Pre-purchase Survey of Yacht '[redacted]' Island Packet 485 Sept 2021

Report number 092102 - 17/09/2021

Compass Marine Yacht Surveys

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Protecting your investment and your crew's safety

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Contents

General Notes

Survey carried out on 6th, 7th, 8th and 9th September 2021, afloat and ashore at Chichester Marina and during a sea trial for [redacted], (the Client) by the surveyor, Andrew Edmond, Compass Marine Yacht Surveys **(www.-compassmarinesurveys.com) .**

Recommendations and suggestions defined:

Recommendation (Level A) - Items that should be addressed before vessel is used or the item relied upon and, or, which may affect insurability. They relate to defects with a high risk of failure and moderate to serious consequences for the safety of the crew and the vessel.

Recommendation (Level B) – These require attention in the near future or a given time span. They pose less imminent risk but are likely to cause problems in future, with moderate to serious consequences for the safety of the crew and, or, vessel.

Suggestions may also be made regarding items that may lead to impaired safety or value in the future. Some suggestions may only have consequences for appearance or comfort of crew. These can affect value.

Where recommendations or suggestions have been made, quotations for the work should be obtained and any significant work checked by a competent and independent person once carried out. Whether or not a recommendation or suggestion is made or at what level, there is no guarantee that an aspect or component will not fail unexpectedly.

Conditions of Survey

The vessel was afloat and ashore held in the slings of a travel lift. Moisture readings were taken after being ashore for approximately 2 hours. The Sovereign Moisture Meter's calibration and the weather conditions were measured and found good for taking moisture readings.

Please see Section J for more on moisture readings. Please see Section L on scope and limitations.

The mast was stepped so mast and rigging could only be inspected from deck level. Any defects found above that level were seen using a high definition x20 optical zoom camera. This does not allow full examination aloft. The rigging was also checked by a rigger commissioned by the client. The rigger climbed the mas and reported separately.

The engine was also checked by a marine engineer who was commissioned but the client and reported separately.

The vessel was seen washed down above and below the waterline. The survey included a visual inspection of the engine and installation when stationary and when running including under load.

The client did not require a valuation.

Before the inspection ashore began, the hull around the supports was examined for evidence of distortion and adequate, secure support. No issues were seen.

Many of the lockers where full of gear. Not all of this was removed for inspection and thus some areas were not inspected. This included asymmetric spinnaker in the chain locker, anchor chain, and warp and spare parts in the bilge lockers.

No special conditions affected the survey other than as mentioned in the text.

Summary

The vessel was fitted with a diversity of equipment, though most was original and had not been updated. The hull was in fair structural condition, with some minor faults and a more significant repair required to the tie rods by the mast. There was one or more potentially costly issue with the main engine which was only partially diagnosed.

Many of the through hull valve were seized and some other minor work was needed to these and to associated hoses.

Minor work was required to reduce slack in the steering and to inspect the rudder tube, tiller arm and rod connections in the lazarette. The rudder blade required opening up to remove wet foam.

Forestay and staysail stay attachments required further inspection/dismantling to check for crevices corrosion and some cracks at the staysail stay attachment required repair, the staysail furler foil needed replacing and the standing rigging will need replacement if more than 10 years old.

The cutlass bearing required replacement and the shaft alignment needed adjustment.

The windlass needed servicing, new firefighting equipment was needed and other lifesaving and safety equipment was needed.

Work was needed to the gas system and AC power system. Two new batteries will be needed in the short to medium term. The WC flushing needed attention.

Recommendations

Hull and ballast

Recommendation (Level A) - *Strengthen the attachment of the lower end of the tie rods aft of the mast.*

Recommendation (Level B) - Reinforce the cut stringer on the port side in the lazarette.

Recommendation (Level B) - Repair the delamination in the upper stringers in the chain locker and outboard of the calorifier in the main cabin.

Through Hull fittings

Recommendation (Level A) – *Fit appropriate sized wooden bungs with securing lanyards close to all through hull fittings including transducers.*

Recommendation (Level A) - *Close the hole in the transom.*

Recommendation (Level A) – *Maintain all Apollo ball valves and the three DZR valve under the navigation seat so that they open and close full and readily. Consider changing these three DZR valves.*

Recommendation (Level A) – *Replace the port aft deck drain hose in the aft cabin.*

Recommendation (Level A) – *Locate and inspect the watermaker brine outlet and inspect the chain locker sump pump outlet.*

Recommendation (Level A) – *Replace the washing machine hose with a more robust hose.*

Recommendation (Level A) – *Fit double clips on all hose attachments to through hull fittings.*

Recommendation (Level A) - *Check all anti-siphon loop vents.*

Recommendation (Level B) – Within two years, replace the fastenings on all through hull fittings with bolted-through flanges and seal the fastenings from the sea water.

Recommendation (Level B) – Remove the dinghy from the lazarette and inspect through hull fittings, hoses and clips behind.

Recommendation (Level B) – Replace the external non-return flap on the exhaust outlet.

Recommendation (Level B) – Within three years, replace the brass ball valve and ski fitting on the washing machine outlet.

Recommendation (Level B) – Remove electrical bonding from through hull fittings.

Steering

Recommendation (Level A) - *Remove the cover box over the rudder tube and tiller arm etc in the lazarette. Replace packing in rudder tube packing gland. Check the rod end. Monitor the movement at the deck level where the rubber stock is attached.*

Recommendation (Level A) - *Stow emergency tiller where it can be deployed quickly. Test at sea.*

Recommendation (Level B) - Remove part of one side of the rudder blade to remove the foam and inspect stock and tangs. Refill with bonding paste and re-laminate, sheathing with glass and epoxy resin for extra strength.

Deck

Recommendation (Level A) - *Replace the bolt with the stripped thread on the companionway steps.*

Recommendation (level A) - *Replace the C rings securing the guard wires with split pins, replace screw fastenings in both forward stanchion basis and tighten guard wires.*

Recommendation (Level B) - Repair the delamination and cracks on the central panel on the boarding platform.

Rig

Recommendation (Level A) - *Clean and inspect the bolts in the forestay stem head fitting chain plate.*

Recommendation (Level A) - *Fit a correctly sized washer over the clevis pin at the base of the forestay to prevent the split pin from being cut.*

Recommendation (Level A) – *Remove and inspect the fastenings at the staysail stay chainplate and the lower eye on the tie rod, replacing parts as necessary.*

Recommendation (Level A) – *Repair the cracks above and below deck at the staysail stay attachment.*

Recommendation (Level A) – *Replace all the standing rigging if more than 10 years old.*

Recommendation (Level B) – Gain access to the shroud and backstay chain plates internally. Replace or repair as necessary.

Recommendation (Level B) - Replace the C rings in the clevis pins at the spreader roots with split pins.

Recommendation (Level B) – Replace the staysail furler foil.

Recommendation (Level B) – Investigate why genoa furling requires so much force and correct this.

Recommendation (Level B) – Service Harken 16 mast winch**.**

Engine fuel system, stern gear and cathodic protection

Recommendation (Level A) – *Service the heat exchanger and air cooler, replacing parts as required.*

Recommendation (Level A) – *Replace the PCV valve.*

Recommendation (Level A) *– Allow for significant costs to repair the piston rings, cooling system or other cause of the significant engine fault noted.*

Recommendation (Level A) – *Further investigate and repair the intermittent engine alarms.*

Recommendation (Level A) – *Service the main engine.*

Recommendation (Level A) – *Connect fuel filler cap to base unit or replace unit and permanently close off the outlet on the top of the tank with no hose. Fit clips to vent hose on the top of the tank.*

Recommendation (Level B) – Fit double clips to all exhaust hose connections.

Recommendation (Level B) – Service the anti-syphon vent on the raw water feed to the exhaust.

Recommendation (Level B) - Replace cutlass bearing and adjust the shaft alignment at the thrust bearing. Allow to replace the rubber boot on the stern seal.

Recommendation (Level B) - Have the genset serviced.

Safety and other Equipment

Recommendation (Level A) - *Release the windlass clutch.*

Recommendation (Level A) - *Layout the bower anchor chain for inspection and allow to replace the entire length.*

Recommendation (Level A) - *Stow the anchor weight so that it cannot damage the sides of the hull in the chain locker.*

Recommendation (Level A) - *Confirm that the tricolour on the mast is working.*

Recommendation (Level A) – *Fit three new fire extinguishers with a combined rating of at least 21A/144B.*

Recommendation (Level A) – *Fit a fire blanket at the galley that complies with the BSEN 1869 standard.*

Recommendation (Level A) – *Fit a smoke alarm.*

Recommendation (Level A) – *Fit an automatic clean agent extinguisher in the engine compartment.*

Recommendation (Level A) - *Fit lights to the horse shoe buoys, attached with lanyards and check dan buoy light is working.*

Recommendation (Level A) - *Carry appropriate safety equipment including flares and lifejackets.*

Recommendation (Level A) – *Carry a fog horn.*

Accommodation and on-board systems

Recommendation (Level A) – *Replace the flexible hose at gas locker and the cooker. Inspect the copper pipe. Replace the a gas alarm sensor and the solenoid switch. Obtain a gas safety certificate.*

Recommendation (Level A) – *The AC power system required installation of an RCD and an MCB for each circuit.*

Recommendation (Level B) - Service the manual bilge pump and check the anti-siphon vents.

Recommendation (Level B) – Repair the cooker spark.

Recommendation (Level B) – Allow to replace the two batteries outboard of the generator.

Recommendation (Level B) – Check the anti-siphon vents on the shower outlets.

Recommendation (Level B) – Identify why the WC filling is so slow and repair.

Recommendation (Level B) – Check the anti-siphon vents on the holding tank discharge to sea.

VAT

Recommendation (Level A) – Confirm VAT paid status

Suggestions

Consider

- removing the anti-fouling by sanded, then scraped and recoated.
- applying a bead of adhesive sealant to the flange nut on the transducers internally.
- allow for replacing the bow thruster bushes and clean the carbon dust in the locker.
- *repairing the toe rail at the port forward lifting point.*
- *re-sealing the cockpit seat drains.*
- *Re-sealing the chainplate deck plates regularly.*
- *mousing all shackles.*
- *removing and re-sealing all deck fittings in the vicinity of the windlass mounting to prevent further water ingress causing the plywood reinforcement to get wet. Ventilation in the locker would also help to maintain drier conditions in the locker.*
- *replacing the gas regulator.*

The full report should be read to obtain an accurate account of the vessel's condition.

Details of " "

Type of vessel: Island Packet 485
Designer: Bob Johnson
Builder: Island Packet Yachts LTD (USA)
Year: 2002/2003

Serial no/ HIN: Not seen
Builder's number -
Registration:
UK Small Ships: n/a
UK Part 1: n/a Lapsed
RCD Category: A

Construction: GRP hull, deck and superstructure with integral long fin keel with lead ballast. GRP/composite full keel/skeg hung rudder.
Rig: Masthead Bermudan cutter.
Engine: Yanmar 4JH3HTE 92hp (67.7kW) @ 3,700rpm continuous (99hp @ 3,800 rpm max), indirect cooled, turbo charged. Serial number E21783.
Transmission: Kanzaki, Model KM4A and serial number 17822
Propulsion: Right handed bronze three bladed Max Prop feathering propeller

Length Overall	51'7"	15.7m
Length Water Line	43'2"	13.2m
Beam:	15'4"	4.7m
Draft:	5'3"	1.5m
Air Draft above DWL	63'6"	19.4m
Displacement:	39,000 lbs	17,690 kg
Ballast	16,000 lbs	7,258 kg
Water capacity	250 imp gals	1136 ltrs
Fuel capacity	33 imp gals	150 ltrs
Holding tank	50 imp gals	227 ltrs
Toilet flush tank	33 imp gals	150 ltrs

The above measurements were obtained from the manufacturer's manual and have not been checked by me and so no guarantee of accuracy can be given.

A. Hull skin, structure and through hull fittings

The vessel was seen ashore held in the travel lift.

A.1. Hull below Waterline

The hull was constructed of a GRP shell moulding with a lattice of plywood lateral 'floors' and longitudinal stringers below the waterline and a matrix of integral GRP and aluminium tanks above the keel amidships. Foam or Polycore

stringers were also seen running along the hull (two on each side) in the anchor locker and the lazarette. Internally, the shell moulding below the waterline was visible in very few places as access was restricted. It was seen, in the lazarette, in a limited number of places under the aft cabin sole, in the keel sump, outboard of the tanks in the main cabin, in some places under the small starboard cabin sole and in some places under fore peak sole.

a) **Coatings -** The hull had a heavy build up of anti-fouling coating below the waterline which was holding well. It is suggested that the anti-fouling is removed (sanded, then scraped off) and recoated.

b) **Damage –** No significant damage was seen to the hull below waterline.

c) **Moisture readings -** Moisture readings were taken on Scale A (0-100) of a Sovereign Quantum moisture meter, in shallow and deep mode. This scale is **relative** and does **not** express moisture content as a percentage of dry weight. See section J for more information on interpreting moisture readings. 44 readings were taken on the hull below the waterline (not including the rudder). At each location, the antifouling was first scraped off and allowed to dry for as long as possible (30 to 60 mins). Readings in each location were taken in shallow and deep modes.

The vessel had been ashore for approximately 2 hours prior to the readings being taken.

Note that GRP on parts of the vessel above the waterline will also show a moisture reading and that readings are affected by conditions. Compare readings below the waterline to the topsides (normally considered dry) in A.2. (c) were 14 shallow and 11 deep were the driest readings and can be considered 'dry' for this vessel and these conditions.

Table 1: Moisture readings on the hull below the waterline

Mode	Range below waterline (Sovereign meter)
Shallow	15-19
Deep	14-21

Readings below 20 are considered dry enough to be of no concern. Only four of the deep readings were either 20 or higher. All were on the port side. On the starboard side, all readings (shallow and deep) except one were below 20. The other was 20.

Readings in shallow and in deep mode varied little across the hull below the waterline. Readings on the port side were higher than the starboard side. Readings in deep mode were higher than shallow mode in the same location in only 34% of locations. In most of these locations, deep readings were only one point higher than the shallow reading for that location and the maximum difference between shallow and deep for the same location was 3 points. This indicates that chemical processes associated with moisture-related defects are not likely to be underway.

Having been out of the water for only two hours and having been in the water for many months prior to that, readings could be expected to drop by up to 5 points if left ashore for two or three months. Therefore levels were generally at the level where the risk of moisture related defects developing was low. See Section J

d) **Blistering -** No blisters or signs of burst blisters were seen.

e) **Wicking and gel-coat aeration –** No evidence of wicking or aeration was found on the hull below the waterline.

f) **Voids and delamination -** Hammer sounding revealed no indication of delamination or voids below the waterline.

g) **Stress cracking –** No stress cracking was found externally on the hull below the waterline. Forward of the keel, anti-fouling was scraped off but no stress cracks were seen.

Overwintering ashore will help to reduce the risk of moisture related defects developing in future.

Suggestion - Consider removing the anti-fouling by sanded, then scraped and recoated.

A.2. Topsides

The hull above the waterline was of GRP, with a core material used for longitudinal stiffening (a stringer on each side stringers). This was visible internally at the anchor locker and lazarette. There was a single painted or vinyl boot top.

a) **Gel coat condition -** The appearance was generally fair to good, though slight scratches were seen, one deep on the bow. Buffing and polishing is likely to significantly improve the finish. Two repairs were seen to the midships (slightly forward) one on each side. These were considered sound but not a high standard of finish.

b) **Delamination and voids –** Hammer sounding externally revealed no delamination on the topsides, however not all areas were reached. Internally, cored sections were in fair condition in the lazarette where accessed and hammer sounded. In the anchor locker slight delamination was noted on the stringers. See A.3.

c) **Moisture readings –** Moisture levels externally on the topsides were 14-15 in shallow mode and 11-14 in deep mode.

d) **Rubbing strake –** There was a moulded rubbing strake with a stainless steel rubbing strip screw-fastened. Fair condition, though some impact damage was seen to the strip.

A.3. Bulkheads and Structural Stiffening including internal mouldings

A number of components contributed to the overall structure:

- The monocoque shell moulding below the waterline.
- Longitudinal and lateral stiffening in the form of a lattice of longitudinal stringers and lateral floors of vertically positioned 20-25mm thick plywood sheets laminated to the hull and coated with flow coat. In the lazarette on the port side, a significant longitudinal stringer had been cut to allow fitting of the dive compressor. It is recommended that this is reinforced across the upper limit of the gap, perhaps by bolting a length of stainless steel angle iron from one side of the cut to the other. Movement was seen between the cabin sole moulding and a stringer and bulkhead at the mast step. See below. A small area of delamination was noted outboard of the calorifier.
- Two stringers were seen in the chain locker which were considered to run aft. In the chain locker the top one stringer each side was slightly delaminated.
- Main and partial plywood bulkheads running laterally including forward of the lazarette, forward of the aft cabin, forward of the aft heads, aft of the navigation station, forward of the main cabin, forward of the bunk/office cabin and forward heads and forward of the forepeak. These were bonded to the hull and all bonding accessed and tested was fair.
- The keel-stepped mast compression loads were taken directly on the keel.
- Tie rods between the deck and the cabin sole by way of the mast were fitted to prevent the deck form lifting and to reinforce the main bulkhead which was discontinued at the passageway. See below.
- Engine bearers. Sound where reached with a hammer.
- Please note that not all of the structure could be seen below inner mouldings, panels, tanks and machinery.

A number of inner mouldings were acting as sole boards and where not considered structural. At the mast step, the sole moulding for the forward section of the accommodation (at a lower level than the main cabin) was seen to have moved relative to the longitudinal stringer below and the bulkhead aft. (There was a separate sole moulding aft of this bulkhead (and at a higher level.) Aft of the mast and forward of the bulkhead, tie rods were fitted to prevent the

deck from lifting as the mast was keel stepped (not on the deck) and rigging tension and hull flexing will have a tendency to pull the topsides inboard, causing the deck to lift. The two tie rods (one either side and aft of the mast), were bolted through the sole moulding with an aluminium backing plate on the underside.

The construction, aft of and below the cabin sole, is very stiff with stringers, bulkhead and tanks significantly limiting the ability to flex. As a result, it is considered that a combination of the tie rods being periodically under significant tension, the very stiff construction immediately aft and below and the relatively flexible cabin sole mouldings has caused the sole board to lift from the stringer and bulkhead by way of the mast. It is considered that the tie rods should be attached to a stronger point ideally on the hull, rather than the bulkhead, sole moulding or stringer.

Recommendation (Level A) - Strengthen the attachment of the lower end of the tie rods aft of the mast.

Recommendation (Level B) - Reinforce the cut stringer on the port side in the lazarette.

Recommendation (Level B) - Repair the delamination in the upper stringers in the chain locker and outboard of the calorifier in the main cabin.

A.4. Skin Fittings and through-hull apertures

Note: No through-hull fittings were dismantled as part of this survey. These usually corrode from the inside.

Below or close to the waterline - The majority of the through-hull fittings had Apollo ball valves others had DZR brass ball valves. The details below note where Apollo or DZR valves where fitted. Some of the Apollo valves were fitted to flanges bolted through the hull (Apollo fittings). The Apollo valves and flanges were bronze and considered to have been fitted when the vessel was manufactured. All were either stiff or seized and were in need of maintenance. They were considered in fair to good condition and serviceable once freed.

All Apollo through-hull fittings were electrically bonded to the main anode. This was seen to have caused the oxidation of the fastenings on the bolted-through flanges (seen on the outside of the hull). It is recommended that these fastenings are replaced, the electrical bonding removed and the fastenings sealed from contact with the sea water.

DZR brass is a form of brass has a duplex crystalline structure which stabilises the zinc content so that the alloy does not experience dezincification as non-DZR brasses do. DZR brass is therefore significantly more corrosion resistant in sea water than brass and suitable for marine use.

Most or all the through-hull fittings were electrically bonded to the main anode. This is not recommended because if there is a problem with leaking current from the vessel this will affect all the bonded fittings.

The location, function and condition of all through hull fittings, seacocks and ball valves and other through-hull apertures was as follows (working forward from the stern).

1. **Engine Exhaust** - On the transom, below the boarding platform and immediately above the static waterline, bronze through hull fitting in fair condition with double exhaust clips to the exhaust hose internally, all in fair condition and secure. No valve. Bronze fitting not seen or reached internally. Clips reached with a hammer and found secure. Exhaust hose in fair condition where seen. The external non-return exhaust guard (rubber flap) was in need of replacement. A swan neck was seen in the hose in the lazarette to approximately deck level.
2. **Manual and main electric bilge pump outlets** - Either side of the exhaust fitting, nylon skin fittings, secure, not reached or seen internally, double clips reached with a hammer and found secure. Manual on starboard side and electric on port side. Hose fair where seen. Anti-siphon loops (engine room) with valves not checked.
3. **Transom hole -** There was a hole in the transom to port of the electric bilge pump outlet. This was seen letting water into the lazarette and possibly under the aft cabin bunk. This should be closed.

4. **Deck locker lid drain (port), LPG locker lid drain (starboard), deck drains and lazarette lid drain -** Below the boarding platform and forward of the bilge pump outlets, two nylon fittings, secure, clips not reached behind a folded dinghy that could not be removed. This dinghy should be removed for inspection behind by first removing the timber construction immediately forward of it.
5. **Aft deck locker and gas locker drains -** These were fitted to opposite sides of the hull (to avoid the possibility of flooding if the bottom of either locker is below the waterline when healing) outboard and aft of the central area. Apollo ball valve on port locker drain on the starboard side. Stiff or seized. Clips secure, hose fair. No valve fitted to the gas locker drain on the port side. Clips secure, hose fair. It is important that a steady fall is maintained on the gas locker drain to avoid water collecting in the low point and blocking the escape of leaking gas.
6. **Aft air conditioning cooling outlet -** A DZR brass fitting on the starboard side of the lazarette, opened and closed full, air condition. Clips secure and hose fair where seen.
7. **Aft heads sink outlet -** Apollo ball valve with a through-bolted flange below the aft cabin sole by way of the heads doorway. Stiff or seized. Clips secure, hose fair where seen.
8. **Aft heads shower outlet and port aft deck drain -** Outboard of the aft heads sink outlet, two Apollo ball valves and skin fittings, stiff or seized. Clips secure. Shower outlet hose fair where seen. Deck drain hose perished and in need of replacement. Anti-siphon loop on shower outlet with vent - vent not checked.
9. **Aft cabin starboard deck drains -** In starboard aft cabin locker, an Apollo ball valve and skin fitting, secure, stiff or seized. Clips secure. Hose fair where seen.
10. **Cockpit drains, galley sink drain, engine raw water intake, fridge/freezer drain -** Under galley sole, five Apollo ball valves with flanges bolted through the hull. Secure, stiff or seized. Clips secure. Hoses fair where seen. Fastenings corroded externally and in need of replacement.
11. **Watermaker raw water intake -** Under the galley sole. A DZR brass fitting. Secure. opened and closed fully. Clips secure and hose fair where seen. Please note that I did not locate the brine outlet from the watermaker. This should be located and inspected.
12. **Generator inlet, generator outlet and air-conditioning inlet -** Under navigation station sole. Three DZR ball valves, secure. All seized. The two inlet valves had nickel plated brass strainers fitted. In fair condition but these do corrode from the inside and should be monitored. Clips secure, hoses fair where seen.
13. **Log and depth transducers -** Under navigation station. Secure.
14. **Portside midships deck drain and generator exhaust outlet -** In a locker below and outboard of the navigation station. The generator exhaust had no valve. Secure and in fair visual condition. Clips secure and hose fair where seen. The deck drain had a bronze Apollo ball valve. Difficult to reach but reached by hammer. Stiff or seized. Hose fair where seen.
15. **Starboard midships deck drain -** Outboard of the fridge and freezer compressors on the starboard side of the main cabin below the settee. A bronze Apollo ball valve. Stiff or seized. Clips secure. Hose fair where seen.
16. **Main cabin air conditioning cooling outlet -** Outboard of the air conditioning unit. A DZR brass fitting. Secure. opened and closed fully. Clips secure and hose fair where seen.
17. **Forward heads sink outlet -** Under the forward passageway sole. A bronze Apollo ball valve with a through-bolted flange. Stiff or seized. Clips secure, hose fair where seen.
18. **Holding tank to sea outlet -** Under the forward passageway sole. A bronze Apollo ball valve with a through-bolted flange. Stiff or seized. Clips secure, hose fair where seen. Anti-siphon loop with vent, vent not checked.
19. **Washing machine outlet -** A nickel plated brass ball valve. These are not recommended for marine use. Secure. Clips secure. Hose fair where seen. However this hose was a standard domestic washing machine hose, not considered sufficiently robust for a below-waterline hose. This should be changed for a more robust hose.
20. **Forward heads shower outlet -** In the port hanging locker in the forecabin. A bronze Apollo ball valve. Stiff or seized. Clips secure, hose fair where seen. Anti-siphon loop with vent, vent not checked.
21. **Chain locker sump pump outlet -** In chain locker. Not seen internally. This should be checked.

Above the waterline

22.Eberspacher Heater Exhausts - At the transom. Secure. Clips secure.
23.Holding tank vent - On the starboard topsides. Secure. Not seen internally. Hose not seen.
24.Fuel tank vent - On the transom. Not seen internally.
25.Water tank vents - On the port side close to the shearline. Secure. Not seen internally. Hoses not seen.

It is recommended that all yellow brass ball valves, tail pipes, elbows and skin fittings are replaced in due course with DZR or bronze fittings.

Wooden bungs secured with a lanyard were seen by some through-hull fittings but not at all of them.

Recommendation (Level A) – Fit appropriate sized wooden bungs with securing lanyards close to all through hull fittings including transducers.

Recommendation (Level A) - Close the hole in the transom.

Recommendation (Level A) – Maintain all Apollo ball valves and the three DZR valve under the navigation seat so that they open and close full and readily. Consider changing these three DZR valves.

Recommendation (Level A) – Replace the port aft deck drain hose in the aft cabin.

Recommendation (Level A) – Locate and inspect the watermaker brine outlet and inspect the chain locker sump pump outlet.

Recommendation (Level A) – Replace the washing machine hose with a more robust hose.

Recommendation (Level A) – Fit double clips on all hose attachments to through hull fittings.

Recommendation (Level A) - Check all anti-siphon loop vents.

Recommendation (Level B) – Within two years, replace the fastenings on all through hull fittings with bolted-through flanges and seal the fastenings from the sea water.

Recommendation (Level B) – Remove the dinghy from the lazarette and inspect through hull fittings, hoses and clips behind.

Recommendation (Level B) – Replace the external non-return flap on the exhaust outlet.

Recommendation (Level B) – Within three years, replace the brass ball valve and ski fitting on the washing machine outlet.

Recommendation (Level B) – Remove electrical bonding from through hull fittings.

Suggestion - Consider applying a bead of adhesive sealant to the flange nut on the transducers internally.

B. Ballast keels, keel fixings and keel matrix

The vessel had a lead ballast keel encapsulated by the hull moulding. No significant damage was seen internally or externally. No issues were noted with the keel matrix but not all was accessed.

C. Rudder and steering

a) **Rudder blade** - The rudder blade was made in two halves of moulded GRP bonded over the stainless steel rudder stock and welded tangs. It was considered to be foam filled. No cracks were seen on the blade. There was a hole on the upper trailing edge of the blade to take a line in the event of steering loss.

Hammer sounding found no delamination. The blade was stress-tested (body weight only) and found secure. Moisture levels were taken and found to be lower on the port side (27-31 shallow mode and 31-47 in deep

mode) than on the starboard side (29-38 in shallow mode and 34-62 in deep). The highest readings were close to the top of the blade. This suggests water has entered the blade from cracks around the stock where it protrudes above the blade (this is a common issue and difficult to prevent). As a precaution, it is recommended that part of one side is cut away, removing any wet foam, and the stock and tangs inspected for corrosion, before filling with bonding paste, re-laminating the side and sheathing the blade with glass fibre and epoxy resin.

No evidence of osmotic blisters or burst blisters were seen on the blade.

b) Rudder skeg - The rudder was skeg- or heel-hung. Skeg secure on the trailing edge of the keel.

c) Rudder stock rudder tube and rudder bushes - The aft end of the skeg or heel, formed the gudgeon and was considered secure to the keel. The skeg bore the weight of the rudder. Wear at the gudgeon/pintle was considered acceptable. The magnetic stainless steel rudder stock extended from there up through the blade, passing through a rudder tube and rudder seal (traditional grease lubricated packing gland). Neither were seen behind a cover box which sound be removed for inspection. The packing gland acted as seal and was accompanied by a bush, considered serviceable. Water was seen at the based of the rudder tube but this may have come from a hole in the transom through which water was seen to enter the lazarette during the sea trial. A third bush was fitted at deck level. Here a stainless steel fabrication was bolted to the deck. Evidence of slight movement here was noted. This should be monitored and repaired if necessary.

d) **Wheel steering –** The vessel was fitted with a Whitlock Mamba rod steering system. A stainless steel tiller arm was fastened to the stock with a key and keyway visible, but access was not gained below the cover box for proper inspection. This was attached to a rod end on the end of a drag link and to the rudder position indicator. It was considered that this rod end was worn, but it was not accessed under the cover box. The drag link was connected via a second rod end (serviceable) to a reduction gearbox under the aft cabin bunk. This was connected to a series of bevelheads under the bunk and cabin sole and in the aft of the engine compartment. All considered serviceable, though there was some slack in the bevelhead under the aft cabin sole. The CV joints were not stainless steel and were not considered to be worn. The rod ends were also not stainless steel. The autopilot drive unit, fitted aft of the engine was considered serviceable. The binnacle was not accessed internally. The binnacle was secure and in fair condition. Overall, there was notable slack in the system between the wheel and the rudder stock. Each linkage will be contributing a small amount to this but, as mentioned above, the aft rod end was considered to be in need of replacement.

e) **Rudder Stops -** Two rudder stops were seen by photograph, welded to a stainless steel fabrication surrounding the rudder tube. Not accessed under cover box.

f) Autopilot – This was seen functioning and holding a course. The fluxgate compass in the forward, port main cabin locker was considered to be functioning correctly.

g) Emergency tiller – An emergency tiller was seen under the aft cabin bunk. It was not tested in the socket on the aft deck. This should be stowed where it can be deployed quickly and tested at sea.

h) Bow thruster – An oil cooled, Sleipner bow thruster was fitted. This operated in both directions. The tunnel was secure with no cracks seen internally or externally. The impeller was secure and in fair condition. Anode fair. No significant oil leak was seen. The oil level in the reservoir was good. There was a considerable amount of carbon in the locker. Bushes are likely to be in need of replacement and this should be allowed for. The carbon dust is harmful if breathed in and it is suggested that the locker is cleaned.

Recommendation (Level A) - Remove the cover box over the rudder tube and tiller arm etc in the lazarette. Replace packing in rudder tube packing gland. Check the rod end. Monitor the movement at the deck level where the rubber stock is attached.

Recommendation (Level A) - Stow emergency tiller where it can be deployed quickly. Test at sea.

Recommendation (Level B) - Remove part of one side of the rudder blade to remove the foam and inspect stock and tangs. Refill with bonding paste and re-laminate, sheathing with glass and epoxy resin for extra strength.

Suggestion - Allow for replacing the bow thruster bushes and clean the carbon dust in the locker.

D. Deck

D.1. Hull-Deck Join

The hull and deck moulding were joined at the deck edge where the hull moulding turned inboard and the deck moulding was laid down on top. Seen only in the chain locker and the lazarette. The join was not over-laminated. Fastenings were seen at regular intervals. No evidence of any issues were seen.

The teak toe rail was screw fastened over the join. A stainless steel rubbing band was screw fasted to the outboard face. There were sign of water ingress at deck fittings in the chain locker and water was seen in places in the cabins with no obvious source except deck fittings, most probably at the toe rail eg stanchion bases or deck plates at shroud chain plates. The toe rail was damaged on the outboard face at the port cap shroud attachments (also the lifting point), possibly caused by lifting sling shackles. The rubbing band was also damaged here.

Suggestion - Consider repairing the toe rail at the port forward lifting point.

D.2. Deck, coachroof and cockpit

The deck, coachroof and cockpit were constructed of a single GRP moulding. The deck, coachroof and cockpit sole had cored sections. The deck, coachroof and cockpit sole had a moulded non-slip finish.

a) **Cosmetic condition, crazing, cracking and damage -** The GRP was fair to good. Stress cracking was seen where the staysail boom passed through the deck. (See section E.2. on Spars.)
b) **Teak –** No teak was fitted to the deck or cockpit. Toes rail teak and other teak trim was fair.
d) **Delamination –** Hammer sounding the deck revealed no delamination, except on the central panel on the boarding platform. Cracks were also seen here. This was not considered structural.
e) **Hand rails –** There were two stainless steel handrails on each side of the coachroof. All secure.
f) **Distortion and compression –** The mast was keel-stepped. No signs of compression of the deck were seen at the mast. The deck was almost flat at the mast, but not concave in shape.
g) **Cockpit –** The cockpit was deep with high coamings. The cockpit drained through two drains considered adequate size and in fair condition. There was no access to the engine compartment from the cockpit. The cockpit seats drained out through the coamings. The laminated tubes forming the drain holes were parting from the coaming on both sides. Consider re-sealing.
h) **Chain locker –** The chain locker was sealed from the rest of the vessel and drained overboard by a bilge pump (heard working but locker was dry) and through-hull fitting on the topsides. The locker lid was an acrylic hatch, not lockable - (See D.3.f.).
i) **Cockpit and aft-deck lockers -** The cockpit and aft deck locker hinges were firm. Satisfactory over-lap and drains under the lids. The aft deck locker latches were fair and could be locked with a padlock.

Recommendation (Level B) - Repair the delamination and cracks on the central panel on the boarding platform.

Suggestion - Consider re-sealing the cockpit seat drains.

D.3. Main companionway and other accesses to accommodation

These were:

a) **Companionway –** The bridge-deck was considered adequate (though not high enough for the 'A' CE category without the lower washboard in place - see manual). Three teak washboards were seen in fair condition. The sliding hatch opened into a garage, also in fair order. Companionway steps were secure internally, however, the thread on one of the securing bolts was stripped and the nut was not fitting. A cable inside the starboard stringer tube for the steps was preventing the bolt from passing through. Minimal signs of water ingress were seen. Access could be securely locked.

b) **Main cabin hatches –** Two main cabin hatches were Lewmar, fitted either side of the cabin with hinges aft. They were lockable from the inside and they could be opened from the deck when unlocked. Acrylic was not crazed. The acrylic seals on both hatches were very poor quality. Opening light seal and frame seal all in fair condition. Hinges supported the hatches' weight. No signs of water ingress.

c) **Forward heads hatch -** Acrylic slightly crazed, seals and hinges fair. Hinge forward. Could not be opened from outside.

d) **Office hatches -** Acrylic slightly crazed, acrylic seal poor, other seals and hinges fair. Hinge forward. Could not be opened from outside.

e) **Forepeak hatch** - Acrylic not crazed, acrylic seal poor, other seals and hinges fair. Hinges forward. Could be opened from outside when unlocked.

f) **Chain locker hatch -** Acrylic not crazed, non slip surface, acrylic seal fair, other seals and hinges fair. Hinges forward, could be opened from outside, but not lockable.

g) **Aft cabin hatch –** Acrylic not crazed. Hinges forward, secure and supporting the hatch's weight. Acrylic seal poor. Other seals in fair condition. Lockable from the inside and openable from the deck when unlocked. No signs of water ingress were seen.

Recommendation (Level A) - Replace the bolt with the stripped thread on the companionway steps.

D.4. Ports and windows

a) **Main Cabin Ports -** Two fixed port lights were seen on either side of the main cabin coachroof coaming. They were firm to the topsides. Tempered glass. Fair condition. No signs of water ingress were seen internally.

b) **Opening lights -** Six opening lights were fitted on ether side of the fore and aft coachroof and two on the aft side of the aft cabin coachroof. All considered secure and in fair condition.

D.5. Pulpit, stanchions, pushpit guardrails and jackstays

These consisted of:

- **Pulpit** – stainless steel tube, seven legs fastened to the toe rail. All were secure.
- **Pushpit** – in three parts each with three or four legs, machine screw fastened to the toe rail. All secure. Above the pushpit a gantry was fitted. Secure.
- **Stanchions and guard wires -** Stainless steel stanchions fastened to the toe rail. Secure and in fair condition. Fastenings in both forward stanchion bases were showing signs of crevice corrosion and should be replaced. The guard wire was 5mm 1x19 stainless steel using swaged terminals. Clevis pins were secured with C rings at least one of which was opening. These should be replaced with split pins (covering with self-amalgamating tape if necessary). The guard wires were slack. Netting was fitted.
- **Jackstays** – Not fitted but seen in the lazarette, fair condition.
- **Cockpit safety line rings** Four were seen, secure.
- **Deck safety line rings** – None were seen.
- **Granny bars -** Secure either side of the mast.

Recommendation (level A) - Replace the C rings securing the guard wires with split pins, replace screw fastenings in both forward stanchion basis and tighten guard wires.

E. RIG

E.1. Rigging attachment points

a) **Forestay –** The forestay was attached to a stem-head fitting with a chain plate through-bolted to the stem. No backing plate was seen internally below significant corrosion (considered aluminium oxide) around the fastenings but, given this, it is assumed that an aluminium backing plates was fitted. These should be cleaned and inspected for signs of crevice corrosion. Externally, they were fair to the chain plate. There was two-way articulation and alignment was fair. A split pin on lower clevis pin was being guillotined by the strap. A tight fitting washer over the clevis pin should be fitted between the pin and the strap.

b) **Staysail stay -** At the aft of the chain locker, a staysail stay was fitted. Below deck level, a tie rod linked the fabricated under-deck fitting to a chain plate on a stringer at the base of the locker. Fastenings, swages and bottle screw all showed slight to moderate signs of corrosion due to water ingress. Cracks were seen on the deck where the deck fitting was fastened and a crack was seen below the deck between the staysail boom and the staysail stay attachment. Chain plate fastenings and the lower eye should be checked for crevice corrosion (some evidence was noted) and the cracks repaired. Alignment was good. There was two-way articulation.

c) **Lower, intermediary and cap shrouds and checkstays -** These were attached to three through-deck chain plates, bonded to the hull (see manual), with deck plates on the toe rail and a heavy sinless steel plate running under the hull-deck join. These were not seen below as they were behind panelling which could not be removed readily. Access should be gained to inspect these periodically. On the toe rail were deck plates, sealing the through-deck penetration. No signs of water ingress were seen in the area of the hull deck join but access was not gained behind the panelling and water and salt crystals were seen under bunks, settees and sole boards. Although the source was not identified, it is likely that it has come from stanchion bases and/or deck plates at the shrouds. Alignment was fair. Two way articulation.

e) **Backstays –** The twin backstays were attached to through-deck chainplates laminated to the transom. The attachment could not be clearly seen internally as the davits were also fitted in the same place with substantial backing blocks. There was two way articulation. Alignment was fair. Access should be gained to inspect the backstay chain plate and attachment. Water ingress was detected on the port davit backing block. This may have come from the backstay deck plate on the toe rail.

Alignment and articulation are necessary to reduce lateral forces on the wires or terminals and flexing as the wire continually tightens and slackens.

Deck plates require regular re-sealing to prevent water ingress.

Recommendation (Level A) - Clean and inspect the bolts in the forestay stem head fitting chain plate.

Recommendation (Level A) - Fit a correctly sized washer over the clevis pin at the base of the forestay to prevent the split pin from being cut.

Recommendation (Level A) – Remove and inspect the fastenings at the staysail stay chainplate and the lower eye on the tie rod, replacing parts as necessary.

Recommendation (Level A) – Repair the cracks above and below deck at the staysail stay attachment.

Recommendation (Level B) – Gain access to the shroud and backstay chain plates internally. Replace or repair as necessary.

Suggestion - Re-seal the chainplate deck plates regularly.

E.2. Spars

These included double spreader mast, boom, staysail boom and spinnaker pole. The mast was keel-stepped.

a) **Mast and boom –** As far as could be seen from the deck with the mast stepped, the silver anodised aluminium mast and boom were in fair to good condition.

Spreaders were of extruded aluminium secured to the cast aluminium roots by clevis pins and C rings. These have a tendency to open and should be replaced with split pins. The angle between the lower spreaders and the shrouds should be approximately the same on each side of the spreader.

The gooseneck attachment between mast and boom was serviceable. There was a boom extension to allow for recovery of the dinghy onto the aft deck. This was considered fair but no pin was seen to secure the extension in place. All other fittings accessible from deck level were secure and serviceable.

b) **Staysail boom -** The staysail boom was fair. It was attached to a substantial GRP construction in the chain locker. Access to inspect this was very limited. A crack was seen below the deck where the boom passed through the deck. This may be damage relating to the bends on the staysail foil.

c) **Spinnaker boom -** A carbon fibre spar. Not removed from its position on the mast. A joint was seen half way along the boom. This was not inspected as it was substantially above deck level. Carbon fibre spars and rigging have very low tolerance of impact damage. A photograph showed a possible crack close to the join.

Recommendation (Level B) - Replace the C rings in the cloves pins at the spreader roots with split pins.

E.3. Standing Rigging

a) **Wire and terminals –** Rigging was tight. All wires were 1 x 19 stainless steel wire. The cap shrouds were 7/16" or 12mm, other shrouds, intermediaries, check stays and backstays were 3/8" or 10mm.

The forestay and inner fore stay were not visible at bottom or the top of the foil and it was not possible to inspect them (inside the furling systems) or the backstay or shroud terminals or fittings where they attached to the mast.

The port backstay was fitted with two insulators and an antenna for an SSB radio using Sta-lok swages.

If the standing rigging is more than 10 years old it should be replaced.

Recommendation (Level A) – Replace all the standing rigging if more than 10 years old.

E.4. Running Rigging and Reefing

a) **Roller reefing –** There were two Harken furling systems, one on the forestay (Mk III) and one on the staysail stay (Mk II) each with a twin groove foil. The staysail system was not tested under load. The halyard swivel bearings on the staysail furler were not checked as the foil was bent, preventing the swivel from being lowered. The swivel bearings on the forestay furler were not checked with the sail fitted. It is possible to replace these bearings. The replacement swivels and drums are costly. Furling the genoa during the sea trial required excessive force for the conditions. This may be improved by fitting a longer furling line, providing more leverage on the drum, however other possible causes should be examined. The at the same time as excessive force was required, the drum could be rotated by hand, indicating it is not likely to be the furler itself.

b) **Main reefing –** The main was furled on. There was an in-mast furling system fitted. This was tested during the sea trial and was considered sub-standard, as the system required excessive force to unfurl the sail and furling without creasing the sail seemed unachievable. In-mast furling is prone to jamming. The sail was missing some of the battens. This might help to improve furling, as might a sail valet, smoothing some of the existing creases, but a new sail may also be required to address this issue.

c) **Halyards and sheets –** Halyards were in fair condition where seen but not fully inspected. Main sheet in fair condition.

d) **Lazyjacks –** Lazyjacks were not fitted (not required with in mast furling).

e) **Other running rigging –** The running rigging that was on deck was in fair condition. Not fully inspected. The staysail sheet and control lines for main sheet traveller were frayed.

Recommendation (Level B) – Replace the staysail furler foil.

Recommendation (Level B) – Investigate why genoa furling requires so much force and correct this.

Suggestion – Mouse all shackles.

E.5. Sails and covers

c) **Sails –** Main, staysail and 110% genoa of cruising laminate fabric. Asymetic lightweight rip-stop nylon. Genoa, staysail and asymmetric in fair condition. Genoa with a fair shape. Main considered poor.

d) **Spray hood -** Fair condition.

e) **Cockpit cover -** Poor condition and in need of replacement.

E.6. Winches, clutches and other deck gear

a) **Winches at the Mast –** Two Harken 32, two speed winches (serviceable) and one Harken 16, 2 speed winch (stiff to operate).

b) **Cockpit winches -** On each side of the cockpit was one Harken 64-2, two speed, self tailing electric sheet winche and one Harken 33, two speed, self tailing manual winch. Serviceable. On each side of the coachroof was a Harken 48 (starboard was electric), two speed self tailing winch. The three electric winches operated.

c) **Genoa cars and genoa cars, turning blocks –** all were considered secure and in working order. Fastenings not seen internally.

d) **Sheeting attachments and travellers –** Main sheet attachment was by traveller on the aft cockpit coaming. All sound and secure.

Recommendation (Level B) – Service Harken 16 mast winch.

F. Engine, fuel system, stern gear and cathodic protection

F.1 Engine and installation

A Yanmar 4JH3HTE 92hp (67.7kW) @ 3,700rpm continuous (99hp @ 3,800 rpm max), indirect cooled, turbo charged diesel engine was fitted. Serial number E21783. Engine hours 2249. Transmission was a Kanzaki KM4A reduction/ reversing box with reduction ratio of 3.3:1. Serial number 17822.

The overall external visual condition of the engine was fair to good.

a) **Engine bearers and mounts -** Access was limited. Flexible engine mounts were not flexing excessively with the engine running. Engine bearers were hammer sounded in a limited number of places and no delamination found. No stress cracking was seen (though access was limited).

b) **Engine Oil –** No significant oil leak was seen. The sump condition was good where seen. There was no evidence of water (emulsified oil) in the oil or in the rocker cover cap or on the dip stick, however, the oil was black and the level satisfactory. No date was seen on the filter.

c) **Cylinder Compression** - The engine started almost immediately when cold and when warm. However, when full throttle was applied during the sea trial, there was a notable loss of power (not the result of fouling) with only 3,200 rpm being achieved - see below. When run from cold **not** under load and at moderate engine speed, the engine was heard to misfire and a significant quantity of bluish-grey smoke was emitted from the exhaust. This

improved as the engine warmed up, allowing sightly higher engine speeds without smoke or misfiring, but that recurred at close to or slightly over 3,800rpm. During the sea trial at a maximum rpm of 3,200 and under load, no smoke was seen at the exhaust. The rated maximum rpm is 3,800 and when in the marina, not under load, maximum rpm was in excess of 4,000. On the sea trial, there was therefore a notable loss of power suggesting a compression issue.The engineer had removed the air filter and reported oil deposits, indicating blow-by. It is considered very likely that there is a problem with one or more of the cylinders' pistons rings, blocked or faulty PCV (Positive Crankcase Ventilation valve - which can grey-blue smoke and misfiring), blocked air cooling ducts or another fault. However the overheating noted below may also be related or causing the issue.

d) **Cooling system –** Where seen, hoses were in fair condition. No strainer was seen on the raw water intake and an anti syphon loop and vent were seen on the outlet hose to the exhaust elbow. The vent was not inspected. Double clips were used on raw water hoses where seen. The raw water pump was located on the forward port side of the engine. The impeller was not inspected. The coolant pump was not inspected internally.

The belt condition and tension was satisfactory, if not over-tight, although there were signs the belt had been slack. The coolant pump will not operate if the belt fails. It is suggested spare belts are carried and the belt is regularly renewed.

The cylinder block was examined as far as possible with restricted access and no cracks or or damaged core plugs were seen. However there was some corrosion on one of the core plugs on the port side. Corrosion was seen on the forward end of the heat exchanger. This should be removed for inspection and cleaning, along with the air cooler casting on the upper aft of the engine.

No emulsified oil was seen on the heat exchanger cap or in the coolant. Evidence of a former slight leak was seen in the exhaust elbow.

During the sea trial, coolant temperature rose slowly to operating temperature and rose slightly when engine speed was increased from approximately 2,000 rpm to approximately 2,600 rpm. When the engine speed was increased to full throttle, rpm increased to 3,200 only and coolant temperature rose to 110°C within three minutes. The rapid rise in engine temperature when pushed under load may indicate blockages within the heat exchanger or other issues with the cooling system.

No excessively high bearing temperatures were noted with an infra-red thermometer.

A significant amount of water was seen in the bilge aft of the engine. Source was not identified.

e) **Turbo -** No oil leaks were seen. Bearing temperatures were not considered excessively high when engine was under load. The loss of power could be related to blocked air passages from the turbo, rendering the turbo ineffective.

f) **Exhaust –** The cast aluminium exhaust elbow was sound to the hammer. Exhaust elbows do corrode from the inside and need to be replaced periodically. Failure not only results in loss of cooling but also fills the engine compartment/cabin with exhaust gases.

A GRP silencer was fitted aft of the engine. In fair visual condition, not accessed underneath for inspection. Only a single clip was seen at the aft end of the silencer. Double clips should be used. The exhaust hose was in fair condition where inspected. There was an swan neck to deck level in the lazarette.

g) **Engine Controls including stop –** The stop solenoid operated. Gear and throttle controls operated freely and smoothly at the steering position and were securely connected to the diesel pump and reduction box. Control panel instruments were seen working. The alarm lights and sounder were intermittent. The cause was not determined.

h) **Electrical –** The 110A alternator was seen charging the batteries with the engine running. The alternator was in satisfactory visual condition, though some corrosion was noted. The starter motor operated on several occasions. Fair visual condition.

i) **Reduction box -** Oil clear and level satisfactory.

Recommendation (Level A) – Service the heat exchanger and air cooler, replacing parts as required.

Recommendation (Level A) – Replace the PCV valve.

Recommendation (Level A) – Allow for significant costs to repair the piston rings, cooling system or other cause of the significant engine fault noted.

Recommendation (Level A) – Further investigate and repair the intermittent engine alarms.

Recommendation (Level A) – Service the main engine.

Recommendation (Level B) – Fit double clips to all exhaust hose connections.

Recommendation (Level B) – Service the anti-syphon vent on the raw water feed to the exhaust.

F.2. Fuel System

a) **Tank material and bearers –** The aluminium fuel tank was located below the cabin sole above the ballast. A shut off valve was seen on the top of the tank (feed to one of the heaters and the engine). An outlet was seen with a shut off valve but no hose. This should be closed off permanently so that tools are required to open it.
b) **Fuel gauge -** Fuel gauge was seen working at the chart table and on top of the tank but calibration was not tested.
c) **Filler/vent unit and hose –** The fuel filler unit on the starboard side deck was not connected by lanyard to the cap. The seal in the cap was in fair condition. The filler hose was in fair condition where seen below deck. Vent for the fuel tank was secure on the transom. On the top of the tank, the vent hose was attached but clips were not fitted.
d) **Fuel Pipe and hose –** Flexible fuel hose fitted to the engine was compliant with ISO7840.
e) **Electric fuel pump-** A DC electric fuel pump was seen to port and forward of the main engine. A manual switch was seen. This was only for assisting with priming the fuel system and not for regular use.
f) **Filters and bowls -** The primary filter was mounted forward of the engine with a water trap and the secondary filter was mounted on the engine. The fuel was clear. No date was seen on the fuel filters.

Recommendation (Level A) – Connect fuel filler cap to base unit or replace unit and permanently close off the outlet on the top of the tank with no hose. Fit clips to vent hose on the top of the tank.

F.3. Stern Gear

a) **Coupling –** A flexible coupling was fitted, with a CV shaft and thrust bearing. There was slight slack in the CV shaft. The thrust bearing allows the alignment of the engine to be independent of the shaft and transfers the thrust from the propeller to the vessel's structure without first going through the engine and engine mounts.

b) **Propeller shaft –** This was 1 $^{1}/_{2}$" non-magnetic stainless steel. The shaft was seen moving vertically with the engine running under load. This was considered to be caused by or related to vertical wear in the cutlass bearing noted with the vessel ashore. At higher engine speeds, there was a rumble from the stern gear. The source of this noise was not confirmed but it could be from the cutlass bearing or the thrust bearing.

c) **Stern Gland –** A PSS raw water lubricated face seal was fitted. This was seen when under power and was not seen to drip. A small amount of water was seen in the compartment below the seal after some time during the sea trial, but this was thought to be coming from the transom and not from the stern seal. However, it may

have been coming from the rubber boot on the stern seal or the stern tube. Access was not possible for close inspection of these parts.

d) Rubber boot - The visual condition of the rubber boot was not seen as it was not accessible for inspection. Gain access to the rubber boot to inspect and allow for replacement.

e) Stern tube - The stern tube was not accessible.

f) P Bracket and Cutlass bearing - No P bracket. The cutlass bearing was in poor condition with vertical wear. It is estimated that this should be replaced before any significant passage. The wear in only the vertical plane indicates that the shaft is not aligned correctly through the bearing and this requires adjustment of the position of the thrust bearing.

g) Propeller – This was a three bladed right-handed feathering Max Prop. It was secure on the shaft. There were minimal signs of corrosion on the propeller. An anode was fitted on the end of the shaft.

h) Rope cutter – An Ambassador rope cutter was fitted. Fair condition.

Recommendation (Level B) - Replace cutlass bearing and adjust the shaft alignment at the thrust bearing. Allow to replace the rubber boot on the stern seal.

F.4. Generator Set

Fitted below the main cabin sole forward of the main engine. A Fischer Panda 8000 NE HP1 6kW generator driven by a Kubota Z482 E indirect cooled engine (serial numbers Fischer Panda C02-023-066 / Kubota 1S3217, engine hours 781.6) was seen running and charging batteries. Switch over between shore power and generator was manual. The generator unit was enclosed in a sound proof canister. Access was severely restricted for many aspects of the inspection.

a) Engine bearers and mounts - Engine bearers and flexible engine mountings not inspected, but the unit was not moving excessively when running.

b) Engine Oil – No oil leak was seen, though access was very restricted. There was no evidence of water (emulsified oil) in the oil. The level was satisfactory. Colour was black and a 2017 date was seen on the filter indicating a service is due now.

c) Cooling Water system – Hoses were fair where seen. Wire reinforced raw water hose was in use on the suction side. A Guidi stainer was fitted. Double clips were in use as required. The impeller was not inspected. The coolant pump was not seen or inspected. No leaks seen, though access was very restricted.

The coolant pump will not operate if the belt fails. It is suggested spare belts are carried and the belt is regularly renewed.

The cylinder block was not examined due to very restricted access. No evidence of emulsified oil was seen in the heat exchanger or expansion tank.

d) Exhaust – The exhaust injection was not seen. Some corrosion was noted on the exhaust outlet.

A Fischer Panda water separator/silencer was seen fitted forward of the main engine. This allowed the cooling water to leave the vessel below the waterline, with the exhaust gases leaving just above the waterline, relatively quietly. The exhaust hose was in fair condition where inspected.

e) Fuel/Compression - Diesel was seen on the top of the cylinder head. This was removed and it did not re-appear after running the generator twice. This was considered to have come from the injectors when an

engineer had removed them. Marks were seen. The generator was relatively slow to start on two occasions. This could be poor compression or there might be an air leak (hence injectors removed).

f) **Engine Controls including stop –** Start and stop controls at the chart table operated. Not all the alarm lights ignited with the ignition on but the engine stationary.

g) **Electrical –** The starter motor operated. No other electrical components were inspected.

Recommendation (Level B) - Have the genset serviced.

F.5. Cathodic protection

A sacrificial zinc anode was fitted on the end of the propeller shaft and on the port side of the hull. These were not significantly depleted. Through hull fittings were electrically bonded to the hull anode. This should be removed.

G. Safety and other Equipment

G.1. Ground tackle and mooring arrangements

a) **Main anchor –** This was a 55kg Rocna anchor. The weight was considered more than adequate for a vessel of this size. Condition was serviceable. There was provision to secure the anchor to the stem head fitting and to prevent the chain lifting when deployed. The roller on the stem head fitting was in fair condition. The anchor was attached to the chain via an un-moused shackle.

b) **Main anchor chain and warp –** An unmeasured length of 10mm (or 3/8") chain, was in fair to poor condition where seen. Most of the links seen had lost their galvanised coating. The chain was not laid out for inspection. No anchor warp was seen in the chain locker. The chain was not seen fastened to a secure point in the chain locker. Warp or chain should be tied off to the side of the anchor locker (or windlass) by a lanyard that can be readily cut in the event of an emergency. The chain length was not measured. Link size was considered adequate for a vessel of this size and the amount of chain seen in the locker was considered adequate. An anchor weight and a snatch line were seen.

c) **Kedge Anchor –** A folding Fortress anchor was seen in the chain locker in a bag, not inspected. A length of 8mm chain and 25mm warp was seen stowed in the lazarette. Not laid out for inspection.

d) **Anchor windlass –** A Lighthouse 1501 electric anchor windlass was secure on the deck forward of the chain locker hatch. It operated using the foot operated switches on the deck and at the helm. An isolation switch was seen in the main cabin. It was not confirmed if the bow thruster batteries also operated the windlass. The clutch (allowing manual/quick release/drop) was seized. The manual operation (lift) by winch handle worked at two different speeds. The deck below the windlass was reinforced with multiple sheets of plywood. This was seen to be wet but not rotted or delaminated. Water ingress was noted from deck fittings. Condensation is also likely to have contributed. It is suggested that all the deck fittings in the area are removed and re-fitted to prevent further ingress of water.

e) **Mooring cleats and fair leads –** There were six stainless steel mooring cleats, two in the bow, two amidships and one on each quarter. These were fastened to the toe rail and all secure when tested with a hammer. Fairleads were fitted to the outboard edges of the toe rail. Aluminium alloy backing plates seen in the chain locker.

f) **Fenders -** Multiple fenders seen on the guard wires.

Recommendation (Level A) - Release the windlass clutch.

Recommendation (Level A) - Layout the bower anchor chain for inspection and allow to replace the entire length.

Recommendation (Level A) - Stow the anchor weight so that it cannot damage the sides of the hull in the chain locker.

Suggestion - Consider removing and re-sealing all deck fittings in the vicinity of the windlass mounting to prevent further water ingress causing the plywood reinforcement to get wet. Ventilation in the locker would also help to maintain drier conditions in the locker.

G.2. Bilge pumping arrangements

a) **Manual pump -** There was a manual bilge pump fitted in the engine compartment, operated from the galley, with a handle stowed beside it. The pumps' capacity was considered adequate and it operated when tested with water in the bilge. The strum box was seen at the bottom of the keel sump in the main cabin, but not reached. Where seen, the hoses were in fair condition. Double clips were seen on the pump (secure). A very small air leak was heard, thought to be the diaphragm which was in need of replacement.

b) **Electric pump -** There was an electric bilge pump fitted in the keel sump with a float switch for automatic function. This operated when tested on manual. Hose clips secure where tested (not reached in sump).

c) **Hoses** - Anti siphon loops and vents for the two bilge pumps were seen on the starboard side of the engine compartment. The vents was not tested.

Recommendation (Level B) - Service the manual bilge pump and check the anti-siphon vents.

G.3. Davits and Boarding Ladders

A pair of davits were fitted on the transom. Not tested. Considered secure. Mountings were at the same location as the backstay chain plates, laminated into the transom. Large wooden backing blocks were seen. On the port side this was seen to have been exposed to water. The source was not confirmed but it is thought to have come from the deck plate for the backstay chain plate above.

A boarding ladder was seen secure on the boarding platform, it would extend into the water sufficiently to facilitate an MOB recovery.

G.4. Navigation Lights

The navigation lights and their performance were as follows:

- White stern light fitting on the gantry. Working. Bulb wattage not checked.
- Red and green light fitting on pulpit. Working. Bulb wattage not checked.
- Steaming light on mast. Working. Wattage not checked.
- Deck lights on mast (blue) - Working.
- Tri-colour at masthead – Not seen. Bulb wattage not checked.
- Anchor light at masthead – Working. Bulb wattage not checked

Assuming the wattage of the bulbs (and therefore range) were adequate, the vessel's navigation lights would conform to the Collision Avoidance Regulations when all are working.

Recommendation (Level A) - Confirm that the tricolour on the mast is working.

G.5. Firefighting equipment

a) **Fire extinguishers -** No in-date fire extinguishers were seen. For a boat this size, the RYA recommends fitting at least three fire extinguishers with a minimum combined fire rating of 21A/144B. In this case, one in the main cabin, one in the aft cabin and one in the forepeak. An extinguisher at the galley and an automatic extinguisher in the engine compartment are considered good practice.

Fire extinguishers should be serviced annually and replaced every ten years or replaced every five years if not maintained annually.

b) **Engine compartment –** The compartment could be sealed from the rest of the boat. A fire port was noted in the galley (for firefighting in the engine compartment without opening the hatches and allowing oxygen to the fire). The insulation was not checked for flammability.

c) **Smoke and gas alarms –** No smoke alarm was seen.

d) **Fire Blanket** – No fire blanket was seen at the galley.

e) **Petrol –** Petrol should be stowed on the aft deck, where any flammable vapours cannot leak into the boat.

Recommendation (Level A) – Fit three new fire extinguishers with a combined rating of at least 21A/144B.

Recommendation (Level A) – Fit a fire blanket at the galley that complies with the BSEN 1869 standard.

Recommendation (Level A) – Fit a smoke alarm.

Recommendation (Level A) – Fit an automatic clean agent extinguisher in the engine compartment .

G.6. Lifesaving equipment

The following lifesaving equipment seen aboard:

- Two horseshoe lifebuoys seen with no light (which should be connected by a lanyard).
- Telescopic Jon Buoy. Not inspected and light not checked.
- Rescyou 8 person liferaft in canister secure on transom with ISO II pack. Serial number 10590418. Last serviced 3/2020. Next service 3/2023.
- No in-date flares were seen.
- No thermal protective aids (TPAs) seen aboard (eg 'space' blanket)
- An ACR 406 MHZ EPIRB was seen. Battery expiry date - 06/2028. Serial number 7374. Test functions positive.
- ODEO LED distress flare - working
- Aqua Spec Strobe - not working
- See Me active radar reflector - not tested.
- No life jackets were seen aboard.

Recommendation (Level A) - Fit lights to the horse shoe buoy, attached with lanyards and check dan buoy light is working.

Recommendation (Level A) - Carry appropriate safety equipment including flares and lifejackets.

More information can be obtained from the RYA.

The RNLI offer advice concerning levels of safety equipment on their website.

G.7. Navigation equipment

The following were seen aboard operating unless stated

At the helm / in the cockpit

- Ritchie compass on binnacle. The light was not seen working. Reading slightly higher than fluxgate and i phone. May need adjusting by approximately 7°.
- Raymarine ST6001 auto-pilot - at binnacle. Seen working and holding a course well.
- Raymarine ST60 analogue direction and digital wind speed seen switched on and showing approximately the correct speed and direction.
- Raymarine ST60 log - seen switched on and functioning, not fully tested.

- Raymarine ST60 depth - seen switched on and operating but not fully tested.
- Raymarine C90W plotter seen working and showing the correct position.
- Raymarine radar scanner and display (on plotters) - seen switched on and showing targets. The display was a good representation of the surroundings.
- Raymarine RAY 240E DSC VHF - switched on and working .

At chart table

- Raymarine RAY 240E DSC VHF - switched on and working .
- ICOM ICM710 SSB radio, working but not fully checked.
- Raymarine C90W plotter seen working and showing the correct position
- Raymarine ST60 multi-function - seen working but not fully checked.
- ICA 6 Navtex - seen working but not fully tested.
- A Cobham Sailor satellite phone handset with a Thrane and Thrane Sailor antenna. Not tested.
-

Steaming triangle day shape and anchor ball seen. No fog horn seen.

Recommendation (Level A) – Carry a fog horn.

G.8. Other inventory items

a) **Mooring lines -** Numerous mooring lines seen, in fair condition.
b) **State flags -** Red ensign seen.
c) **Outboard motors -** Yamaha 5CMH, 5hp, SN - 1008750 2004 model with integral tank and remote tank option. Not run. Controls moving except for the gear shift which was seized. Engine turned over freely. Some propeller damage seen. Mariner SN 09656151. This was in poor visual condition and was not checked. The client said he would sell both outboards.
d) **Dinghy -** Rib Eye, aluminium alloy rigid hull. Tubes in poor visual condition. Not launched. HIN not seen. Holes had been drilled in the hull to fit lifting rings. A second dinghy with a flexible floor (and possibly also transom) was seen folded and stowed in the lazarette.

H. Accommodation and on-board systems

H.1. Accommodation General

Overall the accommodation was in fair to good condition. Upholstery, headlinings, woodwork, sole boards and trim all showed modest signs of wear.

In the forecabin was a double, island berth. Aft of that was the forward heads and office/bunk cabin and aft of them, the main cabin. Aft and to port was the chart table and navigation station and aft and starboard was the galley with chest refrigerator, drawer refrigerator, chest freezer, four burner butane cooker, microwave oven and two stainless steel sinks. Aft again was the aft cabin with heads compartment to port. Cosmetic condition of the heads compartments was considered good. The main cabin had a settee to port and starboard with a table on the starboard side.

Ventilation was good with hatches, opening lights and Dorade vents in all cabins.

H.2 Gas Installation

When built , this vessel had to comply with the RCD. The vessel is not being coded for commercial use and the surveyor is not 'Gas Safe' registered. Some insurance companies require a declaration from the assured that the gas system conforms to ***current*** standards and if that is the case here upgrading may be required as a condition of the insurance policy. Some insurers judge a gas installation against ISO 10239. Even if the vessel is not required to comply with that standard it contains much advice. Information can also be found at www.boatsafetyscheme.com.

The vessel had the following gas installation:

- Two 3.9 kg propane bottles (Calor) with shut off valve on the bottles, seen secure in the gas locker.
- The locker drained overboard via a drain hole and hose to the hull in the lazarette. No valve. The locker was sealed from the cabins. The drain diameter was considered sufficient.
- The regulator was in fair to poor visual condition. It is suggested that this is replaced.
- The flexible low pressure rubber hose from the regulator to the bulkhead was out of date and in need of replacement.
- A pressure gauge (enabling checking for pressure drop - leak detection) was fitted in the line of the flexible hose. Seen showing pressure but not tested or calibrated.
- The copper pipe on the low pressure side, was seen for a very short length. Here the visual condition was fair.
- A solenoid shut off valve was seen in the gas locker. Poor condition and getting hot, though it was working. There was a double loop wiring issue on the switch panel and switch on the gas detector.
- The flexible hose to the cooker was out of date and should be replaced.
- The gimballed GN Espace Ocean Chef cooker was in fair visual condition with 4 burners, a grill and an oven. The six flame failure devices functioned when tested. The spark ignition did not function on one of the burners, the grill or the oven.
- There were opening ports above the cooker.
- No other gas appliances on board.
- A gas alarm was seen, with the capacity for two sensors. Only one was connected and this sensor was not working.
- It is recommended that a gas safety certificate is obtained.

Recommendation (Level A) – Replace the flexible hose at gas locker and the cooker. Inspect the copper pipe. Replace the a gas alarm sensor and the solenoid switch. Obtain a gas safety certificate.

Recommendation (Level B) – Repair the cooker spark.

Suggestion: Consider replacing the regulator.

Please note this survey is not a gas safety certificate, that is only obtainable after comprehensive assessment by a qualified person listed on the Gas safe register www.gassaferegister.co.uk.

H.3. Electrical installation

a) **Batteries** – Six 100 Ah, Lifeline GPL-27T 800 cranking amps (standard not known) sealed 12V AGM lead acid domestic batteries were secure under the galley sole. A further two of the same where located to starboard of the generator. The former six were considered to be in two banks, one of five batteries (wired in parallel) and one of one battery. Seen charging. When tested the bank of five showed 2,031 cranking amps CCA, 100% 'state of health', 100% 'state of charge' and 1.39% MR internal resistance (low). Considered good. The single battery in this location was out of reach for testing. Electrolyte levels were not seen. The function of this battery was not identified. The bank of five was considered to be domestic and the single battery might be the generator start.

The two batteries starboard of the generator were wired in parallel as one bank. When tested this bank showed 563 cranking amps CCA, 73% 'state of health', 100% 'state of charge' and 5.34% MR internal resistance (moderate to high). Considered serviceable but nearing the end of their useful life. These batteries were considered for the engine start. The battery casings were not seen as they were tightly stowed. Isolation switches for the batteries was seen at the forward end of the galley.

A further two Optima Blue Top 34M 50 Ah, 800 cranking amps (CCA), sealed 12V AGM lead acid engine batteries were secure under the forepeak berth, for the bow thruster and possibly also the windlass (not

confirmed). Not seen charging. When tested this showed 2,199 cranking amps CCA, 100% 'state of health', 100% 'state of charge' and 1.28% MR internal resistance (low). Considered good. Electrolyte levels were not seen (sealed batteries). An isolation switch for this bank was seen immediately above the batteries.

Battery monitor seen for one bank only. Not confirmed which. The DC switch panel also allowed multiple banks to be checked.

b) **Charging** Charging was by a single 110A alternator on the engine, from shore power or the generator, by a 240V, 60A, Charles Marine C charger with three positive DC outputs (for three battery banks) and a float charge mode. Seen working. A second battery charger was a Victron Phoenix 50A (3 outputs) battery charger with float charge mode. Seen working. Two 325W 12V solar panels were fitted on a gantry at the transom. Seen charging at the regulator (Outback Flexmax FM 80).

c) Circuit protection – 12V DC circuits had circuit breakers mounted on a panel at the navigation station. All functioned adequately.

d) Cabin lighting – Cabin lights were all seen working except one in the galley, one in the main cabin and one in the forepeak, one in the chain locker and one in the lazarette. Under-step lights were not all checked but some seen not working.

e) 230 volt AC power system– 230V AC system was fitted. There were two 30A shore power inputs and two circuits below deck. Bus A and Bus B. Bus A included the outlet sockets (2x15A), calorifier (15A), battery charger 1 (15A) (not confirmed which was which), water maker (20A) and dive compressor (15A). Bus B included the microwave (15A), refrigeration (5A), battery charger 2 not confirmed as (15A), air conditioner 1 and 2 (10A each). The two circuits could be joined in parallel. Assuming that shore power input 2 only supplies Bus B circuits when Bus A and B are not joined, then the manual switch over system on the panel at the navigation station ensured that only one input circuit supplied each output Bus at a time.

Shore power circuitry was not inspected. The ring main had sockets in all cabins. A 12kVA isolation transformer was working under the main cabin sole by way of the navigation station. Two sets of two isolation switches was seen in the same locker. No MCBs were fitted. An RCD was also needed. This is considered especially important as the vessel was equipped with substantial power requirements in relation to supply, even when using both 30A shore power inputs. Special care should be taken not to overload the generator. The generator regulator mounted forward of the main engine included a voltage control system and an automatic start booster.

f) **Inverter** - A Sinergex Puresine 1500W inverter was fitted forward of the main engine. An isolation switch was seen forward of the galley. This was not tested.

g) Computer and wireless router - Shuttle XPC Slim DH370 computer with Dell screen and 'Red Box' wireless router. Computer seen working.

h) Microwave - Not tested.

Recommendation (Level A) – The AC power system required installation of an RCD and an MCB for each circuit. .

Recommendation (Level B) – Allow to replace the two batteries outboard of the generator.

H.4. Fresh water tanks and delivery

The two GRP fresh water tanks were incorporated in the hull below the port and starboard sides of the main cabin sole. Access was only to small areas and only to parts of the top and parts of the fore and aft sides. A further tank was fitted forward of the fuel tank, for the fresh water toilet flush. This was only seen on part of the top and part of the fore side. The filler hoses were seen only in short lengths, fair where seen. The caps on the three filler units on

the port deck were not unit were not connected to the main filler unit. Seals fair. A tank gauge was seen working at the chart table. Calibration was not checked.

A Sea Fresh watermaker was fitted. Low pressure pump under galley sole and high pressure pump in lazarette. Six filters seen and four membrane tubes. The system was not tested but it was assumed it had not been properly mothballed and membranes will need replacing. These are costly. The system could deliver water to the fresh water tanks or to flush the holding tank.

The calorifier was in fair visual condition. Tested on shore power and on the Eberspacher water heater. It was not heated by the engine.

There was a fresh water pressure pump in bilge sump. Filters were also seen. Freshwater hoses and pipes, where seen, were in fair condition. No leak was detected.

Water was delivered to galley and heads. The water was not tasted.

The showers had sumps and electric pumps to drain. Both operated when tested. Anti-siphon loops were seen in the shower outlets. Vents not checked.

A pressure washer was fitted in the lazarette. Not tested.

A Bosch washing machine was fitted in the office. Not tested.

Recommendation (Level B) – Check the anti-siphon vents on the shower outlets.

H.5. Heads

The two WCs were fresh water vacuum flush with discharge only to the holding tank. Discharge overboard from the holding tank was by a macerator pump fitted under the forward passage sole. This operated when switched from the switch panel at the navigation station.

The holding tank was GRP, forward of the fuel tank.

The WC units were in fair to poor visual condition. The two vacuum units operated well. However the filler pump (forward of the tanks, below the steps to the foreword passage) delivered water to the WC units very slowly. The cause of the problem was not identified as the pump was heard working.

WC and holding tank hoses were all sanitary grade. An anti-siphon loop was seen on the holding tank discharge to sea. The tank vent was close in the starboard cockpit locker. The pump-ashore unit was on the starboard deck. Cap not attached to unit and seal in poor condition.

Recommendation (Level B) – Identify why the WC filling is so slow and repair.

Recommendation (Level B) – Check the anti-siphon vents on the holding tank discharge to sea.

H.6. Heating, air conditioning and refrigeration

a) **Fridge –** There were two fridges and a freezer. One of the fridges (a draw) was 12V DC and the other fridge (chest) plus the chest freezer were 230V AC. A thermostat was seen for the fridge and freezer. All became cold when switched on. The fridges and freezer drained to a pump and then to sea. Pump working. The three compressors were seen under the starboard main cabin bunk.

b) **Heating –** An Eberspacher Airtonic D5 5.5kW blown air heater heater was fitted in the lazarette. It operated when switched on from the chart table. An Eberspacher Hydronic S3 D4E 4.3kW water heater was also fitted n the lazarette. It operated (heating the calorifier) when switched on (from the aft cabin bunk).

c) **Air conditioning** Two Mermaid M16 M 16CHP-R reverse cycle air conditioning/heating units were fitted, one in the lazarette (not seen under unremovable cover box - duct loose to the unit) and one under the starboard main cabin settee. Heating cycles were not tested but both effectively cooled the aft and main cabins. Outputs were 4.8kW when cooling and 5.4kW when heating. A March Pump LC-3CP-MD Magnetic Drive Pump was seen in the engine compartment delivered cooling water to both units. The valves fitted in the engine compartment to close cooling water supply could not close fully. Each unit had its own control panel (aft cabin bunk and forward of the galley).

d) **Dehumidifier -** An Ecoair dehumidifier was fitted below the chart table. Not tested.

e) **Dive compressor -** Not tested.

f) **CO alarm -** A carbon monoxide alarm was seen in the galley. It tested positively.

I. Security

Main cabin access – Secure and lockable. **Anchor locker –** As manufactured. Not lockable. **Lazarette and aft deck lockers –** Lockable.

J. Moisture Readings

High moisture content is not generally a structural defect, and is to be expected in older GRP/FRP boats. However where some moisture has been absorbed the likelihood of moisture-related problems occurring is higher, and the actual state of the laminate cannot be completely guaranteed without destructive testing and chemical analysis. The opinion given in this survey is based on all the evidence available at the time without destructive testing.

The readings should be considered in conjunction with the period the vessel has been ashore and the weather conditions when obtained. Differences between readings above the water-line (normally dry) and below should be noted.

The interpretation of the readings in shallow mode range for a monolithic hull is as follows:

- 0 – 15 For all practical purposes may be considered dry;
- 16 - 20: Some moisture present at low levels but of no concern;
- 21 – 30 Considered medium, but those at the top of the range i.e. 30 are at the point where the risk of moisture related defects developing is significant;
- 31- 45 Considered high and at a level where the risk of moisture related defects being present but not yet physically detectable is significant;
- 46 – 60 Very High and will usually be accompanied by physically detectable signs. Likely to be accompanied by a significant increase when switched to deep mode;
- 61 – 100 extremely high and indicative of possible laminate damage in addition to osmotic blistering. Likely to be accompanied by a significant increase when switched to deep mode.

K. This Vessel and VAT, RCD, and Part 1 Registration

The vessel surveyed here was built after the Recreation Craft Directive became mandatory.

Unless she is used commercially she will not require to be certified by one of the MCA's certifying bodies.

No sales invoices were seen showing significant information to prove VAT had been paid. Check the VAT status.

As much information as possible about the boat's history should be gathered. The above is not intended as advice but only as an introduction to these subjects. If there is any doubt, contact the RYA, MCA, or HMRC Recreational Boat Helpline in Portsmouth.

***Recommendation (Level A)* – Confirm VAT paid status**

L. Scope, Limitations and Declaration

This full condition survey was carried out in accordance with my standard Terms of Business. Its purpose is to establish the structural and material condition of the vessel and systems.

- Where equipment was tested this is detailed in the text.
- References to condition are in relation to the vessel's age (i.e. good condition does not necessarily mean new).
- Mechanical condition of the engine is not covered under the terms of the survey, only the installation and visual condition were inspected.
- The survey is not a parts and labour guarantee and it should be noted that defects may exist in the vessel that the survey could not detect due to the limitations of time, vessel presentation and the range of tests (excluding destructive testing or dismantling) acceptable to the owner.
- Some components may appear serviceable but are found defective when under load.
- Parts of the vessel that were covered, unexposed or inaccessible due to fixed panels, mouldings etc were not examined, so I cannot say these areas are free from defects other than where specified.
- No fittings or fastenings were removed for examination other than where specified.
- The survey carries with it no guarantee against faulty design or latent defects or suitability of the vessel for any particular purpose, nor any guarantee of compliance with any particular national or international rule, requirement, regulation, law, standard or code unless specifically stated in this report.

The survey is for the client with no liability to anyone else. The surveyor retains this report's international copyright and the report may not be copied or distributed in an form without the surveyor's express permission.

Declaration - This report is as true and accurate a description of the vessel as could be ascertained at the time of the survey, but no guarantee is given or implied.

Andrew Edmond (17th Sept 2021)