fieldhouse yacht surveys

ATLANTA

Pre-purchase Survey

Completed for

[Name & Address removed]

On Wednesday 14th October 2020

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Law and Jurisdiction

This document is to be construed under English Law and English Law shall be used in interpreting the document and for resolving all claims or disputes arising out of or connected with the document.

1. INTRODUCTION

1.1. This is to certify that Nic Fieldhouse, Principal Surveyor of Fieldhouse Yacht Surveys and Consulting Ltd, carried out a pre-purchase survey on ATLANTA in accordance with instructions received from *[Name & Address removed]* .

1.2. The primary aim of this document is to report on the factual condition of ATLANTA at the time of the survey. Where the equipment has been inspected or tested and found to be in an unsatisfactory condition, recommendations for rectification, repair or replacement will be detailed in this report. These recommendations will be assigned one of the five categories detailed in Section 7. For clarity, all recommendations will be printed in upper case and red font thus: RECOMMENDED.

1.3. Where reference is made to the condition, this must be considered in relation to the age of the vessel.

1.4. The vessel was inspected whilst afloat on her pontoon berth and also when out of the water & held in lifting slings at Premier Marina, Chichester on Wednesday 14th October 2020.

1.5. The survey was conducted by Nic Fieldhouse, Principal Surveyor of Fieldhouse Yacht Surveys and Consulting Ltd.

1.6. The survey was carried out in accordance with Fieldhouse Yacht Surveys Standard Terms and Conditions and with relevant codes of practice published by the International Institute of Marine Surveying.

1.7. Those present during the survey were:

[Name removed], Client (for part of the survey)

[Name removed], Owner of ATLANTA (for part of survey)

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2. SUMMARY

2.1. ATLANTA was seen to be a very good example of a 2001 (2002 model year) Saga 29 Hard Top motor cruiser. The GRP hull seemed to be in good structural condition and retained a very good cosmetic finish.

2.2. The deck moulding, engine, domestic services, navigation equipment and interior finish were generally all in good working order.

2.3. The visibility from the helm seat in the saloon was slightly obstructed in the port & starboard quarters.

2.4. Once the recommendations detailed below have been addressed, there is no reason why ATLANTA should not give good service.

2.1. TYPE A1 RECOMMENDATIONS

2.1.1. There were five **type A1 recommendations** that must be implemented before the vessel is relaunched. Please refer to Section 7 for a full description of the categories of recommendations used in this report.

2.1.2. I was informed by the current Owner that the dark blue ablative type antifouling paint below the waterline had been applied in October 2019. The name of the antifouling paint was ‘Seajet 034 Emperor’. There was very low build-up of previous coats, giving a smooth hull surface. It is RECOMMENDED (type A1 recommendation) that new antifouling paint is applied before launch (see paragraph 5.1.4.1).

2.1.3. When inspected from the cockpit locker, it was found that the welded stainless steel skin fitting of the engine exhaust outlet (item 17 in Figure 5 and Table 3) was corroded. Exhaust water was found to be weeping through the corroded weld bead. This area of corrosion is shown in Figure 6. It is RECOMMENDED (type A1 recommendation) that the skin fitting of the exhaust is replaced (see paragraph 5.1.8.4).

2.1.4. The isolation valves of the black water tank outlet and the engine cooling intake (items 16 and 18 in Figure 5 and Table 3) were constructed from Tonval. This is a low quality brass with a high zinc content and is susceptible to dezincification in the marine environment. Dezincification leads to the structural degradation of the material. These valves showed significant evidence of internal corrosion, particularly where the valves were connected to the skin fitting or to the barbed brass hose-tail. It is RECOMMENDED (type A1 recommendation) that that these two valves and their attached hose tails are replaced with items constructed from bronze or dezincification resistant brass. Whilst this work is being performed, the exposed threads of the skin fittings should be examined for evidence of corrosion (see paragraph 5.1.8.6).

2.1.5. The internal wiring of the hull anode (described in paragraph 5.1.9.1) was inspected via the cockpit locker. All wires and their end terminals were found to be securely fastened and free of significant corrosion. It was noted that the bonding wire that was connected to the skin fitting of the black water holding tank (item 16 in Figure 5 and Table 3) was connected to the anode via the bronze stern bearing. The connection of one metallic item to the anode via another metallic item is considered bad practise because if the wire between the stern bearing and the anode were to fail (through corrosion or fatigue), the skin fitting of the black water holding tank would form a galvanic circuit with the stern bearing. The less noble material (most likely the valve of the holding tank in this situation) would then corrode in sacrifice to the bronze stern bearing. It is RECOMMENDED (type A1 recommendation) that the bonding wire of the black water holding tank is replaced with a wire that is bonded directly to one of the anode studs (see paragraph 5.1.9.8).

2.1.6. After the vessel had been lifted ashore, the drainage cap of the Vetus exhaust muffler was removed in order to allow the coolant water inside the muffler and exhaust hose to drain out. This was done in order to prevent water inside the hose from surging forwards during the road transportation of the vessel. Any water that is allowed to enter the cylinders via the exhaust system and exhaust manifold could lead to damage of the engine. It is RECOMMENDED (type A1 recommendation) that the drainage cap is replaced (see paragraph 5.4.1.22).

2.2. TYPE A2 RECOMMENDATIONS

2.2.1. There were seventeen **type A2 recommendations** that must be implemented before the vessel is taken cruising:

2.2.2. A bronze grease injection cap was mounted in the rudder tube, located between the upper bearing and the hull. It is RECOMMENDED (type A2 recommendation) that this grease injection device is re-filled with grease (see paragraph 5.1.7.7).

2.2.3. The hydraulic ram of the steering system was secured to the forward end of the bronze tiller arm via a stainless steel bolt, secured by a nyloc nut. It was found that the threaded shank of the bolt did not fully engage with the nyloc nut. This nut is shown in Figure 4. This could allow the nut to work loose. It is RECOMMENDED (type A2 recommendation) that the stainless steel bolt is replaced with a longer item or the nut is properly secured with a thread locking compound (see paragraph 5.1.7.9).

2.2.4. The steering was tested by turning the helm wheel from lock to lock. The rudder turned correctly, but it was found that when it was turned fully to port, the tiller arm struck the bronze body of the steering ram before the tiller arm could make contact with the stainless steel fabrication of the port end-stop. The bracket of this end-stop is shown in Figure 4. It was also found that the hydraulic ram reached the end of its travel before the tiller arm makes contact with the port end stop. It is RECOMMENDED (type A2 recommendation) that both stainless steel end stop brackets are adjusted so that the tiller arm makes contact with them before the tiller strikes the body of the steering ram or before the ram reaches the end of its travel (see paragraph 5.1.7.11).

2.2.5. The upper end of the rudder stock was fitted with an end cap that incorporated a stainless steel bar. This round bar projected forwards and provided an attachment point for an emergency tiller arm. During the survey, this tiller arm was not found on the vessel. It is RECOMMENDED (type A2 recommendation) that an emergency tiller arm is fabricated and stowed inside the cockpit locker, in an easy to reach location (see paragraph 5.1.7.12).

2.2.6. The isolation valve handles of the black water tank vent and the forward, starboard cockpit drain (items 3 and 4 in Figure 5 and Table 3) were found to be very loose. It is RECOMMENDED (type A2 recommendation) that these are tightened (see paragraph 5.1.8.5).

2.2.7. All hoses were constructed from reinforced material and were in good working order. For all skin fittings positioned below the waterline, the attached hoses were secured with two stainless steel hoses clips. All hose clips were free of significant corrosion and constructed from stainless steel. The hoses of the galley sink outlet and electric bilge pump (items 7 and 14 in Figure 5 and Table 3) were secured to their skin fittings with a single stainless steel hose clip. It is RECOMMENDED (type A2 recommendation) that where the barbed hose tail of the attached skin fitting or isolation valve is long enough to accommodate two clips, these hoses should be secured with two stainless steel clips (see paragraph 5.1.8.7).

2.2.8. The engine's alternator belt was free of significant wear, but was slightly loose. It is RECOMMENDED (type A2 recommendation) that the alternator belt is adjusted (see paragraph 5.4.1.17).

2.2.9. The bitter end of the anchor chain was spliced to 27.4 metres of 16 mm diameter warp. This warp was free of wear. The bitter end of the warp was tied directly to the inside of the locker. It is RECOMMENDED (type A2 recommendation) that the bitter end of the warp is modified so that it is tethered to the inside of the locker by a short length of line that could easily be cut in an emergency (see paragraph 5.5.1.3).

2.2.10. One spare 2.75 kg LPG (butane) gas cylinder was stored in the starboard cockpit cupboard, next to the gas cylinder storage container. It is RECOMMENDED (type A2 recommendation) that the spare cylinder is not kept on board unless it can be stowed in an approved gas storage container (see paragraph 5.5.5.2).

2.2.11. From the LPG bubble leak tester, copper pipe lead the gas supply through to the galley. Some parts of the copper pipe were suitably routed inside polyethylene pipe. It was found that where the copper pipe was routed behind the galley unit, the pipe was resting on the thermal lagging of the Ardic diesel fuelled space heater. It is RECOMMENDED (type A2 recommendation) that the copper pipe is adjusted so that it is held clear of the lagging or hot parts of the Ardic exhaust pipe (see paragraph 5.5.5.9).

2.2.12. The LPG gas pipe in the galley lead to an isolation valve, located beneath the sink. A further length of armoured gas hose conveyed the gas supply to the cooker. This length of hose was manufactured in March 2011. Gas hose should be replaced every five years. It is RECOMMENDED (type A2 recommendation) that this hose is replaced by a maximum length of one metre of appropriately labelled gas hose. The hose should be marked to BS 3212 type 2 or BS 3212:1991 or BS EN 1763 class 2/3/4. This work should be performed by a qualified gas technician, such as those listed on the gas safety register (see paragraph 5.5.5.10).

2.2.13. One manually operated diaphragm bilge pump was installed in the side of the starboard cockpit coaming. The handle was clipped beneath the pump. The inlet of the pump was installed in the keel sump, beneath the engine. The inlet hose was not fitted with a strum box. The pump was tested by placing water in the bilge sump. The pump functioned well, but a significant amount of water leaked from the length of hose located behind the galley unit. It is RECOMMENDED (type A2 recommendation) that the outlet hose is replaced. The inlet hose should be fitted with a strum box (see paragraph 6.1.1).

2.2.14. It is RECOMMENDED (type A2 recommendation) that two buckets (with lanyards) are stowed on board. These should be between 9 and 14 litres in capacity (see paragraph 6.1.3).

2.2.15. The vessels pair of 12 volts d.c. fog horns were mounted on the aluminium antenna & navigation light mast, located on top of the wheelhouse roof. These horns did not function. It was found that the stainless steel bodies of both horns were full of water. It is RECOMMENDED (type A2 recommendation) that both horns are replaced with waterproof units. Ensure that these are mounted in the correct orientation, to prevent water damage (see paragraph 6.2.1).

2.2.16. There was no anchor ball found on board. This is required by COLREGS. It is RECOMMENDED (type A2 recommendation) that one is purchased and stowed ready for use (see paragraph 6.2.2).

2.2.17. There were no Carbon Monoxide alarms installed on ATLANTA. It is RECOMMENDED (type A2 recommendation) that at least two units are procured and mounted in appropriate locations. It is suggested that one alarm is mounted in the guest cabin and one in the forepeak cabin. These should be positioned at sleeping head height. Refer to the following website for details of alarms that are approved as meeting BS EN 50291-2. These are best suited for boats:

http://www.boatsafetyscheme.org/stay-safe/carbon-monoxide-(co)/co-alarms-save-lives/ (see paragraph 6.4.1).

2.2.18. No emergency flares were found on the vessel. It is RECOMMENDED (type A2 recommendation) that a set of flares (size and quantity appropriate to the sea areas and sea states expected to be encountered) is procured and stowed ready for use (see paragraph 6.7.1).

2.3. TYPE C RECOMMENDATIONS

2.3.1. There were six **type C recommendations** that do not require immediate attention but are to be dealt with within a specified time period:

2.3.2. Reinforcing in the forward parts of the hull was provided by a white GRP moulding that formed the sole & bunk frames in the guest cabin & forepeak. This moulding was found to be in good cosmetic condition and free of cracking or de-bonding from the hull, except for one location: As shown in Figure 7, the vertical GRP plate that provided additional support to the white GRP moulding was cracked. This 100 mm long crack was located beneath the steps that lead down to the guest cabin from the wheelhouse. It is likely that this damage has developed as a result of repeated loading when crew step down into the forward living area. It is RECOMMENDED (type C recommendation with an implementation time of two years) that this cracked support is repaired with layers of GRP cloth (see paragraph 5.2.2.2).

2.3.3. Two anchor chain storage lockers were installed in the foredeck. The two moulded GRP lids were in good condition and free of cracking or other damage. The two stainless steel hinges on each lid were secure. The stainless steel latch of the port locker cover was in good working order. The stainless steel latch of the starboard

locker cover was broken. It is RECOMMENDED (type C recommendation with an implementation time of six months) that this latch is replaced (see paragraph 5.3.5.1).

2.3.4. The 630 mm high pulpit and side rails were constructed from 25 mm diameter stainless steel tubing. The welded fabrication was free of distortion or evidence of impact damage. Each post was secured to the deck moulding with two stainless steel bolts and one stainless steel screw. It was found that a number of these screws were loose. These screws were a combination of cross-head and flat-head screws, indicating that some of these may have been replaced at some time. When an attempt was made to tighten some of these screws, it was found that they turned freely. It is RECOMMENDED (type C recommendation with an implementation time of one year) that where access to the underside of the deck permits, the loose screws should be replaced with stainless steel bolts, in order to fully secure the side rails to the deck moulding. Ensure that the nuts are supported by penny washers (see paragraph 5.3.7.5).

2.3.5. When the fresh water system was powered up, it was found that the pump would run for about one second every thirty seconds. This indicated a fault with the accumulator or a leak in the pump or the pressurised part of the system. It is RECOMMENDED (type C recommendation with an implementation time of one to two months) that this fault is rectified (see paragraph 5.5.3.3).

2.3.6. A large number of small wires were connected directly to the 12 volts d.c. battery posts. There was no evidence that these wires were protected with in-line fuses. Some of these wires were not protected within conduit or protective sleeving. These wires present a fire hazard. It is RECOMMENDED (type C recommendation with an implementation time of six months) that the routing and termination of these wires are overhauled by a qualified marine electrician (see paragraph 5.5.7.3).

2.3.7. Two fire extinguishers were found on board. These are summarised in Table 4. It is RECOMMENDED (type C recommendation with an implementation time of just over one year) that both of the units are serviced or replaced. Ensure that any new unit for the engine compartment is of the inert gas type as powder extinguishers can damage the engine and turbo unit (see paragraph 6.3.1).

2.4. TYPE D RECOMMENDATIONS

2.4.1. There was one **type D recommendations** whose repair may be left to the owner's convenience:

2.4.2. No evidence of laminate or gel-coat repair was noted. There was one chip in the gel-coat on the starboard aft corner. There was no exposed laminate in this area of damage. It is RECOMMENDED (type D recommendation) that this area of chipping is repaired with colour-matched gel-coat (see paragraph 5.1.3.2).

3. SCOPE & LIMITATIONS

3.1. ATLANTA was inspected whilst afloat on her pontoon berth and also when out of the water & held in lifting slings at Premier Marina, Chichester on Wednesday 14th October 2020. For the shore-based part of the survey there was good, all-round access to the exterior of the hull. The only minor obstructions were those presented by the two slings of the lifting hoist.

3.2. At the time of survey the ambient temperature was approximately 14°C, with 7/8 cloud cover, a light wind and occasional light rain.

3.3. Internal inspection was limited to the areas that are normally accessible directly or through lockers, inspection hatches, removable panels, etc. No part of the vessel was dismantled; no bolts were removed for inspection and no linings removed. Consequently, any part of the vessel, her equipment or fittings, which were unexposed or inaccessible, cannot be confirmed to be free from defect.

3.4. All tanks were inspected where visible but not internally inspected and they have not been pressure tested; their contents have not been tested for contamination.

3.5. Window hatches and external doors have not been tested for water tightness.

3.6. We have not inspected fibreglass laminate, woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are, therefore, unable to report that any such part of the structure is free from defects, rot or deterioration.

3.7. The vessel and her equipment were not assessed for design or suitability for any particular purpose, or compliance with any rules, regulation, standard or code.

3.8. Note that the terms “serviceable” or “serviceable condition”, as used in the report, means that the item remained usable, despite possible wear or deterioration. The item may nevertheless require maintenance or replacement in due course.

3.9. No dismantling of the engine took place and so the internal condition of the engine cannot be commented upon. Components hidden from view, such as the sump, crankshaft, camshafts, pistons, valves and cylinder head gaskets could not be examined for latent defects. No compression tests of the cylinders took place. Comments can only be made with regard to the general condition of the engine on the day of the inspection. No guarantee can be made regarding the life expectancy of the engine.

4. THE VESSEL

4.1. DETAILS

Name	ATLANTA
Hull Identification Number (HIN)	*[data removed]*
C.E. Category	C – Inshore. Maximum 8 persons
Built by	Saga Trading AS, 6740 Selje, Norway
Model	Saga 29 Hard Top
Type	Sports Cruiser with 'V' Hull
Build date	Build commenced July 2001. 2002 model year
Engine manufacturer & Model	Yanmar 4LH-STE
Engine type	4 stroke, 4 cylinder diesel, turbocharged
Engine power	Continuous 140 kW (188 horsepower) @ 3100 rpm Maximum 169 kW (227 horsepower) @ 3300 rpm

Table 1: Vessel Details

4.1.1. ATLANTA was seen to be a Saga 29 Hard Top - a sports cruiser with a 'V' hull. She was built by Saga Trading in 2001.

4.1.2. The hull of ATLANTA was moulded in one piece with hand laid GRP, made up of polyester resin, mixed-strand fibreglass mat and woven rovings. The entire hull surface was finished with a white pigmented gel-coat. The hull was seen to be stiffened internally by a pair of glass fibre longitudinal stringers. Further reinforcing in the forward parts of the hull was provided by a white GRP moulding. Additional reinforcement was provided by the plywood bulkheads & locker panels.

4.1.3. The deck & cockpit moulding was a foam cored GRP composite, finished with white pigmented gel-coat. It incorporated the decks, the coachroof and the cockpit. The wheelhouse sides and wheelhouse roof were constructed from three additional GRP mouldings.

4.1.4. ATLANTA had a single unbalanced, skeg-mounted rudder constructed from a stainless steel stock encapsulated in a GRP blade. The hydraulic steering was controlled from a wheel on the starboard side of the wheelhouse. ATLANTA had a 12 volts d.c. electrical system, with one engine starting batteries and two batteries for services. Battery charging was from the engine alternator, from a small solar panel or from shore power through an automatic battery charger.

4.1.5. Accommodation was well laid out with a large sleeping cabin forward, with a toilet & shower aft of this cabin, on the starboard side. One guest cabin was located aft of the forepeak cabin, port side. Steps then lead up to a galley on the starboard side, aft of the helm position. The wheelhouse had seating and a table on the port side. Sliding glass doors at the aft end of the wheelhouse opened out onto a semi-enclosed cockpit, with steps leading up to the side decks.

4.1.6. ATLANTA was fitted with a single Yanmar 4LH-STE , turbocharged, direct injected, four cylinder diesel engine, with fresh water cooling, propelling a single bronze, four blade propeller through a ZF Hurth gearbox. Engine control was via a single lever, giving forward & reverse gears and throttle control, mounted next to the helm in the wheelhouse. There was one welded aluminium fuel tank located inside the engine compartment, positioned on the port side of the engine.

4.2. VESSEL'S NAME

4.2.1. ATLANTA had her name positioned across her transom. The text was applied with dark blue, self-adhesive PVC. The text was in good cosmetic condition and was clearly readable.

4.3. DIMENSIONS

Dimension	Metres	Feet / inches
Length overall	9.2	30 feet and 2 inches
Length at waterline	8.84	29 feet and 0 inches
Beam	3.24	10 feet and 8 inches
Draft	1.05	3 feet and 5 inches
Displacement	4,700 kg	10,362 lb

Table 2: Vessel Dimensions (Broker's information sheet)

4.4. HULL IDENTIFICATION NUMBER

4.4.1. The vessel's Hull Identification Number (HIN) was moulded into the starboard, upper corner of the vessel's transom. The number was *[data removed]*, as shown in Figure 1. This number indicated that the vessel's build was commenced in July 2001.

[image removed]

Figure 1: Hull Identification Number

4.5. PART III REGISTRATION (SMALL SHIPS REGISTER)

4.5.1. The SSR certificate was not seen during the survey.

4.5.2. The vessel's SSR number was applied to the port side of the transom with black PVC numbers, as shown in Figure 2.

[image removed]

Figure 2: SSR number on transom

4.6. CE PLATE

4.6.1. The vessel's CE Type Examination Certificate was not inspected during the survey.

4.6.2. The CE plate was mounted inside the living quarters (Figure 3), located at the top of the steps that lead down to the sleeping accommodation. The plate stated that the vessel was rated for eight persons in category C waters (inshore). For a description of these sea categories, see the following web page:

https://fieldhouse-yacht-surveys.com/craft-design-categories

[image removed]

Figure 3: CE Plate of ATLANTA

5. THE SURVEY

5.1. HULL EXTERIOR

5.1.1. Material & Details of Construction

5.1.1.1. The hull of ATLANTA was of the 'V' type, with one reverse chine flat along each side. She had a square transom with a stainless steel & timber bathing platform.

5.1.1.2. The hull was moulded in one piece with hand laid GRP, made up of polyester resin, mixed-strand fibreglass mat and woven rovings. The entire hull surface was finished with a white pigmented gel-coat.

5.1.2. General Appearance

5.1.2.1. The hull was sighted from a distance fore and aft and visually inspected all round. Her lines were symmetrical, fair and true, with no signs of distortion or flat areas.

5.1.3. Topsides

5.1.3.1. The topsides were finished with unpainted, white-pigmented gel-coat. The topsides were inspected visually. The gel-coat was found to be in sound condition with no signs of major trauma or stress cracking. The gel-coat was well polished, with no evidence of chalking due to UV exposure. There were small cosmetic scuff and scratch marks from mooring fenders and a few minor horizontal scratches. There was no evidence of gel-coat cracking in the topsides due to UV exposure. There was some slight yellowing of the gel-coat, located just above the waterline.

5.1.3.2. No evidence of laminate or gel-coat repair was noted. There was one chip in the gel-coat on the starboard aft corner. There was no exposed laminate in this area of damage. It is RECOMMENDED (type D recommendation) that this area of chipping is repaired with colour-matched gel-coat.

5.1.3.3. Grey PVC rubbing strakes ran along the upper edges of both topsides and across the transom. The joint of the two ends of the extrusion was concealed beneath a 990 mm long length of stainless steel plate, secured through the PVC with four stainless steel screws. The PVC extrusion and stainless steel plate were in very good cosmetic condition, well secured and free of damage.

5.1.4. Hull Below the Waterline & Keel

5.1.4.1. I was informed by the current Owner that the dark blue ablative type antifouling paint below the waterline had been applied in October 2019. The name of the antifouling paint was 'Seajet 034 Emperor'. There was very low build-up of previous coats, giving a smooth hull surface. It is RECOMMENDED (type A1 recommendation) that new antifouling paint is applied before launch.

5.1.4.2. The entire hull & keel were visually inspected, except where surfaces were hidden behind the two slings of the lifting hoist. Additionally, the antifouling was scraped off in a number of areas in order to inspect the condition of the underlying gel-coat. There was no evidence of blistering or other damage attributable to water penetration. No evidence of scratching or chipping of the hull or keel was found. There was no evidence of grounding damage of the keel.

5.1.5. Moisture Readings

5.1.5.1. Moisture readings were taken using a Tramex Skipper Plus capacitance type moisture meter. The meter was set to range 2, which measures deep into the layup. Figures quoted are from the meter's percentage H20 scale. Note that by convention, moisture meters are calibrated for timber, so the percentage moisture readings are not directly applicable to GRP. The true moisture content of GRP is very approximately 10% of those quoted.

5.1.5.2. Readings were taken both above and below the waterline in order to obtain a comparison. Note that high moisture content is not generally a structural defect and is to be expected in older boats. Where some moisture has been absorbed, the likelihood

of moisture related problems occurring are higher. When this occurs, the actual state of the laminate cannot be completely guaranteed without destructive testing and chemical analysis. The opinion given in this survey report is based on all the evidence available at the time but without destructive testing.

5.1.5.3. Moisture readings taken on the topsides were between 10 and 13, which indicate a low moisture level.

5.1.5.4. Readings taken of the hull below the waterline were between 15 and 17. These readings indicate that the hull laminate below the waterline has a medium moisture content.

5.1.5.5. To limit the moisture levels in the hull laminate, the boat should ideally be stored ashore for a few months each winter. The owner should endeavour to keep the bilges as dry as possible. When the vessel is to be left unattended for more than a few days, the sole boards and internal locker covers should be opened up to allow the moisture in the bilges to evaporate.

5.1.6. Hammer Testing of Hull Surfaces

5.1.6.1. In order to identify any areas of delamination or poorly resinated laminate, the exterior surfaces of the hull (above and below the waterline) were then tested with a small plastic-headed hammer. The test gave sound returns with no indications of softening, poor lay-up or delamination of the GRP.

5.1.7. Rudder & Steering

5.1.7.1. ATLANTA had a single unbalanced, skeg-mounted rudder constructed from a stainless steel stock encapsulated in a GRP blade. It was inspected visually and by hammer testing and found to be in serviceable condition, with no evidence of weeping, cracking, splits or other damage.

5.1.7.2. The 40 mm diameter stainless steel rudder stock was fabricated in two sections. These were joined together by a welded & bolted flanged joint, positioned between the rudder blade and the hull. The four stainless steel bolts and nyloc nuts of the joint were secure and free of significant corrosion. The stock was inspected where access allowed. The visible portions of the stock (inside and outside of the vessel) were found to be free of pitting corrosion or evidence of cracking. It should be noted that the portion of the rudder stock within the rudder tube and within the blade could not be accessed for inspection; therefore the condition of the stock cannot be guaranteed.

5.1.7.3. There was very minor wear in both of the upper and lower rudder bearings.

5.1.7.4. The lower rudder bearing was housed in a stainless steel skeg. This welded fabrication was mounted to the underside of the aft end of the keel with four stainless steel bolts, each secured with a nyloc nuts. These were hammer tested and found to be well secured and in serviceable condition. All were free of visible corrosion.

5.1.7.5. The bronze body of the upper bearing was mounted in a substantial GRP moulding, located inside the cockpit locker. This GRP moulding was secured to the hull moulding with layers of GRP cloth. All laminate was inspected and found to be free of cracking or other damage.

5.1.7.6. The 2¼” diameter bronze rudder tube (this is the tube that is fixed to the hull, through which the rudder stock passes) was inspected from the cockpit locker. It was found to be securely attached to the hull by GRP tabbing. There was no evidence of any debonding of the joint between the bronze tube and the laminate.

5.1.7.7. A bronze grease injection cap was mounted in the rudder tube, located between the upper bearing and the hull. It is RECOMMENDED (type A2 recommendation) that this grease injection device is re-filled with grease.

5.1.7.8. A cast bronze tiller arm was secured to the rudder stock with two A4-grade stainless steel screws. The tiller arm and screws were found to be secure and free of corrosion.

5.1.7.9. The hydraulic ram of the steering system was secured to the forward end of the bronze tiller arm via a stainless steel bolt, secured by a nyloc nut. It was found that the threaded shank of the bolt did not fully engage with the nyloc nut. This nut is shown in Figure 4. This could allow the nut to work loose. It is RECOMMENDED (type A2 recommendation) that the stainless steel bolt is replaced with a longer item or the nut

is properly secured with a thread locking compound.

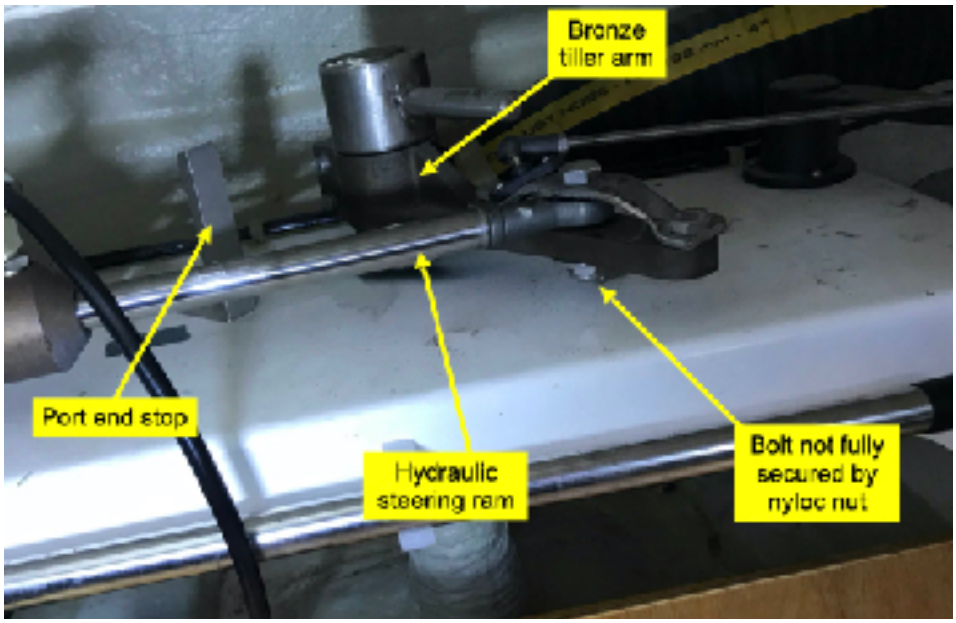

Figure 4: Steering mechanism in cockpit locker

5.1.7.10. Where accessible for inspection, the hydraulic hoses, hydraulic ram and fluid reservoir were found to be in good order, with no evidence of fluid leaks.

5.1.7.11. The steering was tested by turning the helm wheel from lock to lock. The rudder turned correctly, but it was found that when it was turned fully to port, the tiller arm struck the bronze body of the steering ram before the tiller arm could make contact with the stainless steel fabrication of the port end-stop. The bracket of this end-stop is shown in Figure 4. It was also found that the hydraulic ram reached the end of its travel before the tiller arm makes contact with the port end stop. It is RECOMMENDED (type A2 recommendation) that both stainless steel end stop brackets are adjusted so that the tiller arm makes contact with them before the tiller strikes the body of the steering ram or before the ram reaches the end of its travel.

5.1.7.12. The upper end of the rudder stock was fitted with an end cap that incorporated a stainless steel bar. This round bar projected forwards and provided an attachment point for an emergency tiller arm. During the survey, this tiller arm was not found on the vessel. It is RECOMMENDED (type A2 recommendation) that an emergency tiller arm is fabricated and stowed inside the cockpit locker, in an easy to reach location.

5.1.8. Skin Fittings and Valves

5.1.8.1. Figure 5 and Table 3 show the location and function of the skin fittings, together with the condition of the valves, hoses and clips. The items in red text in Table 3. indicate a defect or poor condition of the items and are addressed in the recommendations below.

5.1.8.2. No skin fittings or valves were dismantled as part of the survey but the following tests were performed:

Examination from outside and inside the vessel

All valves opened and closed to their full extent

The through-hull fittings, hose clips and valve bodies were hammer tested

The fittings were aggressively tested to assess their security of attachment to the hull

Where accessible, hose clips were inspected and hoses were aggressively tested

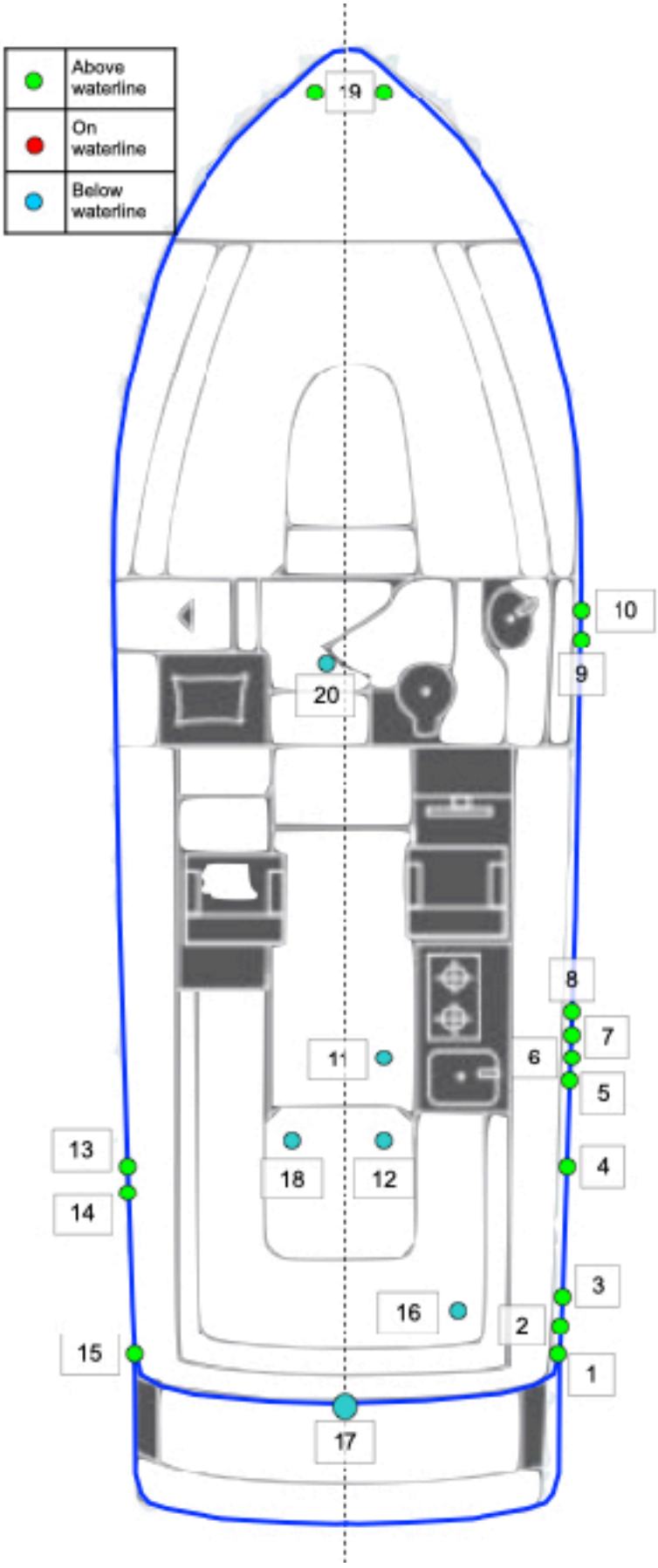

Figure 5: Location of skin fittings (plan view looking from above)

#	Function	Above / Below WL	EXTERNAL		INTERNAL							
			Skin Fitting		Valve			Hose		Clips		
			Mat.	Cond.	Type	Mat.	Cond.	Reinf.	Cond.	#	Mat.	Cond.
1	starboard cockpit drain, aft	200mm above	ss	✓	ball	tonval	✓	✓	✓	2	ss	✓
2	gas locker vent	200mm above	ss	✓	ball	tonval	✓	✓	✓	2	ss	✓
3	black water tank vent	200mm above	ss	✓	ball	tonval	loose handle ✓	✓	✓	2	ss	✓
4	starboard cockpit drain, forward	200mm above	ss	✓	ball	tonval	loose handle ✓	✓	✓	2	ss	✓
5	Ardic space heater exhaust	680mm above	ss	✓	N/A			ss pipe	✓	1	ss	✓
6	manual bilge pump	680mm above	ss	✓	N/A			✓	✓	2	ss	✓
7	galley sink outlet	680mm above	ss	✓	N/A			✓	✓	1	ss	✓
8	fresh water tank breather	680mm above	ss	✓	N/A			✓	✓	2	ss	✓
9	heads toilet sink	130mm above	ss	✓	ball	tonval	✓	✓	✓	2	ss	✓
10	shower tray pump out	130mm above	ss	✓	ball	tonval	✓	✓	✓	2	ss	✓
11	depth sounder	below	pl	✓	N/A							
12	speed transducer	below	pl	✓	N/A							
13	port cockpit drain, forward	200mm above	ss	✓	ball	tonval	✓	✓	✓	2	ss	✓
14	electric bilge pump	200mm above	pvc	✓	N/A			✓	✓	1	ss	✓
15	port cockpit drain, aft	200mm above	ss	✓	ball	tonval	✓	✓	✓	2	ss	✓
16	black water tank outlet	below	br	✓	ball	tonval	poor	✓	✓	2	ss	✓
17	engine exhaust	below	ss	corroded through	N/A			✓	✓	2	ss	✓
18	engine cooling intake	below	br	✓	ball	tonval	poor	✓	✓	2	ss	✓
19	2x anchor locker drains	above	ss	✓	N/A							
20	heads toilet inlet	below	br	✓	ball	DZR	✓	✓	✓	2	ss	✓

WL	Waterline	Pl	Plastic
Mat.	Material	ss	Stainless steel
Cond.	Condition	corr	Corroded
Br	Bronze or Brass	DZR	Dezincification resistant Brass

Table 3: Function and condition of skin fittings, valves, hoses and clips

5.1.8.3. All fittings on or below the waterline were bronze or brass (apart from the plastic speed impeller & depth transducer) and showed no signs of dezincification. The parts of these fittings that were accessible from outside of the boat were found to be free of dezincification. All skin fittings located close to or below the waterline were fitted with an isolation valve.

5.1.8.4. When inspected from the cockpit locker, it was found that the welded stainless steel skin fitting of the engine exhaust outlet (item 17 in Figure 5 and Table 3) was corroded. Exhaust water was found to be weeping through the corroded weld bead. This area of corrosion is shown in Figure 6. It is RECOMMENDED (type A1 recommendation) that the skin fitting of the exhaust is replaced.

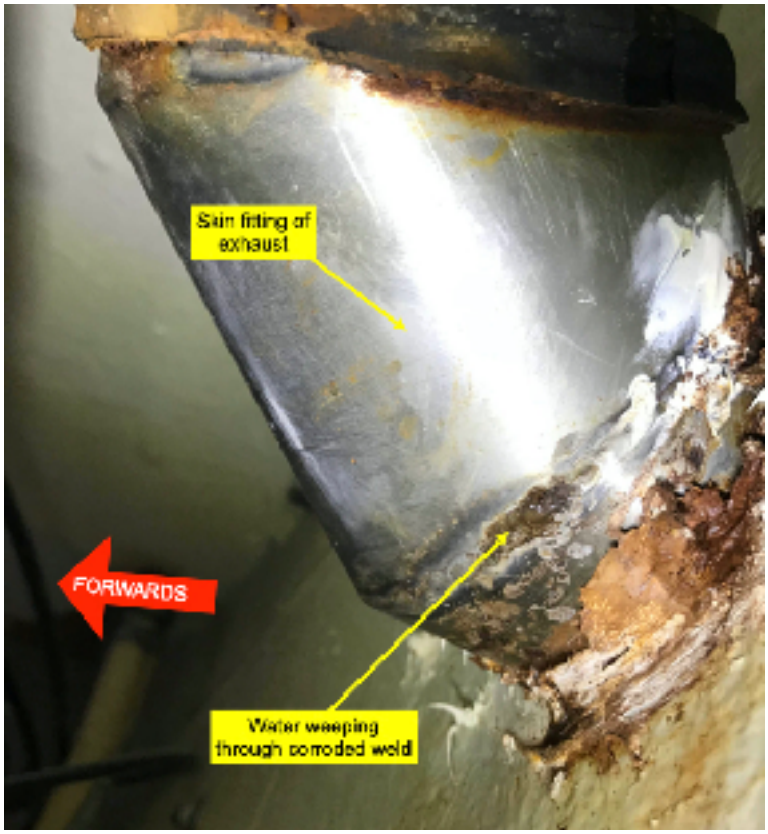

Figure 6: Corroded skin fitting of engine exhaust

5.1.8.5. The isolation valve handles of the black water tank vent and the forward, starboard cockpit drain (items 3 and 4 in Figure 5 and Table 3) were found to be very loose. It is RECOMMENDED (type A2 recommendation) that these are tightened.

5.1.8.6. The isolation valves of the black water tank outlet and the engine cooling intake (items 16 and 18 in Figure 5 and Table 3) were constructed from Tonval. This is a low quality brass with a high zinc content and is susceptible to dezincification in the marine environment. Dezincification leads to the structural degradation of the material. These valves showed significant evidence of internal corrosion, particularly where the valves were connected to the skin fitting or to the barbed brass hose-tail. It is RECOMMENDED (type A1 recommendation) that that these two valves and their attached hose tails are replaced with items constructed from bronze or dezincification resistant brass. Whilst this work is being performed, the exposed threads of the skin fittings should be examined for evidence of corrosion.

5.1.8.7. All hoses were constructed from reinforced material and were in good working order. For all skin fittings positioned below the waterline, the attached hoses were secured with two stainless steel hoses clips. All hose clips were free of significant corrosion and constructed from stainless steel. The hoses of the galley sink outlet and electric bilge pump (items 7 and 14 in Figure 5 and Table 3) were secured to their skin fittings with a single stainless steel hose clip. It is RECOMMENDED (type A2 recommendation) that where the barbed hose tail of the attached skin fitting or isolation valve is long enough to accommodate two clips, these hoses should be secured with two stainless steel clips.

5.1.9. Anodes

5.1.9.1. One pear anode was fastened through the hull, mounted on the starboard side of the hull and 1.90 metres forward of the propeller. Note that it is considered good practise to position the hull anode a maximum of 1.0 metre from the metallic items that the anode is providing protection to.

5.1.9.2. The pear anode was secured to the hull with two galvanised steel studs (200 mm between fastening centres) . The studs and nuts had some minor surface corrosion but were in serviceable condition. The anode was approximately 30% wasted.

5.1.9.3. The electrical connection between the hull anode and the stern bearing, skin fitting of the black water tank, propeller shaft and the skin fitting of the engine cooling intake was tested with a multimeter and the resistance found to be between 0.1 and 0.7 Ω. The recommended maximum resistance is 1.0 Ω.

5.1.9.4. Each of the stainless steel trim tabs was protected by one zinc button anode, bolted to the upper surface of each trim tab. These anodes were approximately 30 to 40% wasted.

5.1.9.5. The bow thruster was fitted with a button anode, secured with a stainless steel screw to the hub of the propeller. This anode was approximately 20% wasted.

5.1.9.6. Two pear anodes (160 mm between fastening centres) were fastened to each side of the stainless steel skeg (lower rudder bearing support). These anodes were less than 10% wasted.

5.1.9.7. All anodes should be inspected annually and renewed if more than 50% wasted. According to anode supplier MGDUFF: Use zinc anodes in salt water, aluminium anodes in salt & brackish water and magnesium anodes in fresh water.

5.1.9.8. The internal wiring of the hull anode (described in paragraph 5.1.9.1) was inspected via the cockpit locker. All wires and their end terminals were found to be securely fastened and free of significant corrosion. It was noted that the bonding wire that was connected to the skin fitting of the black water holding tank (item 16 in Figure 5 and Table 3) was connected to the anode via the bronze stern bearing. The connection of one metallic item to the anode via another metallic item is considered bad practise because if the wire between the stern bearing and the anode were to fail (through corrosion or fatigue), the skin fitting of the black water holding tank would form a galvanic circuit with the stern bearing. The less noble material (most likely the valve of the holding tank in this situation) would then corrode in sacrifice to the bronze stern bearing. It is RECOMMENDED (type A1 recommendation) that the bonding wire of the black water holding tank is replaced with a wire that is bonded directly to one of the anode studs.

5.1.10.Bow Thruster

5.1.10.1. A Sleipner Side-Power SP-55-S, 12 volts d.c., 3.1 kW bow thruster was installed in the bow. Access to the motor and the internal parts of the GRP tube was gained by lifting the bunk cushions in the forepeak. The motor was found to be clean and free of visible corrosion. There was no evidence of cracking or delamination of the GRP tabbing that secured the bow thruster tunnel to the hull moulding.

5.1.10.2. Power to the motor was supplied by the vessel's main batteries via heavy duty cabling. Where accessible for inspection, these cables were found to be well supported and adequately connected to the motor. All electrical connections were suitably shielded.

5.1.10.3. The serial number of the motor unit was *[data removed]*, article number SP55S12, motor type 4_2010_12.

5.1.10.4. Externally, the five-blade propeller was found to be free of visible wear or damage. The bronze casting of the drive leg was free of corrosion.

5.1.10.5. 12 volts d.c. power to the bow thruster was controlled by a red quarter-turn switch, mounted just above the sole boards, at the aft end of the wheelhouse, port side.

5.1.10.6. The bow thruster was tested whilst the vessel was afloat and was found to function correctly.

5.2. HULL INTERNAL STRUCTURE

5.2.1. General Appearance

5.2.1.1. There were a number of removable sole boards in the forepeak cabin and in the passageway that runs from the saloon to the forepeak. These were lifted in order to inspect the internal hull and stiffening structure. Access to the hull structure was also gained by lifting the bunk covers in the forepeak cabin, guest cabin and also via the engine compartment & cockpit locker.

5.2.1.2. There was some standing water and evidence of engine cooling water in the bilge space beneath the engine. The origin of this water could not be determined, but it may have leaked into the bilges during the servicing or previous winterisation of the engine.

5.2.1.3. All other bilge spaces were found to be dry and mostly clean, but with evidence that minor quantities of black, oily water once stood in the central bilges. These dirty marks were most evident in the bilge compartment located beneath the bunk of the guest cabin.

5.2.1.4. The bilge compartments were finished with a white paint. These coatings were found to be free of flaking.

5.2.2. Hull Internal Structure

5.2.2.1. The hull was seen to be stiffened internally by a pair of glass fibre longitudinal stringers. These were bonded to the hull moulding with layers of GRP tabbing. These also formed the supports of the engine & gearbox and ran along the upper edges of the keel. It was found that these stringers were not fitted with limber holes. The lack of limber holes maximised the strength & stiffness of these stringers and prevented any water ingress into the foam of the stringers, but this also prevented efficient drainage of any bilge water into the keel sump. Where accessible for inspection, there was no evidence of de-bonding, cracks or movement of the GRP stringers.

5.2.2.2. Further reinforcing in the forward parts of the hull was provided by a white GRP moulding that formed the sole & bunk frames in the guest cabin & forepeak. This moulding was found to be in good cosmetic condition and free of cracking or de-bonding from the hull, except for one location: As shown in Figure 7, the vertical GRP plate that provided additional support to the white GRP moulding was cracked. This 100 mm long crack was located beneath the steps that lead down to the guest cabin from the wheelhouse. It is likely that this damage has developed as a result of repeated loading when crew step down into the forward living area. It is RECOMMENDED (type C recommendation with an implementation time of two years) that this cracked support is repaired with layers of GRP cloth.

Figure 7: Crack in GRP support of sole in forward living area

5.2.3. Bulkheads & Locker Panels

5.2.3.1. Additional reinforcement was provided by the plywood bulkheads & locker panels. The bulkheads were secured to the white GRP moulding (described in paragraph 5.2.2.2) with mastic and stainless steel screws. The locker panels were bonded to the hull with layers of GRP tabbing. Where accessible, the plywood bulkheads and locker panels were inspected and found to be in sound condition, with no evidence of moisture ingress, wood rot or delamination. Where accessible for inspection, the integrity of the tabbing was inspected and found to be free of de-bonding, cracks or movement.

5.3. Deck and External Fittings

5.3.1. Hull / Deck Join

5.3.1.1. The deck was joined to the hull by the out-turned flange joining method. The external joint was concealed behind a grey extruded PVC rubbing strake. The strakes ran along both topsides and across the stern.

5.3.1.2. Internally, and where accessible for inspection, the hull to deck joint was found to be sealed with a white mastic sealant. Inspection of the interior faces of the join was limited to the anchor chain lockers and the cockpit locker. As far as could be ascertained, the hull to deck joint appeared to be sound, with no evidence of water ingress to the vessel interior through this joint.

5.3.2. Deck, Coachroof & Cockpit Moulding

5.3.2.1. The deck, coachroof & cockpit moulding was a foam-cored GRP composite, finished with a white pigmented gel-coat. It incorporated the decks, the upper surface of the transom platform and the cockpit. Structurally this moulding was in serviceable condition, with no signs of damage or delamination between core and skin.

5.3.2.2. The gel-coat was found to be in sound condition, with only minor scuff and scratch marks. The gel-coat generally retained a good level of gloss and appeared to be well polished, with no evidence of UV degradation. There was some minor cracking of the gel-coat at the bases of the stanchion posts on the side decks.

5.3.2.3. The integrity of the deck structure was checked by applying the Surveyor’s weight to the deck surface. No excessive deformation was noted.

5.3.2.4. The slip-resistant surfaces in the side decks, coachroof and cockpit sole were provided by a rough texture moulded into the gel-coat. These surfaces were in good condition and free of significant wear.

5.3.2.5. Moisture levels in the moulding were measured at regular intervals, paying particular attention to the laminate adjacent to deck fittings. All readings were found to be low.

5.3.2.6. There were two thermoplastic cupboard doors in each side of the port & starboard cockpit coamings, two in each side. These mouldings, their hinges and latches were all in good working order and free of damage.

5.3.2.7. A manually operated diaphragm bilge pump was mounted in the side of the starboard cockpit coaming. See section 6.1 for a description of the bilge pump.

5.3.2.8. There was one large locker beneath the cockpit floor. The two locker covers, stainless steel hinges, locking latches and hydraulic struts were in good working order. This locker gave access to the three 12 volts d.c batteries, the isolating valve of the black water holding tank and the aft end of the engine & gearbox.

5.3.2.9. The transom platform was formed by the deck moulding. The slip-resistant surfaces of this platform were provided by lengths of teak planking, bonded to the underlying GRP. The edges of the planks were finished to a good standard with black caulking. There was no significant wear of the planking. The timber and caulking were found to be in good cosmetic condition, with no evidence of shrinking or cracking of the caulking. The planks were found to be generally well bonded to the underlying GRP, but with a few small regions of de-bonding, located at the ends of some of the planks. These may eventually need to be re-bonded.

5.3.3. Wheelhouse

5.3.3.1. The wheelhouse sides were formed from one GRP moulding, finished with white gel-coat. This moulding was secured to the deck moulding with stainless steel screws. The moulding and joint were found to be sound and free of damage.

5.3.3.2. The roof of the wheelhouse was formed from two GRP mouldings, finished with white gel-coat. One moulding formed the majority of the roof, with the smaller, second moulding providing support for the two sliding glass roof windows. These mouldings were found to be free of damage and in very good cosmetic condition.

5.3.4. Bathing Platform

5.3.4.1. The bathing platform was constructed from solid timber planks, secured to a welded framework of 1" diameter stainless steel tubing and stainless steel brackets. It was bolted through the hull moulding with eight stainless steel fasteners. Where accessible for inspection, the fasteners were hammer tested from inside the cockpit locker and were found to be in serviceable condition and free of distortion or significant corrosion. There was one small dent in the starboard, aft corner of the stainless steel frame.

5.3.4.2. The timber planks were found to be free of significant damage or softening. The undersides of the planks were green with algal growth and in need of a clean.

5.3.5. Chain Locker & Bulkhead

5.3.5.1. Two anchor chain storage lockers were installed in the foredeck. The two moulded GRP lids were in good condition and free of cracking or other damage. The two stainless steel hinges on each lid were secure. The stainless steel latch of the port locker cover was in good working order. The stainless steel latch of the starboard locker cover was broken. It is RECOMMENDED (type C recommendation with an implementation time of six months) that this latch is replaced.

5.3.5.2. The anchor chain & warp inside the port locker was removed in order to inspect the bulkhead and the lower parts of the locker. The plywood bulkheads & bases of both lockers were inspected and found to be free of damage.

5.3.5.3. Each locker had one drain hole located in the hull topside. The openings of these drain holes were finished with a stainless steel deflector shield. The stainless steel shields were secure and free of damage.

5.3.6. Hatches, Windows & Ports

5.3.6.1. One forward hinging, square Gebo hatch (480 x 480 mm opening) was installed in the roof of the forepeak. This size meets the recommendation for the minimum dimension to allow escape in an emergency, which is 380mm [BS EN ISO 9094-1:2003, Small Craft - Fire Protection]. It was found to be securely attached and showed no signs of water ingress. The rubber seal was in good condition and free of hardening or cracking. The tinted acrylic window was in good condition, but with minor crazing. The aluminium frame was in good cosmetic condition and free of damage. The two reinforced nylon latches were in serviceable condition. The friction stay was in good working order.

5.3.6.2. The three-panel windscreen, side windows and sliding cockpit door of the main saloon were all constructed from tempered glass, set into anodised aluminium frames. The rubber seals around the glass panels were in serviceable condition.

5.3.6.3. Four fixed aluminium & tempered glass windows were set into the sides of the coachroof: two in the forepeak, one in the heads and one in the guest cabin. One oval window was set into the port topside, located in the guest cabin. These were found to be in good cosmetic condition and free of evidence of leaking.

5.3.6.4. Two rectangular roof windows were installed in the roof of the wheelhouse. These were constructed from tempered glass, mounted in anodised aluminium frames. The locking & sliding mechanism of each window functioned correctly, with no evidence of water ingress. It was noted that the black mastic material that sealed the glass into the aluminium frames had been re-applied in numerous locations on the inner faces and on most parts of the outer faces. The sealant around these two roof windows may need to be replaced in the next few seasons.

5.3.6.5. Access to the wheelhouse from the cockpit was from a full width sliding door, constructed from sliding panels of tempered glass, set into anodised aluminium frames. The glass, frames, sliding mechanism and locking handle functioned correctly and were free of damage or noticeable wear.

5.3.7. Deck Fittings and Equipment

5.3.7.1. There were six polished stainless steel mooring cleats: Two on the foredeck, one on each of the aft corners of the cockpit and one on each side deck. All were inspected and found to be free of damage and adequately secured to the deck moulding.

5.3.7.2. There were two polished stainless steel fairleads fitted to the foredeck. These were inspected and found to be free of damage and adequately secured.

5.3.7.3. One stainless steel bowsprit & bow roller fabrication was mounted to the foredeck and stem of the hull. The fabrication was found to be sturdily constructed and free of damage or deformation. The anchor roller was in good working order and free of significant wear. There was some scratching of the fabrication where the anchor chain passes over the surface. The teak planks of the bowsprit were secure and free of damage.

5.3.7.4. Two 25 mm diameter tubular stainless steel grab rails were fitted to the wheelhouse roof. They were in good cosmetic condition and securely mounted.

5.3.7.5. The 630 mm high pulpit and side rails were constructed from 25 mm diameter stainless steel tubing. The welded fabrication was free of distortion or evidence of impact damage. Each post was secured to the deck moulding with two stainless steel bolts and one stainless steel screw. It was found that a number of these screws were loose. These screws were a combination of cross-head and flat-head screws, indicating that some of these may have been replaced at some time. When an attempt was made to tighten some of these screws, it was found that they turned freely. It is RECOMMENDED (type C recommendation with an implementation time of one year) that where access to the underside of the deck permits, the loose screws should be replaced with stainless steel bolts, in order to fully secure the side rails to the deck moulding. Ensure that the nuts are supported by penny washers.

5.3.7.6. A three step, hinging and telescopic, welded stainless steel boarding ladder was secured to the starboard side of the stainless steel bathing platform. This ladder hinged down to and below the waterline by approximately 550 mm in order to assist with man overboard recovery. It was found to be adequately secured and free of cracks or deformation. The plastic treads of the steps were secure and in good condition.

5.3.8. Antenna Mast

5.3.8.1. The antenna & navigation light mast was constructed from welded aluminium, finished with white a grey-anodised coating. It was secured to the wheelhouse roof by an aluminium bracket. The mast was secured to the bracket by a sliding joint, which was locked by one steel screw. This corroded screw should be replaced with a stainless steel equivalent. The fabrication was considered to be very well made and was sturdily constructed. It was inspected and found to be free of damage, deformation or cracking. It provided support for the three white navigation lights and the two 12 volts d.c. fog horns (non-functioning).

5.3.9. Canvas

5.3.9.1. The blue canvas cockpit awning was in very good condition and free of damage. The windows were free of significant scratches or degradation. The fasteners, buttons, zips and stitching were in good working order and free of damage. The tubular stainless steel frame of this awning was free of distortion and adequately secured to the cockpit coaming.

5.3.9.2. Blue canvas screens for the wheelhouse front & side windows were also fitted. These were in good order and free of significant UV degradation. The buttons of these screens were in good order.

5.4. PROPULSION

5.4.1. Engine & Transmission

5.4.1.1. ATLANTA was fitted with a single Yanmar 4LH-STE , turbocharged, direct injected, four cylinder diesel engine, with fresh water cooling, propelling a single bronze, four blade propeller through a ZF Hurth gearbox. Engine control was via a single lever, giving forward & reverse gears and throttle control, mounted next to the helm in the wheelhouse.

5.4.1.3. The engine rev counter at the helm position included an analogue engine hour meter. At the time of survey, this read 724.6 hours.

5.4.1.4. There was no evidence of engine overheating. The paint coatings were in very condition, but with some minor corrosion around steel fasteners and below the raw water pump.

5.4.1.5. The engine oil and gearbox oil were inspected and found to be clean, free of moisture and at the correct level.

5.4.1.6. The ZF Hurth gearbox was a model HSW_630_A1. The serial number was *[data removed]*. The part number was 9_78.25.000.31.

5.4.1.7. The engine and transmission systems were tested with the vessel tied to her pontoon berth. During this test, the engine speed (whilst in gear) was limited to approximately 1000 rpm as higher engine speeds may have applied excessive loads to the warps and pontoon.

5.4.1.8. The engine started very readily from cold. Exhaust gases were clean and free of soot or blue smoke. During the test, the gauges for monitoring of engine oil pressure and coolant temperature functioned correctly. Engine oil pressure read approximately 0.4 MPa when running in gear at 800rpm. This figure was within the 0.34 to 0.44 psi range specified in the Yanmar Service Manual.

5.4.1.9. The coolant temperature gauge functioned normally. When the engine had been running in gear for approximately thirty minutes, the gauge gave a reading of approximately 70 to 75°C, which was within normal working limits.

5.4.1.10. The sounder alarm functioned normally when tested from the test button at the engine control panel.

5.4.1.11. Ahead and reverse gears functioned normally. When forward & reverse gears were engaged, there was no evidence of abnormal jolting, knocking or other abnormal noises from the gearbox.

5.4.1.12. No smoking or unusual smells were noted in the engine compartment.

5.4.1.13. The cylinders were not compression tested; therefore no assessment could be made of the engine's compression condition.

5.4.1.14. After the running of the engine, the external parts were visually inspected for evidence of fluid leaks. No leaks from the engine cooling water, gearbox oil and exhaust systems were evident. Evidence of a minor oil leak was evident from the seal between the engine block and sump. It is likely that leaking around this seal is most noticeable when the engine is fully warmed up and running under load.

5.4.1.15. The external parts of the cast iron exhaust elbow were found to be free of significant corrosion. After the running of the engine, there was no evidence of water leakage around the joints of the elbow.

5.4.1.16. Where accessible for inspection, the coolant hoses were inspected and found to be free of chafing damage or significant degradation.

5.4.1.17. The alternator belt was free of significant wear, but was slightly loose. It is RECOMMENDED (type A2 recommendation) that the alternator belt is adjusted.

5.4.1.18. The flexible rubber engine mounts were found to be in serviceable condition, but with some minor corrosion of the fasteners and steel plates that secured each mount to the engine beds.

5.4.1.19. The foam filter of the engine air intake was slightly dirty. It is RECOMMENDED (type A2 recommendation) that this foam is cleaned.

5.4.1.20. Access to the the alternator, raw water strainer, oil filters was good. Visual access to the viewing window of the raw water strainer was poor. Access to the engine oil dipstick was good, but its location on the starboard side of the engine was not immediately obvious.

5.4.1.21. Engine exhaust gases and cooling water from the engine were discharged through a Vetus moulded plastic muffler box and an armoured flexible hose, to a hull fitting on the centreline of the transom. Where accessible for inspection, the lengths of exhaust hose and securing clamps were found to be in serviceable condition and well secured with stainless steel and plated steel clamps. Ensure that the plated steel hose clamp that secured the hose to the exhaust elbow is regularly inspected and replaced when it starts to corrode. See paragraph 5.1.8.4 for details of the recommendation relating to the condition of the skin fitting of the exhaust hose.

5.4.1.22. After the vessel had been lifted ashore, the drainage cap of the Vetus exhaust muffler was removed in order to allow the coolant water inside the muffler and exhaust hose to drain out. This was done in order to prevent water inside the hose from surging forwards during the road transportation of the vessel. Any water that is allowed to enter the cylinders via the exhaust system and exhaust manifold could lead to damage of the engine. It is RECOMMENDED (type A1 recommendation) that the drainage cap is replaced.

5.4.2. Fuel System

5.4.2.1. There was one welded aluminium fuel tank located inside the engine compartment, positioned on the port side of the engine. The supply line to the engine from the fuel tank was fitted with a series of quarter-turn isolation valves, mounted beneath the two primary filters. It is not considered good practise to locate the isolation valves inside the engine compartment as they cannot be accessed in the event of an engine fire.

5.4.2.2. The majority of the surfaces of the fuel tank were obscured behind insulation or could not be accessed due to the limited space between the tank and the hull & deck. Access to the top of the fuel tank was gained by removing the two pull-out drawers located at the aft end of the wheelhouse, port side. Where accessible for inspection, the tank was found to be free of damage or corrosion and was adequately secured to the surrounding structure.

5.4.2.3. The two paper & glass primary fuel filters were in good external condition, with all connections in serviceable condition and free of corrosion. The fuel inside both filters was found to be clean and free of debris, moisture or evidence of mould growth. The two filters were fitted with a series of isolation valves that would allow one filter to be by-passed if one of them became blocked.

5.4.2.4. The filler cap for the diesel fuel tank was located on the port side deck, next to the cockpit. The cap was suitably labelled. The rubber o-ring seal was in good condition and free of degradation. The short length of wire that secured the port filler cap to the main body of the filler unit was in good condition.

5.4.2.5. The fuel hose between the deck filler cap was constructed from reinforced material and was free of cracking or other degradation. It was secured at both ends with two stainless steel hose clips.

5.4.2.6. The fuel supply & return lines between the engine and the fuel tank were suitably manufactured in accordance with BS EN ISO 7840. Where accessible for inspection, these were found to be free of chafing damage or significant degradation. The short lengths of hose that passed between the fuel injectors were coated with a grey paint. Beneath the cracked & flaking paint, the hose material was found to be in serviceable condition and free of significant degradation.

5.4.2.7. Fuel level in the tank was measurable by means of a dial gauge, mounted on the starboard side of the helm wheel. This was seen to function correctly, but its accuracy could not be verified.

5.4.3. Stern Gear

5.4.3.1. The exposed sections of the 45.0 mm diameter stainless steel propeller shaft were in good condition and as far as could be ascertained, the alignment appeared to be correct.

5.4.3.2. The bronze stern bearing was secured to the GRP hull by two A4-80 grade stainless steel bolts. Where accessible for inspection, the body of the bronze bearing and the fasteners were found to be in good condition and free of corrosion. There was minimal wear in the cutlass bearing.

5.4.3.3. The four-blade, 20” diameter, fixed pitch, bronze propeller was inspected and found to be free of bending or any visible distortion, but with a small chip & scratch on the edge of one of the blades. The burred edge of this chip should be smoothed off. There was no evidence of corrosion on any parts of the casting. The propeller was adequately secured to its shaft with a single bronze nut and locked by a stainless steel grub screw. These were in good order and free of corrosion.

5.4.3.4. The inboard shaft seal was of the ‘lip seal’ type. It was inspected and found to be in serviceable condition, with no evidence of perishing or cracking of the reinforced rubber hose. The seal was secured by two stainless steel hose clips at each end. These were in serviceable condition and free of corrosion. The seal was oil lubricated, with an oil header tank located inside the engine compartment. Ensure that this seal is replaced periodically and within the time limits recommended by the manufacturer.

5.4.3.5. During the running of the engine and whilst in gear, there was no evidence of water ingress via the propeller shaft seal.

5.4.3.6. A single hinging, stainless steel trim tab was mounted on each side of the transom. These were found to be free of corrosion and free of damage. The tilt mechanism of each was tested from the control panel at the helm. These functioned, but it was found that the port button controlled the starboard trim tab and vice-versa.

5.5. Systems and Services

5.5.1. Anchor and Chain

5.5.1.1. The 10 kg (22 lb), galvanised steel plough anchor was inspected and found to be free of wear or corrosion. The anchor was stowed on the bow roller on the foredeck. The anchor was secured to a length of chain by a stainless steel swivel joint. The swivel joint was found to be secure and free of wear.

5.5.1.2. The anchor chain was removed from the locker and fully inspected. It was found to be free of corrosion or visible wear. The anchor chain was made from short plain-linked galvanised steel. Dimensions of the chain were 8 mm x 28 mm x 39 mm. The recommended length of anchor chain that should be stowed on a small craft is 45 metres, which equates to a length: depth ratio of 5:1 in 9 metres of water. [Gerr, Dave. Boat Mechanical Systems Handbook. Adlard Coles Nautical, 2009]. The length of the chain was measured and found to be 16.5 metres.

5.5.1.3. The bitter end of the chain was spliced to 27.4 metres of 16 mm diameter warp. This warp was free of wear. The bitter end of the warp was tied directly to the inside of the locker. It is RECOMMENDED (type A2 recommendation) that the bitter end of the warp is modified so that it is tethered to the inside of the locker by a short length of line that could easily be cut in an emergency.

5.5.2. Anchor Windlass

5.5.2.1. A Simpson Lawrence ‘Sprint’ 12 volts d.c. windlass was installed on the foredeck. This was inspected and found to be adequately secured to the deck moulding. The chrome-plated body of the windlass drum was in very good condition. The external surfaces of the electric motor, mounted under the deck and located in the chain locker, were in good condition and generally free of corrosion.

5.5.2.2. The windlass was tested from the two buttons on the foredeck and from the switch inside the wheelhouse and was found to function correctly.

5.5.3. Fresh Water System

5.5.3.1. There was one welded aluminium fresh water tank, located on the starboard side of the engine. This was found to be adequately secured to the adjacent structure and where access allowed, was found to be free of damage.

5.5.3.2. Water from the tank was fed into a pressurised water system, pressurised by a pump

located on the port side of the cockpit locker. A calorifier provided hot water to the mixer tap in the galley and to the shower & sink tap in the heads compartment. The calorifier was heated by either hot water from the engine cooling system or by 240 volts a.c. electric heating. The calorifier was tested with the 240 volts a.c. heating element and was found to function correctly. The heating of the calorifier via the engine's cooling system was not tested.

5.5.3.3. When the system was powered up, it was found that the pump would run for about one second every thirty seconds. This indicated a fault with the accumulator or a leak in the pump or the pressurised part of the system. It is RECOMMENDED (type C recommendation with an implementation time of one to two months) that this fault is rectified.

5.5.3.4. Water level was measurable by means of a dial gauge, mounted next to the helm wheel. This was seen to function, but its accuracy could not be verified.

5.5.4. Heads

5.5.4.1. ATLANTA was fitted with an electrically operated toilet in the heads compartment, located towards the bow, on the starboard side of the vessel. The toilet unit was tested whilst the vessel was afloat and functioned correctly. The outlet of the toilet fed into a white polythene holding tank, located inside the cockpit locker, starboard side. A manual hand pump, mounted on the port side of the holding tank support structure, allowed the holding tank to be pumped overboard. The holding tank and attached hoses were found to be clean, secure and in good order, with no evidence of leaking. It was noted that the length of hose between the toilet and the holding tank was made up of two lengths of hose, joined by a union located inside the cockpit locker.

5.5.4.2. The sides of the heads compartments were constructed from a GRP moulding and were finished with a white gel-coat. This moulding was in good cosmetic condition and free of damage.

5.5.4.3. The oval white GRP sink & white surround were in good cosmetic condition. The sink was fed with water via a chrome-plated mixer tap, with integrated shower nozzle. All were in good working order and free of damage.

5.5.4.4. Waste water from the shower tray was pumped overboard by an electric pump, which was controlled by a switch in the side of the heads compartment. The pump was tested and found to function well.

5.5.5. LPG Installation

5.5.5.1. The LPG gas cylinder storage container was installed inside the starboard, aft cupboard in the cockpit, mounted in the starboard cockpit coaming. One 2.75 kg LPG (butane) gas cylinder was stored in the gas cylinder container.

5.5.5.2. One spare 2.75 kg LPG (butane) gas cylinder was stored in the starboard cockpit cupboard, next to the gas cylinder storage container. It is RECOMMENDED (type A2 recommendation) that the spare cylinder is not kept on board unless it can be stowed in an approved gas storage container.

5.5.5.3. The base and sides of the gas cylinder storage container were constructed from a single GRP moulding, finished with a white gel-coat. The 2.75 kg cylinder was too tall for this container, preventing the GRP container lid from closing. The container was designed to accommodate a smaller cylinder.

5.5.5.4. A locker drain hose was installed at the bottom of the gas cylinder storage container in order to allow any leaked gas to escape to the outside of the hull. The locker was not gas tight to a level above the pressure regulator, but leaking gas would drain overboard via the drain hose, installed at the bottom of the container.

5.5.5.5. The drain hose and attachments were in good working order. This drain was tested with water and was found to be partially blocked by debris. Ensure that this drain hose is kept clear of dirt & debris. The outlet of the drain was suitably located above the waterline. The gradient of the fall of the hose was such that no water trap could be formed.

5.5.5.6. Consideration should be given to installing a larger cylinder storage container that is specifically constructed for the storage of two 2.75 kg LPG cylinders. The container should be fitted with a drain hose that leads to the stern. Ensure that the drain hose

drains to the skin fitting along a steady gradient, ensuring that the hose does not trap water. The container should be securely attached to the inside of the cockpit cupboard.

5.5.5.7. The butane gas cylinder inside the storage container was fitted with a pressure regulator and isolation valve. There was no date on the regulator to indicate its age but it is likely that the regulator is less than ten years old. Pressure regulators should be replaced when ten years old.

5.5.5.8. From the isolation valve & pressure regulator, rubber hose led the gas supply to a bubble leak test unit, mounted inside the cupboard of the starboard cockpit coaming. The rubber hose was manufactured in January 2018. Gas hose should be replaced every five years. There was no evidence of cracking or degradation of the hose. Flexible gas hose should not be routed outside of the cylinder storage container. It should be connected to the copper pipe at a connection located inside the container. The bubble leak tester functioned well.

5.5.5.9. From the bubble leak tester, copper pipe lead the gas supply through to the galley. Some parts of the copper pipe were suitably routed inside polyethylene pipe. It was found that where the copper pipe was routed behind the galley unit, the pipe was resting on the thermal lagging of the Ardic diesel fuelled space heater. It is RECOMMENDED (type A2 recommendation) that the copper pipe is adjusted so that it is held clear of the lagging or hot parts of the Ardic exhaust pipe.

5.5.5.10. The LPG gas pipe in the galley lead to an isolation valve, located beneath the sink. A further length of armoured gas hose conveyed the gas supply to the cooker. This length of hose was manufactured in March 2011. Gas hose should be replaced every five years. It is RECOMMENDED (type A2 recommendation) that this hose is replaced by a maximum length of one metre of appropriately labelled gas hose. The hose should be marked to BS 3212 type 2 or BS 3212:1991 or BS EN 1763 class 2/3/4. This work should be performed by a qualified gas technician, such as those listed on the gas safety register.

5.5.5.11. The Eno twin hob and oven was secured by a non-gimballed mounting frame to the galley structure. The cooker was clean. All burners lit easily and burned with a clean blue flame. All safety cut-off valves functioned correctly.

5.5.5.12. The installation was not further inspected or pressure tested for leaks.

5.5.5.13. Note that this survey is not any kind of gas safety certificate. This is only obtainable after comprehensive pressure testing and assessment by a qualified person listed on the gas safety register. The above recommendations should be undertaken by a qualified gas technician, such as those listed on the gas safety register. See http://www.gassaferegister.co.uk for further details.

5.5.6. Galley

5.5.6.1. The galley was situated on the starboard side of the wheelhouse, aft of the helm position. The worktops were in good cosmetic condition and free of damage. The numerous storage cupboards were in good condition and free of damage.

5.5.6.2. There was a 12 volts d.c. front-access fridge unit located beneath the galley worktop. This fridge was clean. It was tested and found to function well. The stainless steel sink was supplied with hot & cold fresh water via a chrome mixer tap. This tap functioned normally.

5.5.7. Electrical System

5.5.7.1. ATLANTA had a 12 volts d.c. electrical system, with one 12 volts d.c. battery for engine starting (115Ah) and two 12 volts d.c. batteries (115Ah each) for services. The batteries were stored in one large GRP storage case, located in the port side of the cockpit locker. The base of the case was securely fastened to the adjacent hull structure. The majority of the starboard side of the GRP storage case had been cut away, in order to permit easier removal of the batteries. This large cut-out has significantly weakened the GRP case and may allow the batteries to fall out of the box. It is strongly suggested that the case is fitted with a closing panel on the starboard side of the box. This panel should be made from ½” thick plywood and should be secured to the GRP case with several bolts.

5.5.7.2. The batteries were load tested. All batteries were found to be in ‘good’ condition.

5.5.7.3. A large number of small wires were connected directly to the battery posts. There was no evidence that these wires were protected with in-line fuses. Some of these wires were not protected within conduit or protective sleeving. These wires present a fire hazard. It is RECOMMENDED (type C recommendation with an implementation time of six months) that the routing and termination of these wires are overhauled by a qualified marine electrician.

5.5.7.4. Battery charging was from the engine's 12 volts d.c. alternator, from the small solar panel on the wheelhouse roof or from shore power through a Cristec CPS300-1A, 25 Amp automatic battery charger, mounted inside the port side of the cockpit locker. This battery charger functioned normally. The serial number of this charger was *[data removed]*.

5.5.7.5. A small solar panel was mounted on the aft end of the wheelhouse roof. This panel was free of damage. It provided a charge to the batteries via a Solara SR135TL charge control unit, installed inside the cockpit locker. The solar panel & charger functioned normally.

5.5.7.6. A galvanic isolator was mounted inside the cockpit locker. This unit prevents galvanic corrosion of the bonded hull equipment, due to poorly installed shore power equipment.

5.5.7.7. From the service batteries, 12 volts d.c. power was routed to the helm switch panel via a rotary control switch and single isolator switch, mounted at floor level, on the port side of the wheelhouse, aft end. The twelve rocker switches at the helm position were fitted with a trip switch type of breaker. These were in good working order.

5.5.7.8. Shore power was connected to the vessel via a socket mounted in the port cockpit coaming. This socket was connected to a circuit breaker unit, mounted at floor level, on the port side of the wheelhouse, aft end. These switches functioned normally. Shore power was distributed via conventional UK domestic 13 amp sockets. These sockets were tested with a socket tester. This device showed that the 240 volts a.c. sockets were correctly wired and suitably earthed.

5.5.7.9. The 240 volts a.c. wiring that could be seen appeared to be serviceable, was well supported and routed clear of the lower bilges.

5.5.7.10. The three electrically powered wipers of the forward wheelhouse screens functioned normally. The port & starboard washer nozzles functioned, but the central washer did not.

5.5.8. Navigation Lights

5.5.8.1. A forward-projecting white light unit, an aft-facing white light and an all-round anchor light were mounted on the aluminium antenna mast, on the wheelhouse roof.

5.5.8.2. Port and starboard lights were attached to the sides of the wheelhouse.

5.5.8.3. The above lights were tested and found to function correctly. Their plastic lenses were clear and free of UV degradation or damage.

5.5.9. Navigation Equipment

5.5.9.1. ATLANTA was equipped with a Silva navigation compasses, mounted in front of the helm wheel. The lens was free of scratching or UV degradation. The damping fluid had a small air bubble.

5.5.9.2. A Simrad RD68 VHF/DSC radio was installed next to the helm seat. The unit was tested for reception and was found to work well.

5.5.9.3. A Raytheon A9 colour chart plotter was mounted at the helm position. The chart displayed an accurate position fix. The colour chart gave position fixes of other vessels, indicating that the AIS receiver functioned normally. The model of this unit was E70234. The serial number of the unit was *[data removed]*.

5.5.9.4. A Furuno colour chart plotter was mounted above the helm wheel. This powered up and gave a position fix on the colour screen.

5.5.9.5. A Raymarine ST500 autopilot control unit was mounted at the helm position. The system powered up and the steering tiller moved when the autopilot adjust buttons were pressed.

5.5.9.6. A Raymarine ST40 water depth and boat speed unit was installed next to the helm wheel. This unit powered up and gave a depth reading. When the vessel was ashore, the hull impeller was turned by hand. This gave a speed output on the display.

5.5.10.Space Heating System

5.5.10.1. ATLANTA was fitted with an Ardic 432DL, 4.3 kWatt, diesel fuelled space heater. The serial number of this heater was *[data removed]*. It was manufactured in 2001. The part number of the main unit was 3730030. The heater unit was installed inside the forward cupboard of the starboard cockpit coaming.

5.5.10.2. The control panel for this heater was installed at the top of the steps that lead from the wheelhouse to the sleeping quarters.

5.5.10.3. The heater body was considered to be correctly installed. Each end of the insulated stainless steel exhaust hose was secured with a stainless steel hose clamp. These clamps were well secured and free of corrosion. The exhaust pipe was suitably lagged along its length.

5.5.10.4. The Ardic heater was tested and found to function well. The current Owner should be asked to provide details of when the heater system was last serviced. It is strongly suggested that the heater unit is serviced periodically and within the time limits recommended by Espar Ltd, the Owners of the Ardic brand. Note that this company is based in Plymouth, Devon. Due to the age of this heater, it is likely that spares for this unit may be difficult to obtain.

6. Safety Equipment

Refer to the Boat Safety Handbook [RYA publication, 2012, ISBN 978-1-906435-53-0]. This book gives recommendations and advice concerning the selection and installation of safety equipment.

6.1. Bailing / Bilge Pumping

6.1.1. One manually operated diaphragm bilge pump was installed in the side of the starboard cockpit coaming. The handle was clipped beneath the pump. The inlet of the pump was installed in the keel sump, beneath the engine. The inlet hose was not fitted with a strum box. The pump was tested by placing water in the bilge sump. The pump functioned well, but a significant amount of water leaked from the length of hose located behind the galley unit. It is RECOMMENDED (type A2 recommendation) that the outlet hose is replaced. The inlet hose should be fitted with a strum box.

6.1.2. A 12 volts d.c. electric bilge pump was installed behind the engine, located in the bilge sump. The pump was not fitted with a float switch. The pump was tested by placing water in the bilge sump. When the switch at the main switch panel was activated, the pump was found to function well. It is suggested that this pump is fitted with a float switch. A control switch should be installed that allows the pump to be manually activated or activated by the float switch.

6.1.3. It is RECOMMENDED (type A2 recommendation) that two buckets (with lanyards) are stowed on board. These should be between 9 and 14 litres in capacity.

6.2. Detection Equipment

6.2.1. The vessels pair of 12 volts d.c. fog horns were mounted on the aluminium antenna & navigation light mast, located on top of the wheelhouse roof. These horns did not function. It was found that the stainless steel bodies of both horns were full of water. It is RECOMMENDED (type A2 recommendation) that both horns are replaced with waterproof units. Ensure that these are mounted in the correct orientation, to prevent water damage.

6.2.2. There was no anchor ball found on board. This is required by COLREGS. It is RECOMMENDED (type A2 recommendation) that one is purchased and stowed ready for use.

6.3. Fire Fighting Equipment

6.3.1. Two fire extinguishers were found on board. These are summarised in Table 4. It is RECOMMENDED (type C recommendation with an implementation time of just over one year) that both of the units are serviced or replaced. Ensure that any new unit for the engine compartment is of the inert gas type as powder extinguishers can damage the engine and turbo unit.

Type	Location	Date Stamp	Pressure Gauge
3.3 kg, automatic operation	Engine compartment	Manufactured 2016	Green
1 kg, ABC dry powder, manually operated	At helm position	Manufactured 2016	Green

Table 4: Fire Extinguishers on board ATLANTA

6.3.2. It is strongly suggested that a second ABC dry powder unit is purchased and mounted in a dry location in the cockpit.

6.3.3. Most fire extinguishers have a five year service life. Ensure that the extinguishers are serviced or replaced after this five year period. Regularly shake dry powder extinguishers to prevent the powder coagulating.

6.3.4. There was one fire blanket mounted at the aft end of the wheelhouse.

6.4. CARBON MONOXIDE ALARM

6.4.1. There were no Carbon Monoxide alarms installed on ATLANTA. It is RECOMMENDED (type A2 recommendation) that at least two units are procured and mounted in appropriate locations. It is suggested that one alarm is mounted in the guest cabin and one in the forepeak cabin. These should be positioned at sleeping head height. Refer to the following website for details of alarms that are approved as meeting BS EN 50291-2. These are best suited for boats:

http://www.boatsafetyscheme.org/stay-safe/carbon-monoxide-(co)/co-alarms-save-lives/

6.5. GAS ALARM

6.5.1. An AMS 'camp signal P' gas (LPG) combined detector & alarm unit was installed on ATLANTA. This device was mounted just above the wheelhouse sole, beneath the galley cooker. The alarm was tested by exposing the gas sensor to the gas from an un-lit cigarette lighter. The alarm was found to function normally.

6.6. MAN OVERBOARD RECOVERY EQUIPMENT

6.6.1. One yellow horse shoe life buoy was mounted to the underside of the wheelhouse roof, where the moulding overhangs the cockpit. The buoy was free of significant degradation. It is strongly suggested that the buoy is fitted with a flotation lamp.

6.6.2. Consideration should be given to installing a self-inflating life buoy, with auto-lighting flotation lamp.

6.6.3. No other man overboard recovery equipment was found on the vessel. Refer to the RYA Boat Safety Handbook. This book gives recommendations and advice concerning the selection and installation of man overboard recovery equipment.

6.7. PYROTECHNICS

6.7.1. No emergency flares were found on the vessel. It is RECOMMENDED (type A2 recommendation) that a set of flares (size and quantity appropriate to the sea areas and sea states expected to be encountered) is procured and stowed ready for use.

[signature removed]

Date of publication: Tuesday 20th October 2020

7. Types of Recommendations Used in This Report

The recommendations detailed within the body of this report are presented in five categories and are classified as follows:

Type A1	Structural, mechanical or other defects requiring IMMEDIATE attention i.e. those affecting structural strength, seaworthiness or safety which MUST be repaired BEFORE the vessel is relaunched at this time.
Type A2	Structural, mechanical or other defects affecting strength, seaworthiness or safety which may be repaired after the vessel is relaunched but MUST be repaired before the vessel is taken to sea.
Type B	Defects not affecting strength, seaworthiness or safety but which, by their nature, should be dealt with before putting the vessel afloat.
Type C	Structural, mechanical or other defects NOT requiring immediate attention but are to be dealt with within a specified time period.
Type D	Non-essential or cosmetic defects whose repair may be left to the Owner's convenience. All suggestions are, unless noted otherwise, of this type.

These recommendations are intended to be only a guide to necessary rectification work. Both type A and type B recommendations cover urgent remedial work to be carried out as soon as practical. Type C recommendations cover significant remedial works to be carried out within the specified time period. It should also be noted that, in some instances, defects are noted within this report without a covering recommendation. In such cases either no action is necessary or the remedy is self-evident.

8. Abbreviations Used in This Report

a.c.	Alternating current
COLREGS	International Regulations for Preventing Collisions at Sea 1972
d.c.	Direct Current
DSC	Digital Selective Calling
GRP	Glass Reinforced Plastic
HP	Horse Power
IIMS	International Institute of Marine Surveyors
LPG	Liquid Petroleum Gas
PVC	Polyvinylchloride
UV	Ultra Violet
VHF	Very High Frequency