International Marine Surveyors, LLC
7719 Lower Hull Bay
St. Thomas, VI 00802
Tel: 340-244-8170 e-mail: info@imsurveyors.com

Pre-Purchase Survey

S/Y “Lion’s Shade”

44’ Nauticat Motorsailer

Prepared Exclusively For:
Corrie Fonvielle
Justin Tucker
Loren Tucker
Kay Tucker
510 Van Buren Ave NW
Piedmont, OK 73078

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Condition and Valuation Survey (Pre-Purchase)

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Condition and Valuation Survey (Pre-Purchase)

Vessel Particulars:

Date of Survey:	9 May 2022				
Date of Report:	16 May 2022				
US Documentation:	685285				
Registered Port:	St. Thomas, VI				
Build Year:	1985	**Hull Id Number:**	SLT4410811.84		
Builder:	Siltala Yachts	**Other ID No.:**	108 (Bow Locker inside Hull)		
Designer:	Kaj Gustafsson	**Radio Call Sign:**	WCD 6700		
***Particulars:**	**LOA:** 43.67ft	**LOA (Bowsprit):**	48.3ft	**LWL:**	37.75ft
	Width: 12.17ft	**Draft:**	5.92ft		
	Air Draft: 56.5ft	**Displacement:**	32,000lbs		
	Gross Ton: 15.0GRT	**Net Ton:**	13.0NRT		

**Note: Vessel particulars taken from documentation found aboard and sourced through manufacturer information online. Draft of vessel and mast height should be verified prior to voyaging.*

Ordering Survey: Ms. Corrie Fonvielle
510 Van Buren Ave NW **Email:** corrie@perfectlyoptimized.com
Piedmont, OK 73078 **Phone:** 405-881-1676

Vessel Description: S/Y "Lion's Shade" was described as a molded fiberglass hull, auxiliary powered, ketch rigged, pilot house motorsailer of approximately forty-four feet overall. The vessel was originally constructed by Siltala Yachts in Finland around 1985 and was commonly known as a Nauticat 44. The vessel showed a bowsprit platform, raked stem, generous forward flare tapering aft to vertical hull sides, and a nearly plumb transom. The deck showed a raised trunk cabin forward, followed by a low profile pilot house, ketch/cutter rig and raised aft deck design. Hull color was white with dark blue trim stripes and canvas. Teak toe rail and teak cap rail surrounded the vessel. "Lion's Shade" was displayed in graphic gold lettering centerline on the transom with "USVI" below.

Current Value: $135,000.00USD **Est. Replacement New:** $804,500.00USD

Survey Location: "Afloat" at Compass Point Marina, St. Thomas, USVI
"Hauled" ashore at Independent Boat Yard, St. Thomas, USVI

Attended by:	Company	Title
Capt. Kenneth Hodgins	International Marine Surveyors	Surveyor Associate
Corrie Fonvielle		Buyer
Justin Tucker		Buyer
Loren Tucker		Buyer
Kay Tucker		Buyer
Niles Pearsall	Amantha Yacht Sales	Seller's Broker

Condition and Valuation Survey (Pre-Purchase)

Purpose of Survey: "Condition and Valuation" survey of vessel to ascertain present condition and current "Fair Market" retail value and for the purpose of obtaining "Marine Risk" insurance coverage.

Scope of Survey: At the request of Ms. Corrie Fonvielle, and on behalf of the buyers, the undersigned marine surveyor did attend aboard the subject vessel as she lay hauled ashore on 2 May 2024 at Independent Boat Yard and afloat on 10 May 2024 at Compass Point Marina, St. Thomas, USVI. Survey of hull and machinery was conducted to ascertain current valuation.

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), Society of Accredited Marine Surveyors (SAMS) Code of Ethics and Recommended Survey Report Content, the voluntary standards and recommended practices developed by American Boat and Yacht Council (ABYC) and the National Fire Protection Association (NFPA) have been used as guidelines in this survey. The Hull Identification Number (SLT4410811.84) was verified, and a true photo representation of the hull number appears above in this report. An out of water inspection of the hull's exterior wetted surfaces and running gear was performed. Vessel's AC and DC power was used to power up the electrical systems, where available. The wiring was inspected where accessible and found to be generally serviceable, unless otherwise noted. Electrical systems and equipment were powered on to test operation only. If a detailed report as to the condition and capacities of the wiring and electrical components is desired, it is recommended that a qualified Marine Electrical Engineer be engaged. Electronics were verified by powering on each unit to verify operation only, where possible. Suitability of electronics for navigation should be determined by vessel's operator prior to voyaging. No reference or information should be construed to indicate evaluation of the internal condition of engines, transmissions, drives or generators, nor the propulsion systems or auxiliary power system operating capacities. Vessel's tankage systems were visually inspected where accessible. No obvious leakage was observed, unless otherwise noted; however, tanks were not confirmed to be full at time of inspection or gauges to be properly calibrated. If a more thorough assessment is desired, the tanks should be filled and checked under full tank status or pressure tested to ascertain the condition of each tank. Safety and fire equipment were visually inspected and deficiencies, if any, are noted. The vessel was surveyed without the removal of any parts, including fixed partitions, fastened panels, fittings, headliners and wall liners, heavy furniture, tacked carpet, appliances, electrical equipment or electronics, instruments, anchor line and 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 copyright International Marine Surveyors inspected, including but not limited to enclosures, covers and tops. Locked compartments and otherwise inaccessible areas would also preclude inspection. Survey requester is advised to open all such areas for further inspection. A visual inspection was only on accessible structures and no destructive testing was performed. Naval architecture and structural engineering analysis were not part of this survey. 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. This report is not considered an inventory, warranty, or guarantee, either specific 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.

Survey Equipment: The following equipment may have been used during the course of the survey to assist in determining the condition of various systems or materials.

Hard Plastic Head Hammer – Used for acoustic testing of decks, bulkheads, stringers, frames, and other structural members for detecting delamination, soft coring material, voids, etc.
Camera - Apple Pro 12MP camera system: Ultra Wide, Wide, and Telephoto cameras with 2x optical zoom in, 2x optical zoom out; 4x optical zoom range, Digital zoom up to 10x in JPEG.
Digital Multimeter – Klein CL390 TRMS Digital Clamp Multimeter used to measure AC and DC Voltage and Amperage.
Thermometer - Handheld non-contact infrared thermometer with laser pointer and Fahrenheit display.
Moisture Meter – Electrophysics Moisture Meter Model GRP33 with readings for GRP moisture indicating "Dry" "Moist" and "Wet.

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 particular system, component or 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 – Sufficient for a specific requirement.
Powered Up – Power was applied only. This does not refer to the operation of any system or component, unless specifically indicated.
Fit for Intended Use – Use which is intended by Survey Client (present or prospective owner).
Good - Unimpaired condition without significant wear or deviation from original strength and operational efficiency, no maintenance or repair required.
Satisfactory - Condition with wear and tear and other deficiencies of a minor nature not requiring immediate correction, repair, or renewal.
Unsatisfactory - Condition in which the adequacy of strength and/or operational status is marginally below acceptable limits or is in doubt. Remedial action, repair or renewal required.
Poor - Condition of undoubtedly inadequate strength or operational status. Repair or renewal required to reinstate serviceability.
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 accordance with the severity as defined in the Recommendations section. *Note: Some deficiencies, observations and suggestions may also be contained in the body of the report.*

REPORT OF SURVEY: At the request of Ms. Corrie Fonvielle, the undersigned marine surveyor did attend aboard the subject vessel as she lay hauled ashore at Independent Boat Yard, afloat alongside at Compass Point Marina, St. Thomas, USVI, and underway in the Caribbean Sea. The purpose of the attendance was to examine the vessel to the extent possible and produce a condition and valuation report to be used for fair market valuation and to obtain marine risk insurance coverage.

WE REPORT THE FOLLOWING FINDINGS:

HULL CONSTRUCTION: Molded resin rich, fiberglass reinforced, polyester resin composite laminate and gel cote surfaces with inlaid teak decking.

Frames: The hull was supported by two substantial fiberglass wrapped longitudinal stringers centerline, secondary fiberglass wrapped stringers outboard and transverse floors as necessary to support the molded keel, masts and hull structure. The framing system showed as sound and adequately proportioned to well support the hull, rigging and machinery. A series of transverse and longitudinal bulkheads constructed of marine grade, teak veneer faced plywood provided additional wrack strength and support to the hull and the deck structure. All bulkheads and framing systems showed continuous secondary bonding to the hull interior with fiberglass tabbing. Bulkheads and furniture fit secure and solid.

Bottom: Displacement V configuration with fine forward entry and soft chine sections. Bottom surfaces showed recently renewed hand applied anti-foul bottom coatings.

Keel: Molded construction, integral to hull, with internal encapsulated ballast, propeller shaft fairing, and propeller aperture. See hauled inspection comments and recommendations below.

Rudder: Double hung with large aperture, 2-inch stainless-steel rudder shaft, and through bolt mounted shoe with lower bearing. Rudder shaft, packing gland, pitman arm, and hydraulic actuator were sighted below aft cabin bunk hatch access. Rudder shaft was keyed to a stainless-steel pitman arm bolted to a top bearing support above a traditional packing gland. Packing gland showed evidence of weeping **(See Recommendations B1)**.

Topsides: Topside surfaces show a raked stem with pronounced flare and fine forward entry tapering aft to vertical hull sides with generous beam amidships and a stepped sheer line. A teak toe rail surrounded the decks outboard with a molded rub rail fastened outboard on the toe rail. The beam carried well aft to a nearly plumb transom stern.

Transom: Flat transom stern with round bilges and wineglass section below the waterline transitioning to rudder fairing. A folding stainless-steel boarding ladder was fit to the transom. Main engine and generator exhausts were at the waterline.

DECK AND SUPERSTRUCTURE: Deck and cabin trunk showed integral molding in fiberglass reinforced plastic, supported from below by bulkheads and cabinetry. The deck system was gel coat surfaces finished in traditional teak decking inlay in serviceable condition with wear noted at the screw fasteners and bungs **(See Recommendations C1)**. The deck joined the hull at an inward turning hull flange that formed a brief toe rail bulwarks reinforced by a solid teak toe rail. The hull deck join showed mechanical fastening at regular intervals and continuous chemical bonding where sighted at the interior.

Port Stern

Starboard Stern

Deck Layout: The **foredeck** was fit with a bow sprit of stainless-steel construction and varnished teak slat surfacing. The bowsprit system supported forestay, bobstay, dual anchor rollers, and was surrounded by a welded stainless-steel pulpit with varnished teak bow seat. Cutter stay was fastened to a strap type chain plate at the stem followed by an anchor locker and a deck mounted, horizontal (Lofrans) electric anchor windlass with capstan and chain gypsy. Anchor locker drained overboard above the waterline. Mooring cleats were outboard of the anchor locker with substantial chocks integral to the rub rail.

A raised trunk **cabin** followed on the centerline with three deck hatches ventilating the cabins below. Walkways lead aft on either side of the raised trunk cabin, past the low-profile pilot house, stepping up to the aft deck area in the stern. Decks were surrounded by a teak cap rail with single nylon coated lifeline below supported on stainless-steel stanchions. Boarding gates were fit on port and starboard adjacent to the pilot house sliding entry doorway.

The **aft deck** showed a centerline helm station with two pedestal mount chairs, mizzen mast centerline followed by ventilation hatch in the spacious aft deck surrounded by a stern pulpit with centerline access to boarding ladder. Davits were mounted to the transom, properly sized for the dinghy.

RIGGING: The vessel was fit as a ketch/cutter rig with two extruded alloy spars and alloy booms with painted coatings in serviceable condition. Masts were deck stepped, supported from below through compression posts to the hull framing. The masts were individually supported with adequately dimensioned stainless-steel wire rope rigging to strap type stainless-steel chainplates and D ring type fasteners at deck level. Mast steps showed open body cast aluminum bases with sheaves returning halyards to deck level. Main mast was fit with a tubular stainless-steel crow's nest at the lower spreaders accessed by folding mast steps. Main boom was supported on a rigid Selden boom vang with control at the mast base. Main sail was fit with three single point reefing lines with control at the forward end of the boom. Mizzen boom was fit with two single point reefing lines with control at the forward end of the boom. Cutter sail was fit with self-tacking track system on foredeck cabin trunk forward of main mast. Strap type chainplates were integral molded to hull structure below deck level with ends encapsulated in fiberglass mat, not visible by normal inspection methods due to the nature of the build.

Standing Rigging: 1x19 stainless-steel wire rope with mechanical fit swages, J hooks aloft, and open body turn buckles at deck level. Forestay was fit with a Harken MKIII roller furling system and open body turnbuckle fit to a stainless-steel tang at bowsprit, counter supported by a bobstay terminating at the stem above the water line. Cutter stay was fit with an identical Harken MKIII roller furling system terminating at a strap type chainplate at the bow. Main mast upper shrouds were supported by double spreaders and were fastened to strap type chainplates outboard of the side decks at the toe rail bulwarks. Lower shrouds were fastened to D ring type fasteners on the inboard deck adjacent to the cabin trunk. Starboard forward lower shroud cotter pin was not deflected, worked loose from pin, reseated and deflected on date of survey. Main mast back stays were fastened at the aft deck port and starboard cabin top to D ring type fasteners. Mizzen forward lower standing rigging terminated at the aft deck cabin top to D ring type fasteners. Mizzen upper shroud and aft lower terminated at a chainplate cluster outboard at the toe rail. Main and mizzen were joined at the mast heads by a triatic stay returned to deck level at the forward side of the mizzen mast terminating at a closed body adjustable turnbuckle.

Running Rigging: Dacron double braid line properly mated to the deck hardware. Main halyard was combination wire rope and braided line, monitor wire rope closely and renew with upgraded spectra type when burs form on the wire. Upgraded sail handling winches were adequately sized and properly positioned for ease of sail handling. Main mast showed port and starboard running backstays controlled at the aft deck cabin top. Deck hardware was properly sized for the weight of the vessel, properly mated to running lines.

Winches:	Main:	1 – Lewmar wire rope winch	Aft Helm:	2 – Lewmar 46 Self-Tailing
		2 – Andersen 10 Single Speed	Mizzen Mast:	2 – Andersen 10 single speed
		1 – Andersen 28 Two Speed		

Rig Condition: The rigging was visually examined at deck level for the purposes of this survey. The masts appeared to be properly tuned and held in straight column at rest and underway. No movement, separation or deflection was sighted at the mast bases. The painted surface of the masts showed slightly worn and chalky with several locations indicating corrosion at the alloy surface. Rigging was reported to have been inspected by a rigger with a separate report to be provided. Given the age of the vessel, it is recommended practice to have the rig inspected and tuned yearly by a qualified rigger with particular attention to chainplates, where visible **(See Recommendations B2).**

Sails and Canvas: Vessel was fit with a standard set of Dacron cruising sails. Genoa and cutter were in like new condition with integral dark blue marine canvas UV sun cover. Main and mizzen sails were fit with dark blue marine canvas Doyle stack pack systems with lazy jacks in good condition. Extensive marine canvas sun covers were fit throughout the vessel on the cap rail, over the pilot house suspended from the main boom, over the pilot house windows, suspended from the mizzen boom, and covering pedestal mounted chairs on the aft deck. Winch covers and instrument covers were fit at the aft helm station. Foredeck and aft deck hatches were fit with dark blue marine canvas covers. Pilot house windows were fit with textilene type shade covers. A dark blue marine canvas bimini supported by stainless-steel tubing provided shade to the aft helm station.

Lines and Fenders: Vessel was fit with an assortment of appropriately sized mooring lines in various lengths and appropriately sized fenders, mooring equipment was basic albeit serviceable. Mooring cleats were appropriately positioned at the bows, amidships and stern quarters, through bolt mounted.

ACCOMMODATION: The vessel was originally configured for live aboard cruising. Enclosed spaces showed two double sleeping cabins, a full main forward dining settee, a fully equipped galley, two enclosed head compartments, a separate shower aft, and a spacious pilot house/saloon with settee. Fore and aft areas connected through the raised pilot house. Overheads throughout were removable panels held in place by teak strips. Cabin soles throughout were traditional teak and holly pattern in well maintained semi-gloss finish. Cabinetry and bulkheads were finished in wood grain veneer with satin coatings.

Pilot House Helm

Galley

Forward Cabin: Chock vee double bunk forward with storage compartments outboard and opening ventilation/egress hatch overhead.

Galley: Fit aft of the forward cabin to port arranged in U shape with the double basin stainless-steel sink forward, gimbaled three burner stove and oven outboard and counter top space with top opening refrigerator below. Cabinetry spaces for storage were outboard and below the counter top space.

Forward Head: Outboard to starboard opposite the galley with manual flush Jabsco head, single basin sink, storage cabinetry, and wet shower arrangements. Head showed vented loop installed above waterline and Y valve for discharge to forward holding tank or directly overboard while offshore.

Main Saloon: Dining settee was positioned aft of the galley in U shaped configuration surrounding a pedestal mount table. Storage cabinetry was outboard of settee and outboard to starboard. Starboard countertop space hosted a top load holdover plate type refrigerator/freezer. Storage locker was outboard aft to starboard with safety gear and spares. Cabinetry in the aft bulkhead was fit with entertainment electronics.

Pilot House: Helm station was centerline with wheel steering, main engine controls, 12vDC distribution panel and ample chart table to port. Engine controls and gauges, VHF, instruments and chartplotter were mounted in the console over the helm station. Machinery space access was through the pilot house sole with lift out hatches, well insulated. An L shaped settee was aft to port around a pedestal mounted table. A single upholstered seat was aft to starboard. Sliding access doorways provided weather deck access to port and starboard. A large butterfly opening hatch in the pilothouse overhead provided light and ventilation. Companionway steps lead aft to the aft cabin.

Aft Cabin: Large double bunk centerline with access to machinery and rudder space below. The aft head was forward to port in the aft cabin with electric flush Jabsco macerating type head, vented loop, and Y valve for discharge to holding tank or directly overboard while offshore. A separate shower compartment was fit forward outboard to starboard. Bilge space access was through lifting hatches in the aft cabin sole.

MACHINERY: Machinery space was accessed through lifting hatches in the pilot house sole. Hatches were well insulated. Main engine and generator were each fit with a separate well insulated sound enclosure.

Main Engine Type: Auxiliary Diesel		**Rated:** 128HP @ 2600RPM
Make/Model: Ford Lehman Super 135		**Controls:** Single lever at each helm
Ser No: Unknown	**Hours:** 1488.1Hrs	**Gauges:** Analog at Pilot House console
Gear: Borg-Warner	**Model:** 10-18-008	**Gear Ratio:** 2.1:1

Engine/Drive Description: The engine was fresh water cooled through sea water heat exchanger system. Engine was supported through rubber isolation mountings on a steel grid system fastened atop the primary longitudinal stringers. Water-cooled exhaust system with water lock muffler and exhaust rated hoses with double band clamping where sighted. Shift and throttle control cables were single lever Teleflex control at each helm. The engine delivered power through a (Borg Warner) fluid clutch reduction/reversing marine gear, rigid coupled to a Drivesaver coupling to straight through, in-line conventional 40mm stainless-steel shafting. The shaft was supported in a fiberglass stern tube exiting the hull through a conventional shaft log fitted with bronze stuffing gland. Fuel was filtered through a dual Racor 75/500 Max filtration system prior to introduction at the engine with vacuum gauge at the aft cabin step. Fuel lines were copper from the tank top with flared end fittings. Fuel hoses were rated flex type between the Racor filter and the engine. Fuel tank selector valves were mounted in the aft cabin step adjacent to the Racor vacuum gauge.

Engine/Drive Condition: The engine showed regular maintenance and upgrading of ancillary components, machinery spaces were clean. Fluids showed as clean and within normal ranges for equipment type. The Racor filters showed evidence of sediment at the sight bowls **(See Recommendations C2)**. The alternator did not produce charging voltage or amperage during sea trials as indicated on the pilot house helm station voltage and amperage gauges and verified with a handheld multimeter **(See Recommendations B3).** Tachometer did not display RPM, see Sea Trial below. The pilot house helm shift and throttle lever did not function at sea trials **(See Recommendations B4).** Engine temperature was below pilot house helm gauge as verified with a handheld thermometer during sea trials, however temperatures increased above normal operating during sustained WOT running **(See Recommendations B5).** Exhaust mixing elbow showed signs of corrosion, typical for age **(See Recommendations B6).** A sea water leak was noted at the exhaust hose join in the aft cabin rudder post area during sea trials, single band clamps were at the join, rudder pin appeared to contact exhaust hose in this location on hard over test **(See Recommendations A1).**

Auxiliary Generator: The vessel was fit with a single diesel-powered electric plant shelf mounted outboard to starboard in the machinery space in a dedicated insulated sound enclosure with remote control and monitoring in the pilot house.

Aux. Gen: Westerbeke
Type: Fresh water cooled 3 cylinder diesel
Model: 5.5EGCD
Hours: 79.4hrs
Output: 120Volts/60Hz/5.5KW/45.8amps
Ser No.: 1996283

Generator Condition: The generator equipment was fresh water cooled through a heat exchanger three (3) cylinder naturally aspirated diesel engine with direct coupled air cooled electrical generation alternator. The unit was safely installed with all required disconnect switching arrangements for type and also with engine safety shutdown circuits as required. Sea water was circulated by an on engine belt driven rubber impeller pump. Coolant was circulated by an integral belt driven pump. Fuel was filtered through a single Racor R20P spin on type filter with clear bowl and proper rated flexible fuel hose band clamped to barb fittings prior to introduction at the on engine fuel filter. Generator starting current was supplied from the main engine starting batteries with a dedicated on/off rotary style switch in the aft cabin closet space adjacent to the generator. Exhaust gasses from the generator engine were channeled overboard through a water lift muffler and exhaust rated hoses with double band clamping at all joins, where sighted, with discharge at the starboard aft waterline. The unit showed in like new condition, with low hours, installed and secured in a dry location with reasonable service access. The generator started smoothly on the first attempt with no sign of excess exhaust gasses. Fluid levels within tolerable limits for the equipment type.

STEERING: Dual station wheel control from pilot house helm and aft deck helm stations with chain over sprocket system to hydraulic pumps fitted adjacent to each helm station delivering pressure to a Uniflow connection valve and Capilano hydraulic actuator attached to the pitman arm by pin heim joint. Steering was tested hard over to port and starboard from each helm station with no hydraulic leaks observed. An emergency steering tiller was stowed below the aft bunk for fitment to the rudder post. A NECO autopilot control was mounted at the pilot house helm station, powered on.

TANKS AND PLUMBING:
Fuel: LPG/Propane **Capacity:** 2 x 20# Tanks
Two (2) fuel service approved steel propane tanks were stored in two designated, vented fuel lockers at port and starboard side deck steps. Manual valve at port tank with pressure gauge for testing and remote solenoid shutoff distributed through LPG rated flexible hose with swaged end fittings.
Condition: LPG system appeared well installed with tanks secured in dedicated, direct overboard vented lockers on port and starboard side decks. LPG connections were observed at the port locker, properly installed with pressure gauge for leak testing, swaged end fittings and remote solenoid shutoff valve with control at galley bulkhead. Pressure gauge showed proper operation. LPG system solenoid control appeared to power on, did not produce flame at a burner when tested with oven mounted lighting control **(See Recommendations B7).**

Fuel: Diesel Oil **Capacity:** 252 US Gallons
Fuel was stored in two (2) welded aluminum tanks located outboard to port and starboard in the machinery space. Capacity was reported as 152 US gallons and 100 US gallons as sighted in the owner's manual found aboard. Fuel capacity was not verified at time of survey, recommend verify prior to voyaging. Fuel was transferred through swage fit copper tubing to valves mounted in the aft cabin step to select fuel source and return. Rated rubber hose band clamped to barb fittings delivered fuel from the selection valves to the Racor filter system prior to introduction at main engine and generator. Fuel level was displayed at analog pilot house helm gauges, port indicated 3/8, starboard indicated full on date of survey, recommend verify.
Filtration: Racor water separators showed a slight accumulation of debris as sighted through clear bowls **(See Recommendations)**. On engine filter showed recent service.
Distribution: Rated flexible hose through manual lift pump system. Deck fills labeled, vented overboard at the hull sides near the sheer.
Condition: Tanks showed clean; no diesel in bilge; filler and vent piping appeared in serviceable condition, hoses were properly secured.

Water: Potable water **Capacity**: 65 US Gallons
Potable water was stored in a single polyethylene tank located in the forward cabin bilge space accessed through hatches in the cabin sole. Labeled deck fill was at the starboard side deck with vent in the hull side near the sheer. Water tank level gauge was at the galley outboard of the sink, indicated empty on date of survey.
Distribution: Low voltage (Surflo) pressure demand pump was fitted in the forward saloon bilge space, powered on.
Piping: The water pump delivered through pressure draw down tank, reinforced PVC hose, and reasonable quality fixtures.
Condition: Fresh water pump powered on, tested at galley sink with unknown quantity of water aboard, pump cycled frequently indicated that pressure accumulator tank was discharged or the storage tank was empty **(See Recommendations C3).**

Water Maker: Offshore Marine Laboratories, Inc. **Capacity:** Unknown
A manually controlled, component system, reverse osmosis unit was installed under the aft cabin bunk. System was not in service on date of survey and was not run tested. Capacity is unknown and unit is reported not functioning, appeared in poor condition.

Hot water: Raritan Model 71211 **Capacity:** 12 US Gallons
Tanks: A single (Raritan) fiberglass shroud heater tank located in engine space outboard to port with 120vAC electric and waste heat capability. Waste heat was provided to the unit from the propulsion engine. The tank, fittings and piping showed in serviceable condition.

Black waste: MSD III Tank **Capacity:** 15 US Gal Est.
Waste water from the toilets (1 Jabsco electric flush and 1 Jabsco manual flush) was contained in two (2) plastic holding tanks located adjacent to each head area with macerating discharge pumps for discharge offshore. Capacity was estimated. Each marine head was fit with a three-way diverter valve for direct overboard discharge offshore. Both toilet fixtures showed in good condition when briefly run tested. Discharge lines were rated quality with vented loops above waterline to prevent back siphoning at the fixtures. Hoses showed properly secured with band clamping at all joins. A slight sewage odor was note at the forward cabin bilge space adjacent to the macerator pump, due for cleaning.

Grey Water: Waste water generated through the aft shower collected in a sump box at the aft cabin bilge with dedicated automatic electric pump for direct overboard discharge through above waterline fittings. Galley and head sinks discharge overboard through dedicated thru hull fittings below the waterline.

THRU HULL FITTINGS: Sea Valves and inlet strainers throughout the vessel were of good quality bronze. Several thru-hulls were noted to have been renewed between hauled inspection and afloat inspection. Discharge and inlet hoses were of rated quality for the individual applications and showed in good repair with proper band clamping noted at all connections. Bonding system at several thru-hulls was not connected **(See Recommendations).** A transducer thru-hull at the keel sump box to starboard was noted damaged on the exterior at hauled inspection, not replaced or removed at afloat inspection. On further close inspection at afloat survey, keel side transducer appeared to be an unused speed unit with blanking plug installed, see Hauled Inspection comments below.

ELECTRICAL: Vessel was originally configured for 120vAC 60Hz and 12vDC systems.

DC Electrical Systems:

Batteries: 4 – 12vDC Full River DC260-12 deep cycle AGM house bank
1 – 12vdC Full River DC210-12 deep cycle AGM starting bank

Containment: Batteries were well secured in dedicated storage boxes with lift off lids in the machinery space outboard of the main engine.

Disconnects: House bank rotary style disconnect switch at the pilot house settee with fuses and circuit interrupters installed at main DC buss bars in machinery space. Generator rotary style disconnect switch at the aft cabin starboard cabinet. A paralleling switch was provided at the aft cabin steps. High load labeled resettable circuit breakers were installed at the machinery space positive bus bar supplied House, Inverter/Charger, and Windlass.

Engine Charging: Starting batteries were charged through engine mounted alternators at main engine and generator.

Battery Monitors: Analog gauge at helm station displayed starting battery voltage. Inverter control panel displayed house bank voltage.

Shore/Generator Charging: 1 – Magnum Energy Magna Sine Model MSH3012RV Inverter/Charger mounted in machinery space to port provided AC power to house loads through main AC electrical panel. Remote control was mounted at pilothouse settee aft to starboard.

Shore/Generator Charging: 1 – MasterVolt Chargemaster Plus Model 12/100-3 battery charger mounted in aft cabin cabinet with remote control at pilothouse settee aft to starboard, not in use on date of survey.

DC Circuit Panels: DC branch circuit control was primarily at the helm station electrical sub panel through labeled toggle switches and LED indicator lights. DC circuit interrupts were not sighted for individual branch circuits, recommend trace and prove proper installation, provide spare fuses as necessary. Panel showed well installed, clearly labeled in serviceable condition where sighted. Behind panel installation was not visible.

Bonding System: A green wire bonding system had been factory installed at original thru-hulls, system was incomplete, disconnected in various locations, and not provided at new thru-hull installations **(See Recommendations B8)**. Hull zinc appeared serviceable. Prop shaft zincs had been recently renewed on date of hauled inspection, recommend monitor frequently and renew prior to complete wastage.

Lighting: Vessel was fit with low voltage DC LED lighting throughout the cabin spaces, powered on.

DC Electrical System Condition: Marine grade copper stranded wiring of adequate gauge showed well supported, organized, and originally installed to ABYC color code, in serviceable condition where sighted. Upgrades, additions, and repairs to the electrical system appeared well executed to original factory standards or improved.

AC (Alternating Current) Systems: Vessel was configured for 120vAC shore service, 120vAC generator and a 120vAC inverter.

Shore Service: Shore service was provided through two (2) Marinco 30 amp shore power inlets at the aft deck helm station providing shore power to house loads and air conditioning panels. Air conditioning shore service was not available dockside at time of survey, not tested. Primary disconnects were at the main panel and the AC panel, appeared to conform to ABYC E-11, within 10 feet of the shore cord inlet. Spare shore power cords were stowed in the main saloon settee, ends showed overheat burn marks, recommend replace prior to use.

Galvanic Isolator: Fail-Safe 60amp galvanic isolator in the aft cabin forward centerline cabinet adjacent to the main AC electrical panel.

AC Circuit Panels: Primary AC circuit controls were in a dedicated cabinet at the aft cabin companionway as well as two (2) sub panels at the pilot house starboard aft seat base. Magnetic circuit breakers controlled individual distribution circuits. Panels and individual circuits were clearly labeled. Voltage and amp meters were integral to each panel. A slide lockout bar provided break before make selection of shore or generator power at the main panel. Air conditioning circuits were reported as not connected to generator service.

AC Electrical System Condition: Marine grade copper stranded wiring of adequate gauge showed originally installed to ABYC color code, in serviceable condition where sighted. Shore power was in use at the primary panel on date of survey. Generator was test run and provided 120vAC power to the main electrical panel. Air conditioning panel and systems were not tested, no power available.

Navigation Electronics: A recent compliment of navigation electronics was provided aboard the vessel in both the main navigation station in main saloon and at the aft helm.

VHF: Raymarine Ray 55 VHF at pilot house
GPS: Raymarine Axiom 7DV at aft helm
Raymarine Axiom Pro 9S at pilot house helm
Radar: Raymarine Quantum 2 Doppler Radome
Compass: Two (2) Ritchie Powerdamp Plus binnacle mount at each helm station
Autopilot: Neco NM 692 MK3
Depth: Raymarine i50 display at each helm
Wind: Raymarine i60 display at each helm
Speed: Garmin chartplotter display
AIS: None observed.
Thermometer: Aft cabin bulkhead mount

Navigation Electronics Condition: Main saloon VHF powered on and returned traffic on date of survey, no MMSI was programmed, DSC function not active. Raymarine chartplotters powered on with local charts installed. Radar returned targets at ¼ and 8 mile ranges. Deviation card was not sighted for either compass. Autopilot control at pilot house helm was powered on, remote pendant at aft helm station was tested, see Sea Trial information below. Raymarine depth and wind displays at each helm powered on, calibration unknown. Vessel speed was displayed on the chartplotters. Recommend provide at least a handheld spotlight. Current paper charts were not found aboard. *Note: It is the responsibility of the master of the vessel to ensure current aids to navigation are aboard for the intended route prior to voyaging.*

Entertainment Electronics:

Audio: A dated Sony AM/FM/CD stereo was installed in the navigation station with speakers in the main saloon, powered on.
Note: Entertainment electronics were tested for power on only and this report is not intended to indicate suitability for each individual user's preferences.

APPLIANCES:	**Manufacturer:**	**Description/Location:**
Stove/Oven:	**Force 10**	Gimbal mount LPG three burner range and oven in galley.
Refrigerator/ Freezer Units:		Two (2) custom cabinet mounted well insulated hold over eutectic plate type refrigeration/freezer units in galley cabinetry and forward settee outboard cabinetry with compressors not powered on at this time.
Air Conditioning:	**Marine Airrr**	2 – 12000 BTU sea water cooled compressors below forward settee bench seating supplying individually controlled blower systems in the forward cabin and aft cabin. Individual blower controls at forward settee and aft cabin.
Water Heaters:	**Raritan**	1 – Model 171211 twelve (12) gallon water heater in machinery space with waste engine heat and 110vAC elements.
Water Maker:	**Offshore Marine Laboratories**	Desalination unit mounted below aft cabin bunk reported not operational or in service at this time.
Cabin Heater	**Espar**	Eberspacher Airtronic L 80 watt 12vDC diesel heater in pilot house with ducting forward and aft.

TENDER: Zodiac
Model: C260S **Year:** 2016
Serial Number: Z11132
Power: Honda 2.3 HP Four Stroke Outboard
Ser #: 1031521 **Model:** BF2.3D
Tender was inflatable type with inflatable keel and tubes, athwartship seat, oars with oarlocks, and roll up type floor. Tender engine was a 2.3 horsepower tiller control outboard engine with integral gas tank rail mounted on date of survey. Tender appeared in serviceable condition, suspended from davits, not test run at this time.
Package Value: $2,000.00USD

SAFETY EQUIPMENT:

Ground Tackle: **Primary:** One (1) Lewmar galvanized claw anchor 33# on bow sprit roller with galvanized chain mated to windlass gypsy stowed in the bow anchor locker.
Secondary: One (1) Bruce galvanized claw anchor 33# on bow sprit roller. No rode attached.
Stern: One (1) Fortress FX-16 with approximately 10 feet of plastic-coated chain and 75 feet of nylon rode mounted to stern pulpit with rode stowed in canvas bag attached adjacent.
Note: Rodes not ranged at this time.

Windlass: Lofrans Tigres Model TG003308 1200 watt 12 volt windlass with capstan and gypsy properly mated to chain mounted in horizontal configuration at the foredeck, did not power on **(See Recommendations B9).**

Flares: Visual distress signals not sighted **(See Recommendations A2).**
(33 CFR 175.101)

Fire Extinguishers: 1 – Kiddie ABC dry chemical Marine Type USCG B:C Size I in forward cabin, not dated, not inspected.
(46 CFR 25)
1 – Kiddie ABC dry chemical in aft cabin with plastic handle may be subject to recall, dated 2007, not inspected **(See Recommendations A3).**
1 – Halotron clean agent Marine Type USCG B:C Size I at pilot house starboard, not dated, not inspected.
1 – Kiddie Mariner Fyre Watch Model 385 Halon automatic extinguisher in machinery space, not dated, not inspected.
Condition: *Fire extinguishers were securely mounted and charged, without recent inspection* ***(See Recommendations A4).***
Note: Inspect and tag all fire extinguishers yearly. Your insurance policy may require annual inspection. All vessel operators should thoroughly read and understand the vessel's insurance policy.
USCG Regulations regarding portable fire extinguishers were updated in 2022. See: https://uscgboating.org/recreational-boaters/fire-extinguisher-faq.php

Fire Blanket: None sighted. While not required, it is advisable to securely mount a fire blanket adjacent to the galley as an alternate to extinguishing a stove top fire by discharging caustic fire extinguishing agent, which may cause unintended damage to adjacent sensitive electrical components.

Smoke Alarms: Smoke alarms not sighted **(See Recommendations A5).**
(NFPA 302)

cO Alarms: Carbon Monoxide alarms not sighted **(See Recommendations A6).**
(ABYC A-24)

Life Jackets: 2 – Type I Adult Offshore PFD in aft cabin locker.
(33 CFR 175)
It is highly recommended that USCG Type I Offshore Lifejackets be provided for each person onboard if the vessel will be operating offshore. USCG Type II Near Shore Buoyancy Devices and Type III Flotation Aids are not recommended for offshore use. Wearable life jackets must be readily accessible. You should be able to put them on in a reasonable amount of time in an emergency (vessel sinking, on fire, etc.). They should not be stowed in plastic bags, in locked or closed compartments, or have other gear stowed on top of them.

Throwable PFD: 1 – Type IV Throwable ring buoy at aft helm station.
(33 CFR 175) 1 – Type IV Lifesling 2 with line and storage bag stowed in aft cabin **(See Recommendations A7).**

Sound Producing Devices: None sighted **(See Recommendations A8).**
(33 CFR 83)

EPIRB: 1 – ACR EPIRB UIN: ADCE0 22845 42801 Battery Expired, recommend renew and register prior to voyaging offshore.

First Aid Kit: None sighted. While not required, it is highly advisable to have a well stocked first aid kit aboard prior to voyaging offshore.

Dewatering: 1 – Rule 1500GPH with automatic float switch in machinery space and manual activation switch at pilot house helm station electrical panel powered on at manual switch.
1 – Rule bilge pump in forward bilge with manual activation at pilot house helm station powered on at manual switch.
1 – Rule 1100GPH with automatic float switch in aft cabin sump and manual activation switch at aft cabin stair locker powered on at float switch and manual switch.
1 – Henderson manual bellows type bilge pump in starboard aft pilot house cabinet, not tested.

Navigation Lights: Port, starboard, and stern light illuminated when tested, conformed to
(33 CFR 83) 33 CFR 83 for power driven vessel less than 50 meters in length.
(ABYC A-16) Steaming light and mast head light were not visible in daylight conditions, recommend verify proper operation prior to voyaging between dusk and dawn.

Search Light:	None sighted. While not required, highly advisable to have at least a hand held unit aboard.
Oil Discharge Placard: *(33 CFR 151/155)*	Securely mounted at pilot house adjacent to machinery space.
Trash Disposal Placard: *(33 CFR 151/155)*	Securely mounted at galley bulkhead.
Waste Management Plan: *(33 CFR 151)*	None sighted. **(See Recommendations A9).**
Escape Hatches:	Emergency egress hatches are provided at each accommodation space.
Boarding Ladder:	Folding swim ladder at transom.

HAULED INSPECTION: Subject vessel was inspected while hauled ashore on 2 May 2024 at Independent Boat Yard, St. Thomas, USVI. Areas of the hull obscured by stands were not inspected. The lower portion of the keel was not inspected in the areas of the keel blocks. Close visual inspection of the wetted surfaces of the hull, running gear, rudder, and thru-hulls was conducted. Sounding by phenolic hammer was performed throughout the entire wetted surface of the hull in an approximately 12 inch by 12 inch pattern. Propeller and shaft were examined, cutless bearing was inspected. Rudder bearings were tested by manually actuating the rudder to port and starboard as well as testing side to side at the rudder shoe. Thru-hulls were visually inspected. No destructive testing or removal of fastened fittings was performed. See Surveyor's Prior Involvement with Vessel statement below.

Hauled Observations:

- Two (2) areas at the port keel sides were noted to sound as areas of concern during percussion testing with phenolic mallet. One (1) area at the starboard keel side was noted to sound as an area of concern during percussion testing with phenolic mallet. The area was outlined in chalk for identification **(See Recommendations B10).**
- Several small quarter sized previously ruptured blisters were noted in the port forward bow area **(See Recommendations B11).**
- The fairing at the aft of the keel supporting the shaft log was cosmetically imperfect and the entire section sounded as an area of concern during percussion testing with phenolic mallet. The area had not been covered in anti-foul coatings and showed a crack at the upper starboard edge (**See Recommendations B12)**. See Photo: IMG_2516.

- Hull surfaces were spot checked with a moisture meter in the areas of concern, adjacent to ruptured blisters, and flaked off bottom paint areas. Topside surfaces were also spot checked with a moisture meter. Topsides surfaces showed Dry. See Moisture Meter Comments below.
- "Haloing" of the anti-foul coatings was noted throughout hull surfaces on previous inspection **(See Recommendations B13)**.
- Anti-foul coatings showed multiple layers of previous coatings, recently renewed, See Photos.
- Sacrificial zinc anodes at the hull side showed minimal deterioration, age unknown, see bonding system comments and Photos.
- Propeller and shaft zincs had been renewed.
- Thru-hull scoop strainers appeared to be plastic, one was damaged at starboard forward hull side **(See Recommendations B14).**
- Thru-hull fittings and ball valves were reported to have been inspected by the local machine shop and several had been renewed. Thru-hulls were inspected at the interior. Green wire bonding system was noted to be partially installed, not attached at all thru-hulls, new and existing. New thru-hulls were noted in the forward main saloon starboard bilge space. One new thru-hull was noted in the master aft master cabin bilge space to starboard.
- Underwater metals continuity test was spot checked at the exterior thru-hulls, inconclusive as connections at the interior were not complete.
- Speed transducer at starboard keel side was damaged, missing the lower portion of the flange, **(See Recommendations B15)**.

Moisture Meter Comments:

- Electrophysics Moisture Meter Model GRP33 provided GRP relative readings on a scale indicating "Dry" "Moist" or "Wet". Moisture meters, in general, function by measuring conductivity, which can also be influenced by substrate materials, particularly metals either suspended in anti-foul paint coatings or withing the structure of the vessel.
- Wetted surfaces of subject vessel were covered in anti-foul coatings of unknown type.
- In general, areas where the black bottom paint had flaked away to an under layer of red bottom paint, moisture meeting meter readings were lower.
- Top sides moisture meter spot readings were within tolerances, at a low level, indicated "Dry" where tested.
- Moisture meter readings taken at the wetted surfaces of the subject vessel, including the keel and rudder, should be considered **inconclusive** as the content level or presence of metals in the anti-foul paint and encapsulated ballast was unknown, see Summary of Osmotic Blistering below.
- Following above recommendations, and based on findings, if a full moisture study of the subject vessel wetted surfaces is desired, complete removal of anti-foul coatings to the gel-cote layer would be required to potentially provide meaningful results.
- Percussion sounding with phenolic mallet may be a more effective way to monitor subject vessel wetted surfaces hull condition and should be performed at each maintenance haul out.

SEA TRIAL: Sea trials were conducted on 10 May 2024 departing Benner Bay southbound through Jersey Bay and into the Caribbean Sea. The main engine started without excessive cranking or excessive exhaust smoke. Main engine was run tested through varying RPM settings. Engine controls were operated at the aft deck helm station, pilot house helm station throttle control did not operate. Sustained running showed elevated operating temperatures at the pilot house gauges, temperatures were verified to be withing tolerances at cruising RPMs with an infrared thermometer, indicated gauges or sender were not calibrated. Engine temperature was elevated at WOT. Tachometer did not function. Alternator did not provide charge voltage **(See Recommendations).** Steering and autopilot were observed for proper operation without exception. Fuel level was approximately full, water load was empty, and seven (7) adults were aboard. Vessel showed light loads and trim for cruising. The cabins were quiet, no pinching was noted underway in light winds and calm conditions. The jib, cutter, main and mizzen were set and observed on both tacks without exception.

Weather: Wind: 8-12 knots, Swells: 2-4 feet, Temperature: 81F, Humidity: 80%, Visibility: 10mi.

Engine Performance: Note: RPM gauge did not function, RPM unknown, readings were taken based on vessel speed. Recommend repair tachometer and verify operation data through all rated RPMs.

RPM	Vessel Speed	Temp IR (F)	Temp (F)	Oil Press (PSI)	DC Volts
Idle:	2.1kts	144	175	35	11
	5.0kts	151	175	35	11
	7.3kts	150	175	40	11
	8.0kts	152	179	40	11
WOT:	8.7kts	175	210	41	11

Engine/Mechanical Survey: There was no mechanical or engine surveyor onboard during the Survey.

SUMMARY:

Summary of Osmotic Blistering: Osmotic blistering is a condition found in the wetted surfaces of vessels constructed in this era utilizing polyester resins. It is a common and well researched condition and may or may not affect the structural integrity of the vessel depending on the depth of the delamination. Research and time have proven that polyester-based resins are susceptible to osmotic blistering, while vinylester resins and epoxy are more resistant to blistering. Blister formation in polyester laminates are caused by permeation of sea water through the gel-cote layer and/or exterior fiberglass layers beginning a hydrolysis reaction with small pockets of water-soluble materials trapped in the laminates from the layup process. Water-soluble materials are part of the laminates and resins such as thickening agents and couplers which allow resin to stick to glass fiber filaments that form the glass fiber reinforced plastic construction of modern vessels. The result of sea water contact with water-soluble materials is a chemical reaction creating a bubbling effect within layers of laminate. This bubbling effect at or near the surface is evidenced with bubble shaped blisters visible on the exterior. It is common for vessels of this era and build material to show signs of osmotic blisters. Osmotic blisters are not necessarily a structural concern, depending on depth of damage, and many vessels operate for many years, even decades, with blisters apparent on the hull. A prudent vessel owner will continuously monitor, and repair as necessary, larger delamination areas, blisters larger than a quarter, and blisters that increase in size between yearly haul out inspections. For further information, see references.

Fit and Finish: Cabin soles throughout vessel were of traditional teak and holly with semi-gloss finish in excellent condition. Bulkheads were of composite laminate construction with wood grain veneer overlays with satin finish in excellent condition. Cabinet systems, passage doors and interior paneling were teak and wood grained pattern veneer with satin finish in excellent condition throughout. Counter tops and workstations in the galley and heads showed white Formica type surfaces in excellent condition. Cabinetry and bulkheads in the heads and aft shower showed teak accented cabinets and fiddles with white Formica finishes. Overheads throughout showed sectional coverings accented with satin finished teak in excellent condition. Headliners were removeable to allow access to maintenance items. Furniture throughout was built in with high grade upholstery in serviceable condition. State room upholstery and furnishings all appeared in serviceable/clean condition. The exterior hull surfaces show regular maintenance. Deck surfaces were maintained in clean and serviceable condition.

Hull Condition: Scantlings appeared well engineered, adequately supporting the hull structures. The framing system showed in sound condition where sighted. Primary and Secondary fiberglass bonding, where sighted showed adequate adhesion to the hull and deck structures. The bulkhead and furniture structures showed in sound condition with no stressing, movement or debonding indicated. No hinging, movement or hard spotting was detected on the hull skins. Bilge spaces and machinery compartments showed well maintained and clean. Hatches and opening ports showed as well sealed.

Deck Condition: Decks showed gel cote and teak surfaces in serviceable condition. The hull/deck join was examined at intervals along the hull interior and showed as tight and dry. No physical defects or distortion was noted on the hull exterior. No stress fracturing, discoloration or delamination was evident in the molded surfaces. Teak decks were nearing end of service life.

General Condition: Subject vessel was found to be in sound overall condition throughout. A constant ongoing maintenance program was in evidence. Hull, rigging and machinery all showed regular maintenance and in better than average condition for vintage and service type. Vessel was originally constructed for blue water cruising during a developmental era of fiberglass composite construction when osmotic blistering was not well understood. Osmotic blisters observed in the hull skin appeared to have been cosmetic in nature. Hull surfaces should be monitored for further development of blisters and mitigated at each haul out as necessary. Areas of delamination concern at the keel sides and shaft fairing should be addressed and if repairs are properly executed could be restored to original condition. Wetted surfaces should be monitored at each subsequent maintenance haul out and repairs, if any, initiated immediately upon identification of faults. Shaft log fairing at aft section of keel should be monitored for further degradation at each subsequent maintenance haul out, particularly if vessel is relocated to northern waters where freezing conditions may be encountered, and repaired or renewed as necessary. Assuming qualified repairers are engaged, subject vessel could be returned to original build condition within a reasonable degree of certainty. It is the opinion of the undersigned marine surveyor that, as best that can be ascertained by visual inspection, the basic hull and deck structures were sound, well completed and well maintained for vintage and service type.

Fitness for Purpose: Subject vessel was found to be adequately equipped and properly maintained for Caribbean cruising.

RECOMMENDATIONS: The following "A" level Recommendations must be carried out in a strong workmanlike fashion in a timely manner to insure the continued safe operation of the vessel and safety of her crew. Deficiencies are noted with an "A" "B" or "C" priority level as follows:

A. "A" level deficiencies are **FIRST PRIORITY/SAFETY/STRUCTURAL** findings or regulatory requirements and should be addressed prior to the next underway excursion of the vessel.
B. "B" level deficiencies are SECONDARY PRIORITY FINDINGS needing timely attention to prevent further deterioration or future failure and may be necessary for vessel's intended use.
C. "C" level items are Surveyor's Notes and Comments compiled during this attendance. Discrepancies noted do not necessarily pertain to the safe operation of the vessel but may be of interest from the standpoint of sound maintenance practices.

A - FIRST PRIORITY/SAFETY/STRUCTURAL Recommendations:

A1 – Closely inspect leak at exhaust hose join in aft cabin rudder space, repair leak, provide double band clamps at join per ABYC P-1, or renew hose as necessary. Reconfigure exhaust hose route to clear rudder pin on hard over to starboard.
A2 - Provide visual distress signals per 33 CFR 175.101 prior to next underway.
A3 – Renew out of date fire extinguisher at aft cabin.
A4 - Provide fire extinguishers to conform with 46 CFR 25 for vessel model year prior to 2017. Three (3) total USCG approve Marine Type Class: BI/5-B required aboard, mounted in manufacturer bracket, inspected, and tagged yearly.
USCG Regulations regarding portable fire extinguishers were updated in 2022.
See: https://uscgboating.org/recreational-boaters/fire-extinguisher-faq.php
A5 – Provide smoke alarms per ABYC A-4 and NFPA 302 requirement to provide at each sleeping accommodation space, a combination smoke/cO unit may be acceptable.
A6 - Provide Carbon Monoxide alarm in accommodation spaces per NFPA 302 and ABYC A-24. Carbon Monoxide is a colorless, odorless, and tasteless deadly gas that is formed by the combustion of carbon or a carbon compound and can be fatal within just minutes of exposure and may originate from another nearby vessel.
A7 – Mount throwable Type IV Lifesling in appropriate exterior location, typically stern pulpit, and securely attach end of line to vessel.
A8 – Provide vessel with sound signaling device per 33 CFR 83.
A9 - Provide vessel with waste management plan per 33 CFR 151.
See: https://www.boatus.org/clean-boating/recycling/waste-management-plan/

B - Findings and Recommendations:

B1 – Tighten rudder packing, clean all corrosion from area and apply anti-corrosion spray. Monitor for further leaks and renew packing as necessary. See Photos: IMG_3479.
B2 - Have rig inspected yearly including chainplates where accessible. NDT chemical testing may be appropriate at deck level and below where accessible. Renew rigging as required at annual rig inspection.

B3 – Troubleshoot alternator, repair, or replace as necessary, and prove proper operation. Verify accuracy of pilot house helm voltage and amperage gauges.
B4 – Troubleshoot and repair pilot house shift and throttle lever, prove proper operation.
B5 – Recommend main engine sea water cooling system flush with Barnacle Buster or similar, prove proper operating temperatures at sustained running. If over temperature conditions persist, thorough maintenance cleaning of the heat exchanger may be necessary. Calibrate pilot house temperature gauge or sender unit as necessary.
B6 – Clean corrosion at main engine exhaust elbow, monitor for leaks and repair or replace as necessary. See Photos: IMG_3511
B7 - Further investigate LPG system, confirm LPG cylinders full, troubleshoot solenoid valve as necessary, and prove proper, safe operation. Recommend keep tank valves in off position when not in use.
B8 – Further investigate green wire bonding system and reinstate all connections or provide where missing per ABYC E-2. Confirm less than 1ohm resistance throughout at next maintenance haul out. Cathodic protection system, if installed, should connect all underwater metals to one point at a sacrificial anode (zinc) connection.
B9 – Troubleshoot windlass and prove proper operation, repair as necessary.
B10 - Further investigate areas of concern at keel sides at next maintenance haul-out by minor drilling of ¼ inch holes, vacuum dry as necessary, allow to dry completely if moisture is found and inject thickened epoxy to mitigate any delamination found.
B11 - Cosmetically repair any and all blistered areas by grinding area back to solid laminates in a feathered pattern, filling with thickened epoxy, and sanding flush prior to applying new anti-foul coating at next maintenance haul-out. Monitor hull surfaces for further blister development and repair as necessary at each maintenance haul out.
B12 - Further investigate fairing area aft of keel in way of propeller shaft log by minor drilling of ¼ inch holes, vacuum dry as necessary, allow to dry completely if moisture is found and inject thickened epoxy to mitigate any delamination found. Closely inspect shaft log for proper sealant, reseal as necessary. Closely inspect area at top of fairing where crack was noted, repair as necessary. See Photo: IMG_2516.
B13 - Improperly configured bonding system or sacrificial anode over-protection may cause “haloing” effect in anti-foul coatings, monitor at next maintenance haul-out, see bonding system recommendation above.
See: https://stevedmarineconsulting.com/reference-cell-testing-know-thy-corrosion-protection-level-editorial-old-vs-new/
B14 - Renew damaged thru-hull scoop strainers at next maintenance haul out. See Photo: IMG_2523.
B15 - Renew damaged speed transducer at bilge sump keel starboard side or remove and plug with thickened epoxy and stepped out layers of fiberglass mat at next maintenance haul out. See Photos: IMG_2521. Consult “West System Fiberglass Boat Repair & Maintenance” for proper techniques.

C – Surveyor's Notes and Comments:

C1 – Monitor teak deck screw fasteners for leaks, temporarily seal as necessary. Teak decks wear and become thinner with age and will eventually loose bungs, exposing screw heads to leaks. Decks will eventually need to be removed, fastener holes filled with thickened epoxy and replaced with new teak, non-skid paint coatings, or synthetic faux teak decking.

C2 – Recommend monitor Racor vacuum gauge during each run and renew filters prior to engine shut-down. Consider upgrading vacuum gauge to new unit with telltale pointer for indication of maximum vacuum after a run. Fuel tanks may eventually need to be cleaned if sediment continues to accumulate in Racor sight bowls. Clean Racor filters yearly or as needed.

C3 – Further investigate pressure draw down tank at freshwater piping in forward settee bilge space, refill or replace as necessary.

Upon completion of "A" recommendations above, subject vessel represents a "safe marine risk" for interested parties. No further recommendations at this time.

VALUATION: Valuation was derived by comparative methods currently common to the industry. Comparables were sourced through internet listing for yachts of her caliber and vintage presently being offered for sale as well as reports of recently sold vessels sourced through SoldBoats database. BucValue Pro was also used for comparison.

The following conditions are defined by BUC Value Pro and used as guidelines in this valuation:

Bristol Condition: Vessel was maintained in mint or Bristol fashion, usually better than factory new, and loaded with extras. Maintenance was performed as 'restoration' projects – a rarity.
Above Average Condition: Showed above average care and was equipped with extra gear. Maintenance was performed as 'improvement' to vessel.
Average Condition: Ready for sale requiring no additional work and normally equipped for its size. Maintenance was performed as 'repair of faults'.
Fair Condition: Requires usual maintenance to prepare for sale.
Below Average Condition: Substantial yard work required and/or maintenance was deferred, or maintenance previously performed was sub-standard.
Restorable Condition: Enough of hull and engine exists to restore the boat to usable condition.

YachtWorld is an MLS type service listing vessels offered for sale by brokerage firms worldwide with a search function that provided options for filtering results. YachtWorld results are also displayed across several partner platforms.
Yachtworld.com returned two (2) 1985 Nauticat 44 vessels listed for sale worldwide. Subject vessel was listed for $139,500.00USD.

SoldBoats is a self-reported database relying on broker reports of actual vessel sold prices worldwide with a search function that provided options for filtering results for relevancy.
Soldboats.com returned six (6) Nauticat 44 vessels sold within the last five (5) years worldwide. Model years used for comparison were 1983 to 1988.

BUC Value Professional comparison was evaluated for a 1985 Nauticat 44 with a single diesel engine, in the South Atlantic and Florida area adjusted for Above Average Condition.

	Low Retail	High Retail	Average Retail
Yachtworld.com	$134,900.00USD	$139,500.00USD	$137,200.00USD
Soldboats.com	$102,000.00USD	$163,500.00USD	$135,713.00USD
Buc Value	$123,000.00USD	$135,500.00USD	$129,250.00USD

Considerable emphasis was placed on her present, above average condition, new generator, ongoing maintenance, location, and the desirability of these particular models. Based upon these parameters subject vessel should have a current "Fair Market Retail" value of approximately:

$135,000.00USD

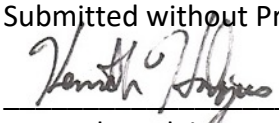
Replacement value: $804,500.00USD.

Condition and Valuation Survey (Pre-Purchase)

Surveyor's Prior Involvement with Vessel: Undersigned surveyor was engaged to attend the vessel in May 2022 for the purpose of an insurance renewal survey and to produce a condition and valuation survey report. Undersigned surveyor was engaged to inspect the vessel in March 2024 while hauled ashore for the purpose of a wetted surfaces inspection and to produce an addendum to the prior insurance survey. Comments, observations, and information contained herein may reflect prior knowledge of the vessel and also previous Recommendations. No other involvement with the subject vessel was recorded.

DISCLAIMER: In accepting this report and subsequent evaluation the undersigned surveyor makes no warranty either expressed or implied with regard to subject vessel and offers this report as his sole opinion based upon conditions observed and facts presented at the time of this attendance. This surveyor offers no warranty for latent defects undetectable by normal inspection methods. This survey report does not guarantee the future condition of the vessel. Subject vessel was examined "afloat" "hauled" ashore and "underway" for the purpose of this survey. Areas of the interiors including around the tankage could not be inspected or accessed. No opening of concealed spaces, testing for tightness, taking of borings or plugs, or any destructive testing was undertaken during this attendance. No hull moisture studies, or specific engine surveys were conducted. Naval architecture and structural engineering analysis were not part of this survey. No determination of stability characteristics or inherent structural integrity has been made and no opinion is expressed with respect thereto. 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. This report is not considered an inventory, warranty, or guarantee, either specific or implied. Copyright remains with the instructing client and the undersigned Surveyor. The Survey Report is submitted in good faith for the purpose stated and for the exclusive use of the client and those lenders and underwriters that will finance and insure the vessel for this client only.

Submitted without Prejudice:



Kenneth Hodgins
SAMS SA, AffiIIMS, ABYC
International Marine Surveyors, LLC

Attachments:
Photos: Twenty-six (26) with additional held on file.
References: Osmotic Blistering, ABYC, NFPT

PHOTOS:


Port Bow Hauled


Starboard Bow Hauled


Port Stern Hauled

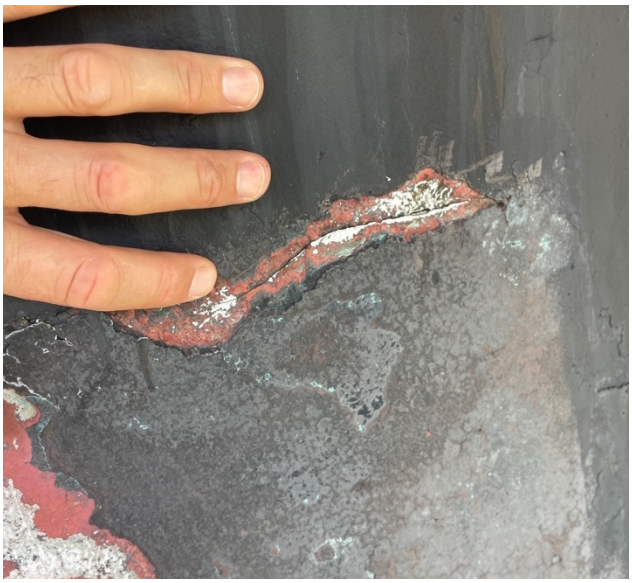

Starboard Stern Hauled

IMG_2504 – Previous layers of anti-foul coatings.

IMG_2505 – Port keel area of concern.

IMG_2509 – Fairing to port aft of keel in way of propeller shaft.

IMG_2515 – Fairing to starboard aft of keel in way of propeller shaft.



IMG_2516 – Crack at top of fairing, starboard side.

IMG_2517 – Starboard keel side, area of concern outlined in chalk, bilge area marked, damaged transducer and plate zinc.

IMG_2521 – Transducer damaged.

IMG_2523 – Scoop damaged.

Port Stern Afloat

Starboard Stern Afloat

Aft Deck and Helm Station

Pilot House Helm Station

Foredeck

Foredeck

Galley

Settee

Primary AC panel


AC Sub Panels


IMG_3479 – Rudder Packing Gland


IMG_3511 – Main Engine Exhaust Elbow Corrosion


Underway Port Tack


Underway Starboard Tack

APPLICABLE REFERENCES:

Osmotic Blistering References:

1. U.S. Coast Guard funded research report "The Causes of Boat Hull Blisters" by Thomas J. Rocket, Ph. D. and Vincent Rose, Ph. D., of Rhode Island University Department of Chemical Engineering, https://apps.dtic.mil/sti/pdfs/ADA206508.pdf
2. Gelcoat Blisters Diagnosis, Repair & Prevention, 9th Edition, Gougeon Brothers Inc, Bay City, MI 48707, https://www.westsystem.com/wp-content/uploads/Gelcoat-Blister-Manual.jpg

ABYC - A non-profit organization, founded in 1954, which sets standards for the safe construction and maintenance of boats in the United States through voluntary consensus safety standards for the design, construction, equipage, maintenance, and repair of small craft.

A-1 MARINE LIQUEFIED PETROLEUM GAS (LPG) SYSTEMS

1.8.3 Each appliance shall be served by a separate low pressure, (i.e., 14 in water column [3.5 kPa]), regulated supply line that shall originate inside the cylinder locker or protective enclosure.

1.8.4 A readily accessible manual or electrically operated (e.g., solenoid) shutoff valve shall be installed in the low or high-pressure line in addition to the cylinder valve, if the cylinder valve is not readily accessible from the vicinity of the appliance (see FIGURE 1 for installation example).

1.8.7 Cylinder and Connected Devices - Location and Installation

1.8.7.1 LPG cylinders, cylinder valves, regulating equipment, and safety devices shall be readily accessible, secured for sea conditions, and protected from the weather and against mechanical damage.

1.8.7.1.1 The LPG cylinders, valves, regulating equipment, and safety devices shall be installed in a dedicated locker meeting the requirements of A-1.9.

EXCEPTION: LPG cylinders valves, regulating equipment, and safety devices installed on the exterior of the boat where escaping gases will flow directly overboard.

1.10.3 Flexible LPG supply lines shall be equipped with permanently attached end fittings, such as a swaged sleeve or sleeve and threaded insert.

A-4 FIRE FIGHTING EQUIPMENT
A-4.6 FIRE DETECTION
A-4.6.1 A fire detection device or system shall be installed on boats with:
A-4.6.1.1 an enclosed accommodation compartment and at least one additional designated sleeping accommodation separated from an enclosed accommodation compartment by bulkheads and/or solid doors, or
A-4.6.1.2 at least one designated sleeping accommodation separated from the main cabin by bulkheads and/or solid doors.
NOTE: Fire detection devices may include smoke or heat detectors.
A-4.6.2 Fire detection devices or systems shall have an audible alarm.
A-4.6.3 Fire detection devices and systems shall be installed in accordance with manufacturer's instructions.
A-24.6.1 Carbon monoxide detectors shall be installed on all boats with an enclosed accommodation compartment(s). Carbon monoxide is a toxic, odorless, colorless, tasteless gas produced by the burning of carbon-based fuels. Carbon monoxide in high concentrations can be fatal in a matter of minutes. Unless the symptoms are severe, carbon monoxide poisoning is often misdiagnosed as seasickness; however, lower concentrations must not be ignored because the effects of exposure to carbon monoxide are cumulative and can be just as lethal.
E-2 CATHODIC PROTECTION
2.5 GENERAL APPLICATION OF CATHODIC PROTECTION
2.5.1 A cathodic protection system shall be capable of inducing and maintaining a minimum negative shift of 200 mV relative to the corrosion potential of the least noble metal being protected
2.5.6 All metals that are to receive cathodic protection from the cathodic protection system shall have a maximum resistance of one ohm to the cathodic bonding system anode.
2.5.8.2 Wire, where used as a cathodic bonding conductor, shall be at least #8 AWG.
2.5.8.6 Insulated conductors shall be identified by the color green or green with yellow stripe(s).
P-1 INSTALLATION OF EXHAUST SYSTEMS FOR PROPULSION AND AUXILIARY ENGINES
P-1.7.1.10 FLEXIBLE EXHAUST HOSE CONNECTIONS
1.7.1.10.1 Every exhaust hose connection shall be secured with at least two non-overlapping clamps at each end to produce a secure, liquid- and vapor-tight joint.
1.7.1.10.2 Clamps used for this purpose shall be entirely of stainless steel metal. The bands shall be a minimum of 0.5 in (12 mm) in width.

NFPA - The National Fire Protection Association is an international nonprofit organization, founded in 1896, devoted to eliminating death, injury, property, and economic loss due to fire, electrical and related hazards.

NFPA 10 Standard for Portable Fire Extinguishers
NFPA 10-6.1.3.6 - Fire extinguishers shall be installed in approved strap-type brackets specifically designed for this application.
NFPA 302 Fire Protection Standard for Pleasure and Commercial Motor Craft
NFPA 302-13.1 – Carbon Monoxide and Smoke Detection Systems. A carbon monoxide detection system shall be installed on all boats with an enclosed accommodation compartment.
NFPA 302-13.2 – Installation. Carbon monoxide detection systems shall meet the requirements of ABYC A-24, Carbon Monoxide Detection Systems, and shall be installed and maintained according to the device manufacturers instructions.
NFPA 302-13.3 – Smoke Detection. All vessels with accommodation spaces intended for sleeping shall be equipped with a single station smoke alarm that is listed to ANSI/UL 217, Standard for Safety for Single and Multiple Stations Smoke Alarms, for marine or recreational vehicle use and is installed and maintained according to device manufacturer's instructions.

END OF REPORT