION

Fill the engine oil sump to the proper level, monitor and service as necessary.

MAIN ENGINE COOLANT LEVEL

Normal levels were observed in the Heat Exchanger's Header Tanks.

ENGINE NOTES

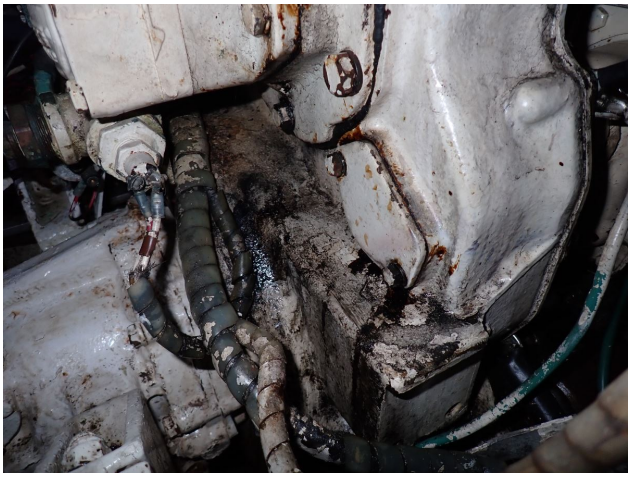
Engines fitted with Walker AirSep filters.

FINDING C-10

Both engines were leaking oil at several locations.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.



COMMENTS

There was an engine room temperature monitoring gauge in saloon forward bulkhead.

MACHINERY & BILGE SPACE EQUIPMENT

ENGINE SPACE VENTILATION

Natural air flow ventilation was provided by the superstructure side vents assisted by large exhaust fan.

ENGINE ROOM AIR BLOWERS

A Jabsco 12 volt air blower was located behind the interior walls of the saloon on both starboard and port sides. An additional large engine room fan is located at the aft starboard corner of the engine room.

FINDING B-10

The large engine room blowers did not power up when tested (client states it is temperature controlled). The starboard fan was noisy.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.

SEACOCKS/SEA-VALVES

Raw water seacocks were ball valve type. Lubricate, exercise and monitor frequently. Recommend performing maintenance on all seacocks & sea-strainers annually (disassemble, inspect, clean and lubricate). It is also recommended that all below the waterline and near the waterline thru-hulls have a proper sized wooden plug attached to function as an emergency plugging device.

RAW WATER STRAINERS

Perko & Groco type bronze alloy with sight glass and underwater strainer scoops.

HOSES

Appeared serviceable where sighted, except where noted. Monitor frequently for dry cracking, degradation, damage or chafing.

FINDING B-11

A) Many of the hoses throughout the machinery space have passed their useful life.

B) The air conditioning's raw water distribution manifold is constructed of PVC, which is not a violation of rules: however, the way in which it is constructed makes the elbow circled very venerable to breakage if pressure is placed on the other end of the manifold.

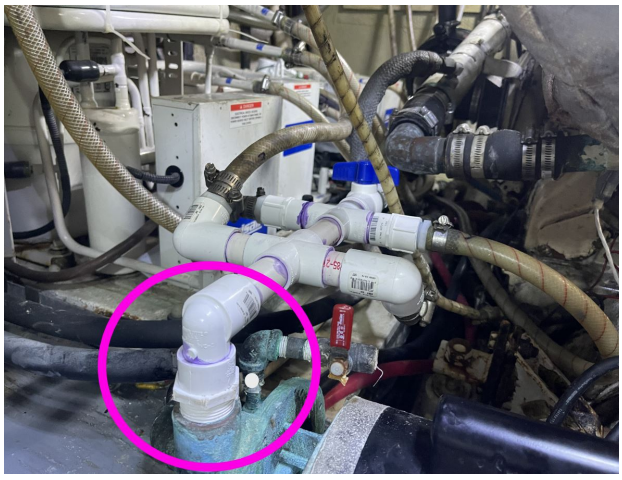
C) The watermaker low pressure pump's hose was not recommended for raw water suction use (collapsible type hose).

RECOMMENDATION

A) Investigate further, and refit or replace as necessary.

B) Investigate further, and refit or replace as necessary.

C) Replace the hoses with reinforced "non-collapsible" type, as necessary.



HOSE CLAMPS

Hose clamps sighted were installed correctly and were in serviceable condition except where cited. Recommend installing corrosion resistant marine grade stainless steel T-bolt type hose clamps and/or solid banded (non-open slotted) hose clamps when current clams are replaced.

FINDING A-3

Several of the vessel's below deck/bilge hose clamps have developed partial failures. Several of the engine's exhaust hose clamps and some of the bilge hose clamps (including the shaft seal boot hose clamps) have developed general rust.

RECOMMENDATION

Inspect all hose clamps and clean or replace with doubled Marine Grade Stainless Steel clamps where appropriate, as necessary.

LUBE TRANSFER SYSTEM

Oil transfer/drain system observed at forward end of engine room, including selector system with pump.

SHIP'S AIR COMPRESSOR

Porter Cable Ship's Air Compressor.

MACHINERY SPACE INSULATION

Thermal & acoustical sound deadening insulation was built into the engine room ceiling.

TOOL BOX

A plastic toolbox was sighted in the engine room.

SPARES

Spare parts bins were observed in the engineroom, along with built in cabinets above the house batteries.

TRANSMISSIONS / GEARS / DRIVES

DRIVE SYSTEM TYPE

Direct Drive.

TRANSMISSIONS/GEARS

Borg Warner Velvet Drive 71.

GEAR RATIO

Reportedly, 2.91 : 1 ratio.

GEAR SERIAL NUMBERS

Unknown (data tags were removed or painted).

GEAR CONTROLS

ZF Mathers MicroCommander Electronic Controls.

TRANSMISSION INSTRUMENTATION

Transmission oil pressure gauges were integrated into the main engine instrumentation displays.

GEAR COOLERS/HEAT EXCHANGERS

Raw water heat exchangers integrated with engines. Check Zinc Anodes or bonding often.

GEAR FLUID LEVEL

Gear fluid on starboard engine was inspected, port was unable to be inspected because of a stuck dipstick. Fluid level is to be measured warm and when engines have just been shutdown, this was not possible during inspection.

FINDING B-12

Stuck dipstick on port gear was observed.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

PROPELLER SHAFTS

1 1/2''. Material: Stainless Steel.

PROPELLER SHAFT COUPLERS

Appeared to be a tapered shaft with securing nut internal to the coupler, could not confirm.

FINDING B-13

Could not confirm if the transmission shaft coupler's fasteners were safety wired.

RECOMMENDATION

Install safety wires, as necessary.

PROPELLER SHAFT SEALS

Dripless Shaft Seal Systems. Monitor frequently.

FINDING A-4

A) The shaft logs on both port and starboard showed signs of leaking with significant amount of build-up attacking metal and bonding connections.

B) Hose clamps were showing signs of rust.

C) Both of the dripless shaft seal cooling and crossover hose's fittings were corroded with dry salt residues, indicating raw water leakage.

RECOMMENDATION

A) Investigate further, and refit or replace fittings as necessary.

B) Investigate further, and refit or replace clamps as necessary.

C) Investigate further, and adjust, refit, or replace the seals and hose fittings as necessary.

GEAR NOTES

Some exceptions were observed.

FINDING B-14

The gear and engine used many JIC fittings that were rusty.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.

FUEL SYSTEMS

FUEL SYSTEM TYPE

Diesel.

FUEL TANK MATERIAL

Reportedly, balsa wood cored fiberglass.

NUMBER OF FUEL TANKS

Reportedly, four tanks in total:

FUEL TANKAGE CAPACITY

Reportedly, 1390 gallons (per builder).

FUEL TANK MANUFACTURER LABELING

The ABYC required fuel tankage labels were sighted on the fuel tanks.

FUEL TANKAGE SECURING

Bonded/glassed to the hull.

FUEL TANKAGE LOCATION

Two 290 gallon tanks at forward engine room bulkhead, one 300 gallon tank in the floor between the engines and one 490 gallon tank below the floor in the owners stateroom.

FUEL FILL LOCATION

Port and starboard amidships side decks, marked for diesel.

FUEL FILL MARKING

The deck fuel fill fittings were clearly marked as to fuel type.

FUEL TANK VENTILATION

Port and starboard hull sides.

FUEL TANKAGE & FUEL FILL GROUNDING

Fuel tank fitting plate grounded where observed.

FUEL FILL HOSE/PIPE

Unknown, due to access. Recommend verifying fuel fill hose type.

FUEL LINES/HOSES

USCG Approved Type A1 fuel lines where sighted, except where noted.

FINDING A-5

The fuel hose feeding the generator was not labeled as U.S.C.G. approved type.

RECOMMENDATION

Inspect all fuel hoses and replace with U.S.C.G. approved type, as necessary.

FUEL SHUT-OFF VALVES

Ball valves at the primary fuel filters.

FUEL MANIFOLD VALVES

Four way valves to select supply and return for both engines at the forward center of engine room under the ladder.

MAIN ENGINE PRIMARY FUEL FILTERS

Racor 900-MA primary fuel filter/water separator.

MAIN ENGINE SECONDARY FUEL FILTERS

Spin on canister type filter/water separators.

GENERATOR PRIMARY FUEL FILTERS

Racor primary fuel filter/water separators.

GENERATOR SECONDARY FUEL FILTERS

Engine mounted, spin-on canister type secondary fuel filters.

FUEL FILTER CONDITION

No significant sediment was observed in the primary fuel filter's sight bowls. Monitor/service often.

GENERATOR FUEL FILTER CONDITION

No significant sediment or algae was observed in the generator primary fuel filters sight bowls or on their diffusers (minor sediment/algae observed). Monitor and service often.

FUEL TRANSFER SYSTEM

Reportedly, can use Walker system to transfer fuel.

FUEL PRIMING SYSTEM

Manual priming pumps on the engine, inline with fuel line.

FUEL POLISHING SYSTEM

Walker Engineering Algae-Sep fuel conditioners.

ELECTRICAL SYSTEMS

DC ELECTRICAL SYSTEMS

DC SYSTEMS VOLTAGE

12 Volt systems.

BATTERIES

House bank consisted of eight 6 Volt batteries wired in series to create 12 volts and then wired in parallel to increase capacity (used to start port engine as well). Starboard engine starting batteries were two parallel wired group 24 marine batteries. Bow thruster batteries were two 8D wired in series to create 24 volts.

FINDING A-6

A) The house batteries did not have over current protection.

B) The starboard engine staring and bow thruster batteries were not well secured, were not installed in acid-proof trays and the positive battery terminals did not have protective insulation covers installed.

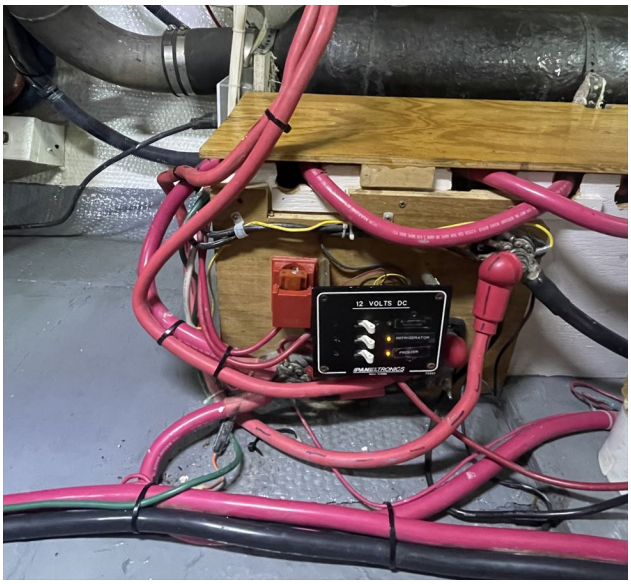
RECOMMENDATION

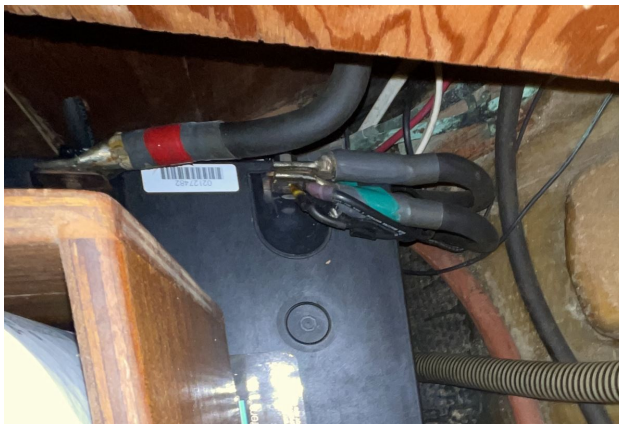
A) ABYC E_11 -11.10.1.1.1 Overcurrent Protection Device Location - Ungrounded conductors shall be provided with overcurrent protection device(s) within a distance of seven inches (178 mm) of the point at which the conductor is connected to the source of power measured along the conductor

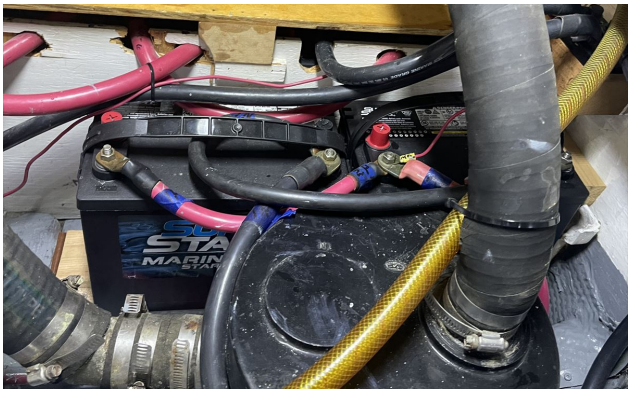
B) ABYC E-10 _10.7.8 To prevent accidental contact of the ungrounded battery connection to ground, each battery shall be protected so that metallic objects cannot come into contact with the ungrounded battery terminal and uninsulated cell straps. This may be accomplished by means such as: 10.7.8.1 covering the ungrounded battery terminal with an electrically nonconductive boot or shield, or 10.7.8.2 installing the battery in an electrically nonconductive covered battery box, or 10.7.8.3 installing the battery in an electrically nonconductive compartment specially designed only for the battery(s)

ABYC - E-10 10.7.4 Batteries, as installed, shall be restrained to not move more than one inch (25 mm) in any direction when a pulling force of twice the battery weight is applied through the center of gravity of the battery as follows: 10.7.4.1 vertically for a duration of one minute, and 10.7.4.2 horizontally and parallel to the boat's centerline for a duration of one minute fore and one minute aft, and 10.7.4.3 horizontally and perpendicular to the boat's centerline for a duration of one minute to starboard and one minute to port.

ABYC E-10 - 10.7.1 Battery mounting materials and surfaces potentially in contact with corrosive electrolytes (e.g., lead acid type) shall withstand electrolyte attack. 10.7.2 Provision shall be made to contain incidental leakage and spillage of electrolyte.







FINDING B-15

A) House batteries had at least one battery with bulged case.

B) House battery box was not constructed correctly.

RECOMMENDATION

A) Investigate further/trace, and service, repair or replace as necessary.

B) ABYC E-10 - 10.7.2 Provision shall be made to contain incidental leakage and spillage of electrolyte.

BATTERY SWITCHES

Four Guest rotary switches. Starboard starting, and generator starting plus port starting and house.

BATTERY PARALLEL SWITCHING

Battery Parallel Switch installed at the helm station.

DC ELECTRICAL PANEL BREAKERS/FUSES

Both the main and electronic DC Electrical Panels were 12 Volt, 100 amp capacity and were located in the pilot house companionway and stair leading below decks.

DC ELECTRICAL SYSTEM MONITORS

Analog DC voltage gauge in the main electric panel. A Bogart Engineering TM2025-RV battery monitor was located on the forward bulkhead of saloon on the starboard side.

BATTERY CHARGERS

Magnum Energy MS2812 Inverter/Charger was connected to the house battery bank. A Sentry G160-3NL - 12 volt / 60 amp battery charger was connected to the port side starting battery bank.

MAIN ENGINE ALTERNATORS

Balmar 12 volt, 160 amp on port engine charges the house bank (port starting as well). Starboard engine alternator was factory unit and charges starting bank for both starboard engine and generator.

GENERATOR ALTERNATORS

Norther Lights 8KW generator charges combination generator and starboard engine starting bank.

DC POWER OUTLETS

One on forward bulkhead in saloon tested at 13.26 volts. One next to aft door in saloon tested at 13.26 volts AC plugs with DC wiring in flybridge.

FINDING B-16

The 12 volt DC outlet at the flybridge helm station was in an AC type outlet.

RECOMMENDATION

ABYC E-11.13.1.3 states receptacles and matching plugs used on AC systems shall not be interchangeable with receptacles and matching plugs used on DC Systems.

BONDING SYSTEM (ABYC E-2 & E-11)

Fiberglass vessels with inboard engines should have a hull potential between -550 to -1100 mV, this vessel was measured at 930 mV. This was a spot check and in no way is a comprehensive corrosion survey.

FINDING B-17

Many of the bonding connections to through hull metal were corroded.

RECOMMENDATION

Recommend thorough inspection and maintenance of the vessel's bonding system, by checking the security of all bonding conductor terminations (destructive testing), cleaning any corrosion off of the bonding conductors and applying a corrosion inhibitor.

DC SYSTEM WIRING TYPE

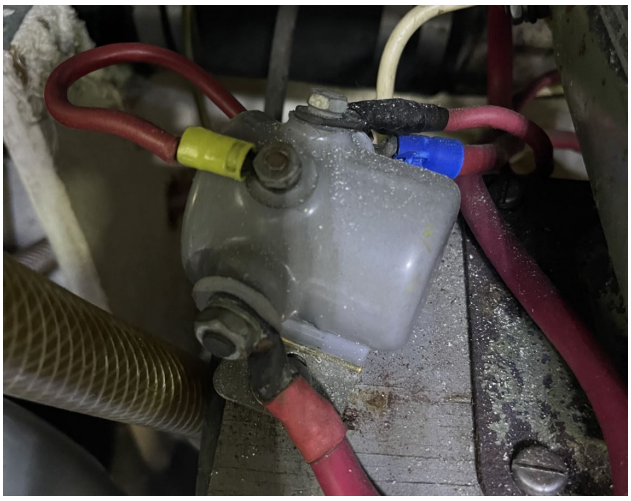
Appeared serviceable for intended use where sighted, except where noted.

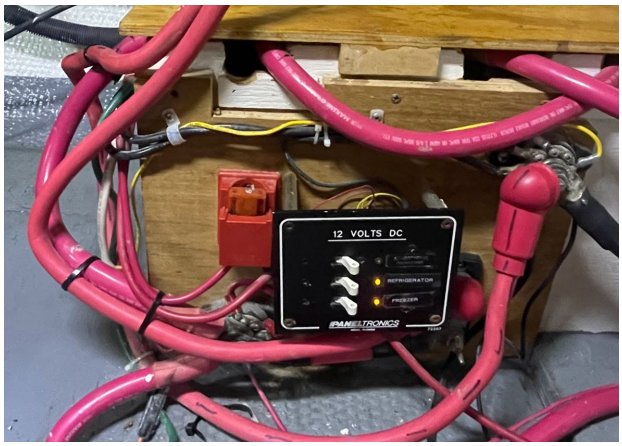
FINDING A-7

Many DC electrical connections throughout the engine space are not protected against accidental shorting.

RECOMMENDATION

ABYC E-11.15.3.10 The shanks of terminals shall be protected against accidental shorting by the use of insulation barriers or sleeves, except for those used in grounding systems.





DC ELECTRICAL/WIRING COMMENTS (ABYC E-11)

The starting battery cables for both engines ran a significant distance on top of the engine room floor where people and equipment needed to traverse over the cables.

ABYC E-11 states the following: 11.15.4.1.7 Conductors that may be exposed to physical damage shall be protected by self-draining loom, conduit, tape, raceways, or other equivalent protection. Conductors passing through bulkheads or structural members shall be protected to minimize insulation damage such as chafing or pressure displacement. Conductors shall also be routed clear of sources of chafing such as steering cable and linkages, engine shafts, and control connections.

AC ELECTRICAL SYSTEMS

AC SHORE POWER SYSTEM VOLTAGE

120/240 Volt @ 60Hz.

AC SHORE POWER PHASE RATING

Single Phase 120 Volt and/or Split Phase 240 Volt.

AC SHORE POWER INLETS

Panels with one 50 amp 120/240 volt shore power inlet and two 50 amp 120 volt shore power inlets with integrated fuses. One was located at the bow at the aft face of the hatch enclosure and a duplicate one was on the starboard side cockpit bulkhead.

AC SHORE POWER CORDS

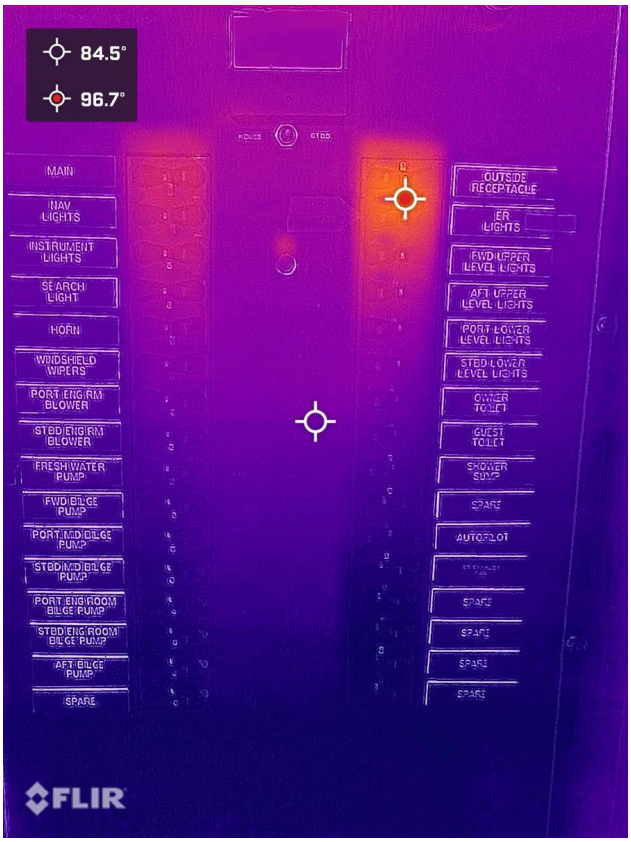
50 Amp. Vinyl shore power cord - 50 feet was sighted.

AC ELECTRICAL SYSTEM OVERVIEW

There was a large selector panel at the pilot house helm that controlled the power coming into the boat from the four possible locations. This panel also was responsible for distributing the AC power to the various panels throughout the vessel. These panels included the air conditioning panel in the engine room, the aux panel in the starboard side owners stateroom closet and the main AC breaker panel in the pilot house companionway.

AC ELECTRICAL PANEL(S)

AC Electrical Panel wiring was inspected with Infrared Imaging Camera to determine if any connections were indicating increased resistance resulting from loose, corroded or undersized connections. Inspection indicated connections were within acceptable temperature range.



MAIN AC SHORE POWER BREAKERS

Fuses at the shore power connections and main breakers in the pilot house distribution panel.

AC ELECTRICAL PANEL BREAKERS

AC branch breakers were located in the AC electrical panels.

FINDING B-18

AC Panel did not have a warning label about the presence of a DC to AC Inverter.

RECOMMENDATION

ABYC A-31.8.6 A warning label is to be installed on the boats main electrical panel indicating that there is an inverter installed.

AC ELECTRICAL SYSTEM MONITORS

AC voltage & amperage gauges in the main AC electric distribution panel.

AC ELECTRICAL SOURCE SELECTOR SWITCHING

Manual rotary type selector switch for shore or ship power and for selecting shore power inlet location.

AC POWER ISOLATION TRANSFORMERS

Two Powerformers Isolation Transformers.

AC ELECTRICAL POWER OUTLETS

All identified AC outlets were tested for proper wiring. In addition, voltage, impedance, frequency and GFCI operational performance were compared to industry standards for each component. All identified AC outlets tested, preformed within industry guidelines with one exception.

FINDING B-19

The forward head AC electrical outlet did not have power when tested.

RECOMMENDATION

Replace the outlets and re-test/prove all outlets inline with the GFCI outlets, as necessary.

AC SYSTEM WIRING TYPE

Appeared serviceable for intended use, where sighted.

COMMENTS

AC electrical system was only tested on shore power because generator was being serviced at time of survey.

GENERATORS/AUXILIARY POWER

GENERATORS

GENERATOR MODEL

Northern Lights M753G-8N.

GENERATOR FUEL TYPE

Diesel.

NUMBER OF CYLINDERS

Three.

GENERATOR KILOWATT RATING

8.0 KW.

GENERATOR ENGINE RPM RATING

1,800 RPM.

GENERATOR VOLTAGE RATING

120/240 Volts AC @ 60 Hz.

GENERATOR PHASE RATING

Split phase 240 volt.

GENERATOR STARTER VOLTAGE RATING

12 Volt.

GENERATOR HOURS

Hours observed on the panel mounted hour meter - 2829.9 hours.

GENERATOR SERIAL NUMBERS

Serial Number 7532-16133.

GENERATOR INSTRUMENTATION GAUGES

Generator control panel installed at the generator and generator instrument panel installed in saloon.

GENERATOR DRIVE BELT

Belt was removed for maintenance.

GENERATOR OIL LEVEL

Oil level was normal on the generator's oil sump dipstick.

GENERATOR COOLING SYSTEM TYPE

Closed coolant with raw water exhaust type.

GENERATOR COOLANT LEVEL

The coolant header tank's and recovery expansion tank's levels were normal.

GENERATOR EXHAUST SYSTEM

Raw water cooled with fiberglass water-lift type mufflers.

FINDING A-8

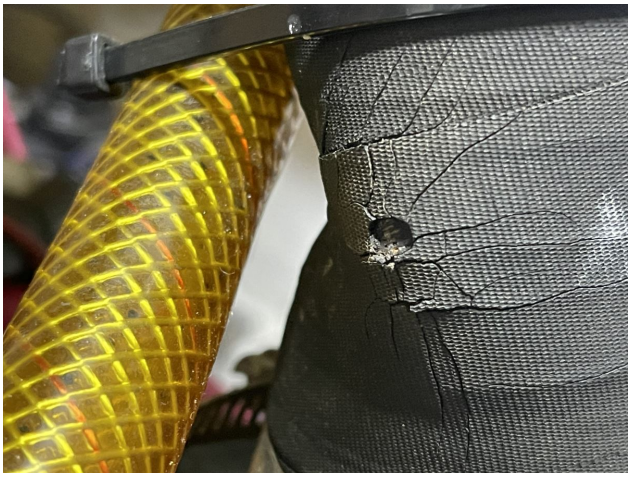
A) The generator's exhaust hose was cracked and forming a hole just above the water lift muffler.

B) The generator's exhaust hose was cracked just before the water lift muffler.

RECOMMENDATION

A) Repair or replace as necessary.

B) Investigate further, and service, repair or replace as necessary.



FINDING B-20

Old exhaust and muffler for removed generator remain in lazarette, it was impossible to determined if it was sealed to prevent water entering through the exhaust port.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.

GENERATOR LOAD TEST INFORMATION

The generator operated with 240 volts @ 60 Hz, under a 20 amp. load.

COMMENTS

The Surveyor was unable to demonstrate the generator, due to generator's service not being completed at the time of survey.

INVERTERS & OTHER AUXILIARY POWER

INVERTER SYSTEMS (ABYC E-11, A-31)

Magnum Energy MS2812 Inverter/Charger.

FINDING B-21

A) The DC/AC Inverter's and the Battery Charger's case/chassis grounding cable conductors were not of the same size/ampacity of their DC positive cable conductors.

B) The DC negative conductor was a red cable with a black sharpie dotted line along its length. DC negative conductors should be black or yellow (Table XIII in ABYC Standards E-11)

C) There was possible over current protection observed on the DC positive (ungrounded DC conductor) from the source to the Inverter Charger; however without disassembly this could not be confirmed.

RECOMMENDATION

A) Replace the grounding cable conductors with the same size cable (one size smaller is acceptable) as the DC positive grounding cable conductor, as necessary (ABYC Standards E-11 & A-31: a DC grounding conductor shall be connected from the metallic case or chassis of the inverter, battery charger or inverter/charger to the engine negative terminal or its bus, and it shall be of an ampacity equal to that of the DC positive conductor). EXCEPTION: The DC grounding conductor may be one size smaller than the minimum size conductor required for the DC current carrying conductors (See ABYC E-9, Table IV, Allowable Amperage of Conductors For Systems Under 50 Volts), providing the overcurrent protection device in the DC positive conductor is rated no greater than 135% of the ampacity of the DC grounding conductor and the conductor is no smaller than 16 AWG.

B) Investigate further, and service, repair or replace as necessary.

C) ABYC Standard A-31 - 31.6.8.2 states: Each ungrounded DC conductor shall be provided with overcurrent protection at the point of connection to the DC electrical system or to the battery, per ABYC E-11, AC and DC Electrical Systems on Boats. Investigate further/trace, and service, repair or replace as necessary.

INVERTER SYSTEM LOCATION & VENTILATION

Starboard outboard engine room over the battery bank. Ventilation was adequate.

FINDING B-22

The inverter is mounted above main battery bank.

RECOMMENDATION

ABYC Standard A-31, 31.6.6 states: To avoid corrosive fumes, battery chargers, inverters, and inverter/chargers shall not be installed directly over lead-acid batteries. Investigate further and move equipment as necessary.

SOLAR POWER SYSTEM

Reportedly four, 135 watt panels controlled by a TriStar MMPT and monitored by a TriStar TS-RM-2 Remote Meter on saloon forward bulkhead.

WATER SYSTEMS

FRESHWATER SYSTEM

WATER TANKAGE MATERIAL

Fiberglass.

NUMBER OF FRESHWATER TANKS

Three in total. Two 100 gallons in lazarette and a 230 gallon in companion way below.

WATER TANKAGE CAPACITY

Reportedly, 430 gallons (per builder).

WATER TANKAGE SECURING

Bonded/glassed to the hull.

WATER TANKAGE LOCATION
In starboard side closet in owners stateroom.

WATER FILL LOCATION
Lazarette.

WATER FILL MARKING
Both fills were properly marked for water.

FRESHWATER TANKAGE VENTILATION
Port and starboard hull sides.

FRESHWATER PUMPS
Galley Maid super water pump (12 Volt) and a Teel water systems pump (120 volt) in tandem.

FRESHWATER FILTRATION
Standard household 2.5 x 10 inch filter canister housing. Monitor and clean often.

FRESHWATER ACCUMULATOR TANK
Wayne 8.5 Gallon capacity.

FRESHWATER PIPE/HOSE PLUMBING
Copper pipes, PVC and rubber hoses installed throughout the vessel.

WATER LEVEL MONITORING
None installed. Highly recommended.

COMMENTS
Recommend periodically sanitizing the vessel's water tankage and water delivery systems.

HOT WATER SYSTEM

WATER HEATER
Isotherm 11 gallon capacity.

WATER HEATER PRESSURE RELIEF VALVE
Relief valve built into the tank.

WATER FILTRATION SYSTEM

DESALINATION (FRESHWATER MAKING) SYSTEM
Galley Maid RO400C 400 gallon per day capacity.

FINDING C-11

The desalination system has reportedly been out of use for an over-extended period of time, and will require a full inspection and service.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary. The system should be cleaned, sanitized and flushed before being put back into service.

BLACKWATER SYSTEM

MSD (MARINE SANITATION DEVICE) SYSTEM (33 CFR 159)
Type III MSD Waste System (utilizes a holding tank or similar device that prevents the overboard discharge of treated or untreated sewage).

BLACKWATER TANKAGE
Reportedly, 80 gallon capacity (per builder).

BLACKWATER TANKAGE VENTILATION
The Blackwater tank's vent fitting was plumbed overboard at the starboard hull side through a charcoal filter.

BLACKWATER SYSTEM DISCHARGE

Whale Diaphragm type overboard discharge pump, with Y-Valves and deck pump-out fitting.

HEAD/BLACKWATER SYSTEM COMMENTS

Blackwater tank level monitoring system "Tank Watch 4" observed displaying level.

STEERING SYSTEMS

STEERING SYSTEM TYPE

Hydraulic.

STEERING SYSTEM MANUFACTURER

Hynautic steering system.

NUMBER OF STEERING STATIONS

Two pilothouse helm and flybridge helm.

STEERING HOSES/LINES

Copper pipes with copper fittings, and reinforced rubber hoses.

FINDING A-9

The copper hydraulic steering lines in the lazarette along with the coper to hose fitting are showing signs of corrosion.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

STEERING FLUID RESERVOIR PRESSURE

Gauge indicated 27.5 lbs. pressure (required 25 - 35 psi pressure).

STEERING SYSTEM ACTUATORS

Appeared serviceable, except where noted.

FINDING A-10

The steering ram has a long extension arm to reach the port side tiller arm. This extension is connected to the ram's shaft with a universal ball joint. A line was observed on the ball joint that could indicate a stress point.

RECOMMENDATION

Investigate further, and service, repair or replace as necessary.

RUDDER STOCKS

Bronze rudder stocks.

RUDDER LOG PACKING GLANDS

Bronze hex nut type packing glands appeared serviceable. Monitor frequently.

RUDDER POSITION INDICATOR

Rudder angle gauge, integrated into the Garmin Multi-Display.

THRUSTERS

American bow thruster 7.5 KW at 24 volt. Controls in helm and flybridge.

ANTI-ROLL CONTROL STABILIZERS

Naiad Marine 201 Electro-Hydraulic Roll Stabilizers.

FINDING C-12

Hydraulic fluid residues (possible leakage) were observed at the starboard interior stabilizer conditioning unit.

RECOMMENDATION

Investigate further/trace, and service, repair or replace, as necessary.

GROUND TACKLE

ANCHORS

120# Manson Supreme with swivel and 50# Fortress FX-55.

ANCHOR RODE TYPE

Reportedly 350 feet of 3/8 inch high test feet chain. Second anchor line with 400 feet of 3/4 - 3 strand.

ANCHOR WINDLASS

Galley Maid BBHW - 1200 pound pull windlass reportedly rebuilt 2019, operated when tested.

COMMENTS

Chain rusty.

ELECTRONICS & NAVIGATION EQUIPMENT

VHF RADIOS
Garmin VHF 200 in Helm. Icom IC-M125 VHF in owners stateroom. Matrix AIS GX2100 on flybridge.

LOUD HAILER
From VHF in helm.

COMPASSES
Brass Binical with 6 inch card center helm 3.5 Saturn in flybridge.

MULTI-FUNCTIONAL NAVIGATION DISPLAYS
Garmin GPS map 7612xsv in helm and GPS map 7607 in flybridge.

AIS (AUTO IDENTIFICATION SYSTEM)
Integrated into Garmin GPS map in pilot house.

CCTV CAMERA SYSTEM
One in engine room. One on upper deck facing aft to see behind boat, displayed on Garmin GPS map.

NAVIGATION COMPUTER
Laptop running Rose Point Coastal Explorer in Pilot house, will not transfer with boat.

AUTOPILOT
Garmin Autopilot is set up for AUTO function only and not navigation function, needs to be set up, slave unit on flybridge. Garmin rudder indicator.

NFU (NON-FOLLOW UP) & FU (FOLLOW UP) STEERING
Garmin handheld remote for remote AP control, never used or tested.

MARINE RADAR
Garmin GMR 24 xHD Radar.

GPS (GLOBAL POSITIONING SYSTEM)
Garmin GPS antenna integrated into multi.

COLOR FISH FINDER
Fish finder display available on Garmin Multi Function display.

FISH FINDER
Garmin transducer for depth plus Raytheon V850 original depth color. Does not have hull offset on Raytheon.

DEPTH DISPLAY
Garmin GMI 20 small display will show depth.

SPEED DISPLAY
Garmin and laptop.

WIND INSTRUMENT
Garmin wireless wind speed and direction.

SEAWATER TEMPERATURE DISPLAY
Ratheon.

SATELLITE TELEPHONE
Delorm Inreach.

INTERCOM SYSTEM
Intercom in pilot house, flybridge, owners, saloon.

WEATHER INSTRUMENT
Mechanical brass 6 inch Weems & Plath temperature, humidity, barometer pressure gauge.

ANTENNAS
Two 8 foot Shakespeare plus one original approximately 18 foot Shakespeare.

OTHER ELECTRONICS

American Bow Thruster Control, engine gauges, air compressor driven air horn. Navigation lights controls, window wiper controls, searchlight control - Jabsco, six bilge pump controls, battery parallel switch, engine room warning system, automatic engine shutdown, water in fuel system (not hooked up) battery parallel, anchor control in helm, Air compressor control, Naiad stabilizer controls, engine shut down. Engine room blower and battery parallel switches at pilot house and flybridge. Unknown switches at flybridge next to emergency horn button.

ELECTRONICS COMMENTS

NMEA 2000 network tested and revealed Network H/L voltage differential out of specified range.

FINDING B-23

NMEA 2000 network tested and revealed Network H/L voltage differential out of specified range.

RECOMMENDATION

Investigate further/trace, and service, repair or replace as necessary.

COMMENTS

Garmin Navigation equipment was installed 11/05/2015 chart light and 12 volt fan.

SAFETY EQUIPMENT

SAFETY EQUIPMENT (U.S.C.G.)

WEARABLE PERSONAL FLOATATION DEVICES (33 CFR 175)

Two offshore Type 1 and Sterns type 111 vest and SOS Pender inflatable type 5 - needs CO2 replaced. Flybridge has 4 type 1 and 2 type 2.

THROWABLE PERSONAL FLOTATION DEVICES (33 CFR 175)

18 and 24 inch throwable ring in cockpit.

FIRE EXTINGUISHERS (46 CFR 25)

This vessel (Model year 2017 or older and between 40 and 65 feet in length with fixed engine room extinguisher) has a minimum USCG requirement of two five pound Class B (5-B) or two 10-B or one 20-B portable fire extinguisher aboard. There were three Kidde 3-A, 40-BC extinguishers, one in saloon, one in pilot house and one in owners stateroom. In addition, there were four white disposable Kidde B1 extinguishers throughout the vessel that were more than 12 years old.

ABYC A-4 recommends a minimum four Class ABC disposable fire extinguishers be aboard, located outside the engine compartment, steering position, sleeping quarters and in the galley.

FINDING A-11

A) The fixed fire suppression system and hand-held fire extinguishers did not have current annual inspection tags.

B) All Kidde white fire extinguishers aboard were more than 12 years old.

RECOMMENDATION

A) Have the fire extinguishers inspected and re-certified to comply with ABYC and NFPA recommended standards for fire protection.

B) USCG requires all disposable extinguishers over 12 years from manufactured date to be replaced. Replace the expired fire extinguisher, as necessary.

VISUAL DISTRESS SIGNALS (33 CFR 175.101)

Four red aerial flairs expiring 2024 with Olin pistol flag and whistle. The USCG requires vessels carry a minimum of three day and three night Visual Distress Signals (VDS). Any combination of the listed VDS will meet this requirement. In addition, if the vessel carries three VDS that are approved for both day and night use this will meet the requirement.

SOUND PRODUCING DEVICES (33 CFR 83)

Ships air horn not tested.

NAVIGATION LIGHTS (33 CFR 83)

Navigation lights operational except steaming light on flybridge brow, (in line with running lights).

"NO OIL DISCHARGE" PLACARD (33 CFR 151/155)

Found the USCG required 5X8 inch placard at the bilge pump control station.

"TRASH DISPOSAL" PLACARD (33 CFR 151/155)

Found the USCG required 4X9 inch placard.

"WASTE MANAGEMENT" PLAN (33 CFR 151) VESSELS OVER 39'4"

Found the Waste Management Placard onboard, thereby meeting the USCG requirement for vessels over 39'4. (Laminated sheet with previous boats name on it)

U.S.C.G. NAVIGATION RULE BOOK (33 CFR 83) VESSELS OVER 39'4"

The U.S.C.G. International and Inland Navigation Rule Handbook was observed onboard. This official government rulebook is required on all vessels over 39'4" in length. Also known as Nav-Rules CG169, contains the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS).

GASOLINE ENGINE SPACE VENTILATION (33 CFR 175/183, 46 CFR 25)

Main engine room ventilation fan with starboard side discharge did not operate. Two Small Jabsco fans, one on starboard side settee ran when tested, noisy. One in port side storage area ran, normal sounding.

AUXILIARY SAFETY EQUIPMENT

FIXED FIRE SUPPRESSION SYSTEM

Two 50# Carbon Dioxide fixed fire suppression tanks, in the engine compartment. Automatic thermal and manual activation.

FINDING A-12

The Fixed Fire Suppression System did not have a current annual inspection tag.

RECOMMENDATION

Have the system inspected and re-certified to comply with ABYC and NFPA recommended standards for fire protection.

BILGE HIGH WATER ALARMS

"System Monitor" at pilot house helm and flybridge had high water alarm.

LIFE RAFTS

None sighted. Highly recommended.

E.P.I.R.B.

ACR - Battery expired 2011, registration expired 2015.

FINDING C-13

Both of the E.P.I.R.B.'s battery inspections and registrations were expired.

RECOMMENDATION

Renew battery, register, test and mark for inspection, as necessary.

FIRST AID SUPPLIES

First Aid Kit at helm.

CARBON MONOXIDE DETECTORS (ABYC A-24)

One was in passage between saloon and pilot house, tested and worked, year unknown. Xintex CO detector in forward V-berth did not work when tested.

FINDING A-13

Carbon Monoxide Detectors were not observed in all accommodation spaces.

RECOMMENDATION

ABYC A-24.7 states A carbon monoxide detection system shall be installed on all boats with enclosed accommodation compartment(s). 24.6.2 A carbon monoxide detector shall be located to monitor the atmosphere in a contiguous cabin space and additionally in each sleeping space separated by solid bulkheads/structure and permanent doors/partitions

SMOKE DETECTORS (NFPA 302)

Smoke detectors were sighted in passageway between saloon and pilot house, in lower companion way intended to cover staterooms, in forward stateroom, and one under helm dash area.

FINDING A-14

Smoke Detectors were not installed in the accommodation spaces.

RECOMMENDATION

Smoke Detectors are very important safety equipment. Install Smoke Detector in the accommodation space, as necessary. NFPA 302 CHAPTER 12 SECTION 12.3. All vessels 26' or more in length with accommodation space intended for sleeping shall be equipped with a single station smoke alarm that is listed to UL 217 Standard for Single and Multiple Station Smoke Alarms for recreational vehicles and is to be installed and maintained according to the device manufacturer's instructions.

SEARCH LIGHT

10 inch chromed articulating searchlight. Both illuminated and articulated when tested. The controls are at both pilot house and flybridge.

VESSEL SAFETY PLAN

Recommend implementing, posting and continually updating a Vessel Safety Plan, outlining all of the vessel's specific safety procedures and the locations, maintenance protocols and serviceability or expiration dates of all onboard safety equipment.

COMMENTS

If cruising offshore, it is recommended that an EPIRB and a USCG approved self-inflating Life Raft be fitted to the vessel. Also, emergency personal locator beacons, an emergency ditch bag and a small manual water maker should be added to the ship's safety gear.

BILGE PUMPING SYSTEMS

ELECTRIC BILGE PUMPING SYSTEMS

Six bilge pumps with six breakers in the 12 volt panel and six control panels at helm cabinet with manual/auto function with light. All control panels tested at helm, lights worked. Duplicate at flybridge. All verified working on manual operation.

COMMENTS

Highly recommend weekly testing of bilge pump operation, adequate dewatering ability and removal of any bilge pump debris.

VESSEL DOCUMENTATION

HIN (HULL IDENTIFICATION NUMBER) COMPLIANCE (33 CFR 181)

The vessel's HIN (Hull Identification Number) displayed on the starboard aft upper hull corner was partially illegible due to paint build-up.

FINDING B-24

The vessel's HIN (Hull Identification Number) displayed on the starboard aft upper hull corner was partially illegible due to paint build-up.

RECOMMENDATION

Re-inscribe the HIN as required for compliance.

SUMMARY

VESSEL CONDITION

It is the Surveyor's 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 and accepted in the marine industry for a vessel at the time of Survey, determines the adjustment to the range of base values in the BUC USED BOAT PRICE GUIDE for a similar vessel sold within a given time period, as a consideration to determine the Market Value.

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 experience, my opinion is:

FAIR CONDITION

STATEMENT OF VALUATION

1. The ''FAIR MARKET VALUE'' is the most probable price in terms of money, which a vessel should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus.

Implicit in this definition is the consummation of a sale, as of a specified date and the passing of title from seller to buyer under conditions whereby:

a. Buyer and seller are typically motivated.

b. Both parties are well informed or well advised, and each acting in what they consider their own best interest.

c. A reasonable time is allowed for exposure in the open market.

d. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and

e. The price represents a normal consideration for the vessel sold, unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Estimated Fair Market Value is determined using a cross reference of data from Soldboats.com, BUC Used Boat Pricing Guides, NADA, Yachtworld.com, other online sales listings or dealers. Adjustments are made for condition and related equipment. The Estimated Market Value is for the vessel in its condition on the date or dates of the Survey, prior to any repairs or maintenance.

After consideration of the reliability of the data, the extent of the necessary adjustments and condition of the vessel, it is the Surveyor's opinion that the ''FAIR MARKET VALUE'' of the subject vessel is:

$265,000
Two hundred sixty five thousand dollars

Estimated Replacement Cost is determined using a cross reference of data obtained from Boat Dealers and other online resources.

The "ESTIMATED REPLACEMENT COST" indicates the retail cost of a new vessel of the same make/model with similar equipment offered by the same manufacturer. The "ESTIMATED REPLACEMENT COST" of the vessel is:

$1,250,000
One million two hundred fifty thousand dollars

Report Summary

SUMMARY

In accordance with the request for a Marine Survey of the "Sample Vessel", for the purpose of evaluating its present condition and estimating its Fair Market Value and Replacement Cost, I herewith submit my conclusion based on the preceding report. The subject vessel was personally inspected by the undersigned on September, 21st and 22nd of 2022. Subject to correction of deficiencies listed in sections A and B, the vessel is considered to be reasonably suitable for its intended use. Other deficiencies listed should be attended to in keeping with good maintenance practices or as upgrades.

SURVEYOR'S CERTIFICATION

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 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 the reporting of a predetermined value or direction in 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 whom it may concern.

Michael Woodring, Marine Surveyor