fieldhouse yacht surveys

QUICKSILVER

Pre-purchase Survey

Completed for
Dave Wakelin,
Hill View,
Dorking,
Surrey,
DK14 0PQ
On 24/08/2013

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TABLE OF CONTENTS

Table of Contents 3
Data Protection 4
Copyright 4
Disclaimer 4
Law and Jurisdiction 4
1 Introduction 5
2 Summary 6
3 Scope & Limitations 8
4 The Vessel 9
4.1 Details 9
4.2 Vessel's Name 9
4.3 Inspected Documentation 9
5 The Survey 10
5.1 Hull Exterior 10
5.1.1 Material & Details of Construction 10
5.1.2 Topsides 10
5.1.3 Skin Fittings (Hose Outlets) 11
5.1.4 Anodes 11
5.2 Sponsons 11
5.3 Hull Internal Structure 13
5.3.1 General 13
5.3.2 Engine Beds 13
5.4 Deck and External Fittings 14
5.4.1 Hull / Deck Join 14
5.4.2 Foredeck Moulding 14
5.4.3 Cockpit 14
5.4.4 Engine Compartment Housing 14
5.4.5 Spray Hood 15
5.4.6 Bathing Platform 16
5.4.7 Hatches 16
5.4.8 Deck Fittings and Equipment 16
5.4.9 Roll Bar 17
5.4.10 Outboard Motor Bracket 17
5.5 Propulsion 17
5.5.1 Engine & Transmission 17
5.5.2 Engines Controls 19
5.5.3 Fuel System 19
5.5.4 Steering 19
5.5.5 Stern Gear 19
5.5.6 Trim Tabs 20
5.6 Systems and Services 20
5.6.1 Anchor and Chain 20
5.6.2 Electrical System 20
5.6.3 Navigation Lights & Equipment 21
6 Safety Equipment 22
6.1 Bailing / Bilge Pumping 22
6.2 Fire Fighting Equipment 22
6.3 First Aid Kit 22
6.4 Carbon Monoxide Alarm 22
6.5 Lifejackets & Harness Lines 22
6.6 Man Overboard Recovery Equipment 23
6.7 Engine Kill-cord 23
6.8 Pyrotechnics 23
Appendix 1. Types of Recommendations Used in This Report 24
Appendix 2. Abbreviations Used in This Report 25

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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 the undersigned carried out a Pre-purchase Survey in accordance with instructions received from Dave Wakelin of Hill View, Dorking, Surrey.

1.2 The primary aim of this document is to report on the factual condition of QUICKSILVER 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 Appendix 1 on page 24. 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.

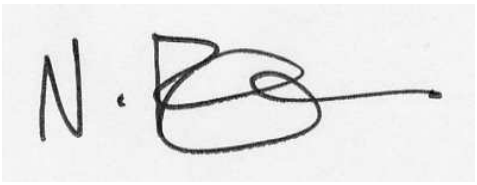
1.4 The vessel was inspected whilst afloat on her pontoon mooring at Littlehampton Marina, West Sussex on Saturday 24th August 2013.

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

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:

Eur Ing Nic Fieldhouse BEng (Hons) CEng MIMechE Affil-IIMS. Marine Surveyor, Fieldhouse Yacht Surveys.



2 SUMMARY

2.1 QUICKSILVER was seen to be a good example of a Carson 750 - a 23' long RIB with stepped hull, inboard engine and GRP cuddy. She was built by Carson Marine in 1999. From the inspection carried out from inside the vessel, the GRP hull seemed to be in good structural condition.

2.2 The deck moulding, cockpit, seating engine and visible parts of the stern drive were generally all in serviceable condition.

2.3 There was one **type A1 recommendation** that must be implemented before the vessel is relaunched. Please refer to Appendix 1 for a full description of the categories of recommendations used in this report.

2.3.1 The anodes on the stern drive were not accessible for inspection. It is RECOMMENDED (type A1) that these are inspected when the vessel is next lifted out of the water. They should be replaced when about 50% consumed (see paragraph 5.1.4.1).

2.4 There were sixteen **type A2 recommendations** that must be implemented before the vessel is taken cruising:

2.4.1 There was a chip in the gel-coat on the stem of the vessel, as shown in Figure 1. It is likely that this was caused by the upper U-bolt on the stem being struck in the fore-aft direction. The stainless steel plate that normally bridges the two sides of the U-bolt has also been displaced. This probably occurred when the U-bolt was struck. The U-bolt was inspected from inside the vessel and it was noted that the fastenings and backing pad were in good order. It is likely that any watertight seal around the U-bolt has been broken. It is RECOMMENDED (type A2) that the U-bolt is replaced with a new item and the gel-coat is repaired. During installation, a semi-hardening sealing compound should be used prevent water ingress (see paragraph 5.1.2.3).

2.4.2 There were three skin fittings located on the stern. One fitting was made from white PVC and was located on the vessel's centreline. The other two fittings were made from brass and were located on the stern, either side of the PVC item. All were approximately 300mm above the waterline. The PVC fitting was for the electric bilge pump outlet and was in acceptable condition. The two brass fittings were unused and were not blanked off. It is RECOMMENDED (type A2) that a blanking cap is fitted to each of the two brass fittings to prevent water ingress (see paragraph 5.1.3.1).

2.4.3 The electrically powered engine bay blower fan did not function. This was attributed to a broken contact on the switch panel. It is RECOMMENDED (type A2 recommendation) that the switch is repaired or replaced (see paragraph 5.5.1.4).

2.4.4 One of the coolant hoses was found to be heavily kinked and was restricting the flow of water to the engine. Figure 6 shows the hose. It is RECOMMENDED (type A2 recommendation) that this hose is replaced with a custom moulded hose that provides the correct shape and curvature, or a longer length that would be less liable to kink (see paragraph 5.5.1.14).

2.4.5 The two fuel shut-off valves were located on the bulkhead at the forward end of the engine housing. It was found that the hose clips that secured the fuel hose to the fuel supply shutoff valves were made of inferior grade stainless steel. It is RECOMMENDED (type A2) that these hose clips are replaced with items made from marine grade stainless steel (see paragraph 5.5.3.3).

2.4.6 The anchor chain was attached to the anchor by two galvanised steel shackles. The chain was generally free of wear & corrosion and in good working order. The shackle that was linked to the chain was heavily corroded. It is RECOMMENDED (type A2 recommendation) that the shackle is replaced (see paragraph 5.6.1.3).

2.4.7 QUICKSTEP had a 12 volt dc electrical system, with a single 96Ah battery for engine starting and services. An attempt was made to measure the specific gravity of the electrolyte in each battery cell. This was only achieved in one cell as the others had insufficient electrolyte to fill the measuring device. The specific gravity of the one tested cell was good. It is RECOMMENDED (type A2 recommendation) that the battery fluid is topped up (see paragraph 5.6.2.1).

2.4.8 It is RECOMMENDED (type A2 recommendation) that two buckets are stowed on board. These should be between 9 and 14 litres in capacity. (see paragraph 6.1.2).

2.4.9 One small fire extinguisher was found on board, located in the cuddy space. There was no date on the extinguisher but it was clearly very old. It is RECOMMENDED (type A2 recommendation) that this unit is replaced with at least one 1kg dry powder fire extinguisher (see paragraph 6.2.1).

2.4.10 One dry powder automatic fire extinguisher was installed in the engine compartment. The pressure gauge indicated that the extinguisher was correctly pressurised, but the unit was very old. The plastic mounting bracket was broken. It is RECOMMENDED (type A2 recommendation) that this unit is replaced by an inert agent gas equivalent. This type of fire extinguisher creates less mess and damage than the dry powder type (see paragraph 6.2.2).

2.4.11 There was no first aid kit found on the vessel. It is RECOMMENDED (type A2 recommendation) that one is procured and stowed on board (see paragraph 6.3.1).

2.4.12 There was no Carbon Monoxide alarm installed on QUICKSTEP. It is RECOMMENDED (type A2 recommendation) that one is procured and mounted in the cuddy space. If a fully enclosed canopy is ever fitted to the vessel, an additional Carbon Monoxide alarm should be installed in the cockpit (see paragraph 6.4.1).

2.4.13 No lifejackets were found on the vessel. It is RECOMMENDED (type A2 recommendation) that an appropriate number are stowed on the vessel (see paragraph 6.5.1).

2.4.14 There was no life ring on the vessel. It is RECOMMENDED (type A2 recommendation) that one is stowed on board and should ideally be fitted with a floating light. The vessel's name should be applied to both sides of the buoy in large black lettering (see paragraph 6.6.1).

2.4.15 There was no kill-cord installed on QUICKSTEP. It is RECOMMENDED (type A2 recommendation) that one is fitted for attachment to the helmsman's leg (see paragraph 6.7.1).

2.4.16 None found on 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 6.8.1).

2.5 In addition to the one type A1 recommendations and sixteen type A2 recommendations, there were two **type C recommendations**:

2.5.1 There were two plastic mooring cleats, one on each corner of the aft deck. It was found that the fasteners that secure the plastic cleats to the horizontal surface of the aft deck were heavily corroded, as shown in Figure 5. It is RECOMMENDED (type C recommendation with an implementation time of six months) that the corroded fasteners are replaced, using large penny washers and ideally with a large plywood backing pad for additional support (see paragraph 5.4.8.2).

2.5.2 It was found that the terminals that connect the fuel hose to the primary fuel filter (mounted next to the shut-off valves) were made from mild steel and were corroding. It is RECOMMENDED (type C recommendation with an implementation time of six months) that these terminals are replaced (see paragraph 5.5.3.4).

3 SCOPE & LIMITATIONS

3.1 As agreed with Dave Wakelin, the vessel was inspected while she was afloat on her pontoon mooring. This prohibited the full inspection of submerged equipment. The exterior surfaces of the hull or machinery below the waterline could not be examined for damage or defects.

3.2 At the time of survey the ambient temperature was approximately 17℃, with 100% cloud cover and rainfall for the majority of the inspection.

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 The hatch to the cuddy was not 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

4.1.1 QUICKSILVER was seen to be a Carson 750 - a 23' long RIB with stepped hull, inboard engine and GRP cuddy. She was built by Carson Marine in 1999.

4.1.2 The hull of QUICKSILVER was of the planing, stepped, deep V-shape with bolted on spray rails. The hull was moulded in one piece with hand laid GRP, made up of polyester resin, mixed-strand fibreglass mat and woven rovings finished with a white pigmented gel-coat. The topsides (excluding the transom) were finished in a metallic grey paint. The foredeck moulding was a GRP composite, finished with white pigmented gel-coat which was then covered with grey metallic paint. It incorporated the foredeck, cockpit & helm bulkhead, hatch surround and side fairings that gave additional protection to the helm position and adjacent seat.

4.1.3 The two straddle seats were each constructed from a single piece GRP moulding, finished in a white gel-coat. The backrests incorporated the fuel filler caps for the two fuel tanks. The GRP engine compartment housing was covered by a plywood lid, which also served as additional seating or as a bathing area.

4.1.4 The foredeck, main cockpit area and bathing platform were finished in a plastic teak-effect material.

4.1.5 The grey sponsons of QUICKSILVER were divided into six separate compartments. The sponsons were secured onto the hull moulding and foredeck moulding by lengths of hypalon / PVC that were bonded along the length of the sponsons. The flanges of the hypalon / PVC were then clamped onto the hull and foredeck moulding by lengths of strip aluminium that were through-bolted with stainless steel fasteners.

4.1.6 The cuddy space was very simply laid out with white painted plywood lockers whose structure also contributed to the strength and stiffness of the hull.

4.1.6.1 QUICKSILVER was fitted with one Volvo Penta 5.7GL-E engine. This was a 5.7 litre V8 petrol unit with normal aspiration (non-turbocharged). The engine drove two propellers through a Volvo Penta 290 Duoprop stern drive. There were two painted aluminium fuel tanks mounted forward of the engine, under the cockpit floor.

4.2 VESSEL'S NAME

4.2.1 QUICKSILVER did not have any visible marking to show her name. It is advised that labels with her name are fastened to the vessel in prominent locations.

4.3 INSPECTED DOCUMENTATION

4.3.1 During the course of the survey, no documents relating to vessel's title of ownership or engine upkeep were available for inspection.

5 THE SURVEY

5.1 HULL EXTERIOR

5.1.1 Material & Details of Construction

5.1.1.1 The hull of QUICKSILVER was of the planing, stepped, deep V-shape with bolted on spray rails.

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

5.1.2 Topsides

5.1.2.1 The topsides were inspected visually. They were coated in a metallic grey paint, finished to a good standard. The underlying gel-coat and grey paint application was found to be in sound condition with no signs of major trauma or stress cracking. The paint retained a good level of gloss and appeared to be well polished with no evidence of UV degradation. There were small cosmetic scuff and scratch marks from mooring fenders and mooring buoys.

5.1.2.2 The transom still retained its original white gel-coat finish. This was found to be in serviceable condition, with some yellow staining along the waterline.

5.1.2.3 There was a chip in the gel-coat on the stem of the vessel, as shown in Figure 1. It is likely that this was caused by the upper U-bolt on the stem being struck in the fore-aft direction. The stainless steel plate that normally bridges the two sides of the U-bolt has also been displaced. This probably occurred when the U-bolt was struck. The U-bolt was inspected from inside the vessel and it was noted that the fastenings and backing pad were in good order. It is likely that any watertight seal around the U-bolt has been broken. It is RECOMMENDED (type A2) that the U-bolt is replaced with a new item and the gel-coat is repaired. During installation, a semi-hardening sealing compound should be used prevent water ingress.

5.1.2.4 The bolted on plastic spray rails were found to be in serviceable condition. The black paint coating on the rails had cracked in various locations, most likely due to flexing of the plastic. Where access allowed, the internal fasteners and backing plates were inspected and found to be in acceptable condition, with some surface corrosion on the aluminium backing plates. Note that the aluminium plates will galvanically corrode where they are in contact with the stainless steel fasteners. Also, the stainless steel fasteners will be liable to pitting corrosion when submerged in sea water. The plate and fasteners should be regularly inspected and replaced if found to be corroding significantly.

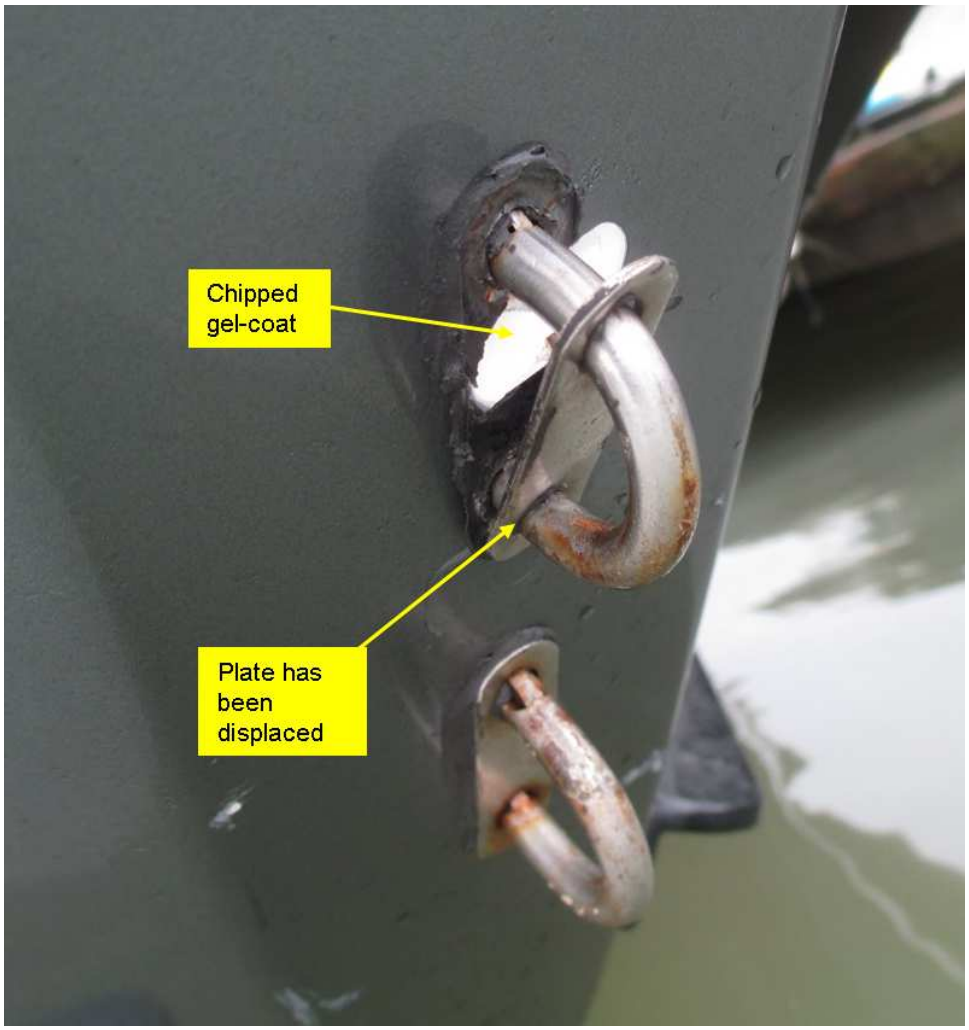


Figure 1: Damage to upper U-bolt on stem

5.1.3 Skin Fittings (Hose Outlets)

5.1.3.1 There were three skin fittings located on the stern. One fitting was made from white PVC and was located on the vessel's centreline. The other two fittings were made from brass and were located on the stern, either side of the PVC item. All were approximately 300mm above the waterline. The PVC fitting was for the electric bilge pump outlet and was in acceptable condition. The two brass fittings were unused and were not blanked off. It is RECOMMENDED (type A2) that a blanking cap is fitted to each of the two brass fittings to prevent water ingress.

5.1.4 Anodes

5.1.4.1 The anodes on the stern drive were not accessible for inspection. It is RECOMMENDED (type A1) that these are inspected when the vessel is next lifted out of the water. They should be replaced when about 50% consumed.

5.2 SPONSONS

5.2.1 The grey sponsons of QUICKSILVER were divided into six separate compartments. There was one inflation point on each side of the bow and two on each of the port &

starboard midships, with inflation points located in the main deck area. The port & starboard quarters (aft end) were covered by an additional layer of red material.

5.2.2 The material type of the sponsons could not be determined, but they were likely to be made of either hypalon or PVC.

5.2.3 Where access allowed, the sponsons were inspected and found to be in serviceable condition, with no evidence of significant UV degradation. No repair patches were found. There were minor scuff and scratch marks in some areas. The outboard surfaces of the sponsons were dirty and in need of a clean. The only evidence of debonding of the sponson material was on the port & starboard joins to the transom. Figure 2 shows the debonding of the join between the port sponson and the transom.

Figure 2: debonding of port sponson to transom join.

5.2.4 The sponsons were secured onto the hull moulding and foredeck moulding by lengths of hypalon / PVC that were bonded along the length of the sponsons. The flanges of the hypalon / PVC were then clamped onto the hull and foredeck moulding by lengths of aluminium that were through-bolted with stainless steel fasteners, as shown in Figure 3. The aluminium strip and fasteners were found to be in serviceable condition.

5.2.5 The aluminium plates will galvanically corrode where they are in contact with the stainless steel fasteners. The plate and fasteners should be regularly inspected and replaced if found to be corroding significantly.

5.2.6 A black neoprene rubbing strip was bonded to the side of the sponsons, protecting the hypalon / PVC from abrasion against other boats, mooring piles, harbour walls etc. The rubbing strip was found to be well bonded to the sponsons, with minor abrasion damage on the starboard bow.

Figure 3: Port bow view of sponson to show hull joining method

5.3 HULL INTERNAL STRUCTURE

5.3.1 General

5.3.1.1 Inside the cuddy space and immediately below the cuddy access hatch there was a small footwell with plywood sole board. The majority of the cuddy was fitted out with a V-berth, whose plywood structure was sub-divided into numerous compartments. The plywood was secured to the hull by GRP tabbing, installed to a high standard. The plywood structure was entirely overlaid with GRP. This provided stiffening to the hull laminate. The top surfaces of the plywood berth were also overlaid with GRP and painted white.

5.3.1.2 In areas that could be accessed for inspection, there was no evidence of separation of the GRP tabbing from the hull. There was no evidence of any cracking of the internal surfaces of the hull laminate that might be caused by wave slamming.

5.3.1.3 The white internal hull paint application was generally in poor condition, with flaking occurring in some areas.

5.3.1.4 The plywood berth and hinging locker covers were in serviceable condition and free from rot or softening from water ingress.

5.3.1.5 In the engine compartment there was a plywood bulkhead forward of the engine. This was secured to the hull moulding by GRP tabbing. There was no evidence of separation of the GRP tabbing from the hull.

5.3.2 Engine Beds

5.3.2.1 The engine beds were examined and found to be sturdily built and were free of signs of cracks or deformation.

5.4 DECK AND EXTERNAL FITTINGS

5.4.1 Hull / Deck Join

5.4.1.1 The foredeck moulding (cuddy superstructure) was secured to the hull by GRP tabbing on the internal surfaces, providing a watertight seal. As far as could be ascertained, the joint appeared to be sound and in areas that could be accessed for inspection, there was no evidence of water ingress to the vessel interior through this joint.

5.4.2 Foredeck Moulding

5.4.2.1 The foredeck moulding was a GRP composite, finished with white pigmented gel-coat which was then covered with grey metallic paint. It incorporated the foredeck, cockpit & helm bulkhead, hatch surround and side fairings that gave addition protection to the helm position and adjacent seat. The flat part of the foredeck was reinforced with a balsa or plywood core. There were no signs of damage or delamination between core and skin. The flat part of the foredeck was finished with a plastic teak-effect material. This material was well bonded to the deck and in very good cosmetic condition.

5.4.2.2 The ‘side deck’ parts of the foredeck were coated in a non-slip material which was found to be in good condition. The non-slip was finished in metallic grey paint.

5.4.2.3 The gel-coat and metallic grey paint on the foredeck moulding generally retained a high level of gloss and appeared to be well polished with no evidence of UV degradation.

5.4.2.4 Structurally the deck seemed to be in serviceable condition, with no signs of damage or delamination between core and skin. Due to the poor weather, the moisture levels in the deck could not be measured.

5.4.3 Cockpit

5.4.3.1 The cockpit floor was constructed from plywood and was glassed onto the hull moulding. The majority of the deck was finished with a plastic teak-effect material. This material was well bonded to the deck and in very good cosmetic condition. The parts of the deck beneath the two straddle seats were bare plywood. Where access allowed, the plywood was inspected and found to be in serviceable condition and generally free of rot or softening.

5.4.3.2 The two straddle seats were each constructed from a single piece GRP moulding, finished in a white gel-coat. The backrests incorporated the fuel filler caps for the two fuel tanks. The GRP mouldings were secured to the cockpit floor by a number of stainless steel fasteners. On both seat mouldings, a number of cracks were found in the gel-coat around these fasteners. It is likely that the cracks extend partially into the underlying laminate of the seats. Lateral loads were applied to both seats and very little movement was noted, suggesting that the there is adequate strength in the seat mouldings. The seat mouldings had a stainless steel grab handle on each side. These were in good condition and adequately attached to the GRP. The thermoplastic locker doors on the side of each seat were in good condition and functioned correctly.

5.4.3.3 Access to the top of each fuel tank was through a small round thermoplastic hatch cover. The covers functioned correctly, although the port cover had a missing o-ring. A new seal should be fitted in order to minimise water ingress onto the tops of the fuel tanks.

5.4.4 Engine Compartment Housing

5.4.4.1 The forward, port and starboard sides of the engine compartment were constructed from a single GRP moulding, finished in white gel-coat. The moulding was secured to

the transom by GRP tabbing, which was showing evidence of debonding on both port and starboard sides. Figure 4 shows the debonding on the starboard side. These should be repaired using a suitable adhesive, followed by the addition of a number of through bolts to prevent the damage from recurring.

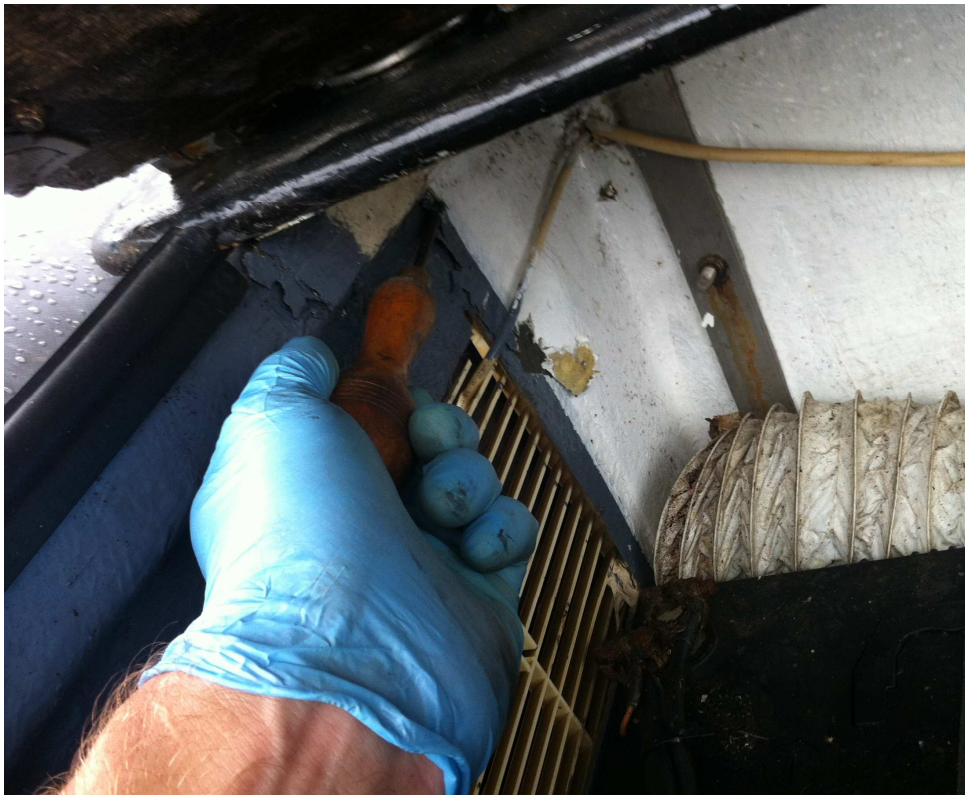


Figure 4: Debonding of engine compartment to transom join

5.4.4.2 The plywood engine cover was hinged along its aft edge. The cover was held open using a broom handle. A safer method for holding the cover open should be found. The plywood was found to be rotting along the aft edge. The lock-down latches were in satisfactory condition. The grey vinyl mattress on top of the cover was in serviceable condition and generally free of damage.

5.4.4.3 The plastic ventilation louvers in the sides of the compartment were slightly damaged.

5.4.5 Spray Hood

5.4.5.1 The maroon coloured sprayhood was manufactured by Sunbrella of North America. The canvas was mostly in good condition with no significant UV degradation. The aft edge of the hood, positioned just above the helm seat, was torn due to excessive handling by the crew. This defect can be repaired by sewing and bonding a repair patch on one or both sides of the tear.

5.4.5.2 The three clear vinyl windows were in serviceable condition, with no tears or significant UV degradation. The vinyl was slightly less clear than a new item would be.

5.4.5.3 The tie down fittings and stainless steel catches were in good condition and free of damage.

5.4.5.4 The canvas was supported by a tubular stainless steel frame, with end joints and pivots constructed from moulded thermoplastic. The frame and mounting points were in serviceable condition and free of corrosion or distortion.

5.4.6 Bathing Platform

5.4.6.1 The bathing platform attached to the transom (starboard side) was constructed from a welded stainless steel frame with a plywood standing area. The plywood upper surface was finished in a plastic teak-effect material. This material was well bonded to the plywood and in very good cosmetic condition. The platform was adequately secured to the transom and free of visible damage or deformation.

5.4.7 Hatches

5.4.7.1 One forward hinging 'Moonlight' hatch (480 x 480 mm opening) was installed at the entrance to the cuddy space. 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 polycarbonate material and aluminium frame were in good condition.

5.4.7.2 The Moonlight hatch was covered by a secondary GRP hatch cover which was hinged at its forward face. This hatch was held up by a hydraulic strut. The upper surface of the GRP hatch was finished with a carbon fibre-effect surface. The security locking mechanism attached to the port & starboard sides of this hatch did not function.

5.4.8 Deck Fittings and Equipment

5.4.8.1 There were three aluminium mooring cleats: One on the foredeck and one on each of the port & starboard sides of the roll bar. All were inspected and found to be adequately secured to the adjacent structure.

5.4.8.2 There were two plastic mooring cleats, one on each corner of the aft deck. It was found that the fasteners that secure the plastic cleats to the horizontal surface of the aft deck were heavily corroded, as shown in Figure 5. It is RECOMMENDED (type C recommendation with an implementation time of six months) that the corroded fasteners are replaced, using large penny washers and ideally with a large plywood backing pad for additional support.

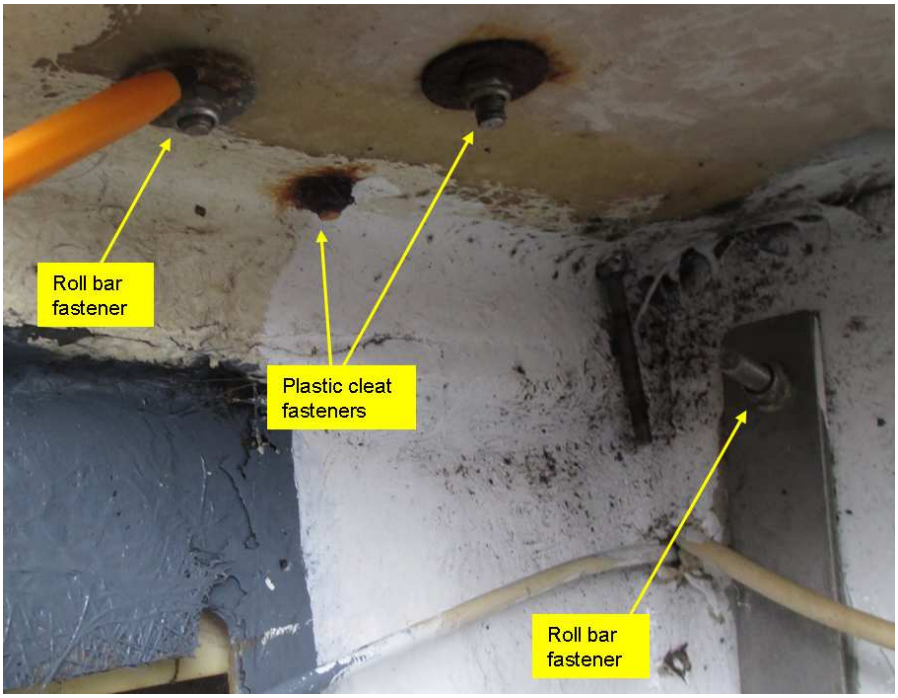


Figure 5: Corroded fasteners on plastic cleat mountings

5.4.8.3 There was one stainless steel fairlead secured to the foredeck, just in front of the deck cleat. It was inspected and found to be free of deformation and adequately secured to the underlying structure.

5.4.9 Roll Bar

5.4.9.1 The roll bar was constructed from 1¼" stainless steel tubing, with additional bracing given by welded stainless steel plates. It was through-bolted to the transom and also onto the horizontal surface of the aft deck, just behind the hinging engine cover. The roll bar was inspected and found to be free of deformation and adequately secured to the underlying structure.

5.4.9.2 The roll bar provided a mounting point for the VHF aerial and white navigation light. One aluminium mooring cleat was mounted to each of the port and starboard sides of the structure.

5.4.10 Outboard Motor Bracket

5.4.10.1 An outboard motor bracket was secured to the transom, port side. It was constructed from stainless steel plate, welded along the edges. The bracket featured a mechanism that allows the motor to be pivoted about the vertical axis.

5.4.10.2 The bracket was found to be well made, although the weld material was corroding. It was well secured to the transom and free of damage or distortion. The timber backing pad for mounting an outboard motorwas in serviceable condition.

5.5 PROPULSION

5.5.1 Engine & Transmission

5.5.1.1 QUICKSILVER was fitted with one Volvo Penta 5.7GL-E engine. This was a 5.7 litre V8 petrol unit with normal aspiration (non-turbocharged). The engine drove two propellers through a Volvo Penta 290 Duoprop stern drive.

Engine Product Designation:	5.7 GL-E
Engine Serial Number:	3834657
Engine Product Number:	401213556667
Engine Family:	4VPAM05.7GLO
Engine date of manufacture:	November 2003
Stern Drive Serial Number:	110153457

Table 1: Engine & Drive data

5.5.1.2 Engine speed control was via a pivot control lever located on the port side of the helm position in the cockpit. Forward and reverse gear was selected by a push-pull control linkage.

5.5.1.3 The tilt mechanism on the stern drive operated correctly.

5.5.1.4 The electrically powered engine bay blower fan did not function. This was attributed to a broken contact on the switch panel. It is RECOMMENDED (type A2 recommendation) that the switch is repaired or replaced.

5.5.1.5 The engine oil was inspected and found to be clean, with no visual evidence of water contamination.

5.5.1.6 The engine was examined externally - without opening up - and found in generally good, clean condition. The machinery was superficially clean with some surface rust in areas. There was no obvious sign of cracking in any parts of the engine or stern drive. There was no evidence of overheating.

5.5.1.7 The exhaust manifolds and pipes appeared to be sound, without breaks or fractures and there was no sign of carbon deposits indicating either gas or other leaks into the engine compartment.

5.5.1.8 The engine started readily from cold without any excessive smoke. The engine was run for approximately twenty minutes. No fuming was noted in the engine space. No leaks from the fuel and exhaust systems were evident.

5.5.1.9 Once the engine had reached normal operating temperature, it was turned off. After one minute the engine was started again at tickover speed. The engine immediately reached normal oil pressure which was maintained without increasing engine speed.

5.5.1.10 Ahead and reverse gears engaged normally.

5.5.1.11 The engine's instruments did not include an engine hour meter; therefore the engine's usage could not be determined.

5.5.1.12 Access to the engine's coolant impeller, alternator, oil filter and oil dipstick were good.

5.5.1.13 The engine bearers were securely mounted, and the flexible rubber engine mounts were in sound condition. The mounting bolts were tight. The alternator belt and hydraulic pump drive belt appeared to be correctly tensioned. There was no evidence of leakage from the cooling system.

5.5.1.14 One of the coolant hoses was found to be heavily kinked and was restricting the flow of water to the engine. Figure 6 shows the hose. It is RECOMMENDED (type A2 recommendation) that this hose is replaced with a custom moulded hose that provides the correct shape and curvature, or a longer length that would be less liable to kink.

Figure 6: Restriction in engine cooling hose

5.5.2 Engines Controls

5.5.2.1 The helm and associated controls were on the port side of the cockpit.

5.5.2.2 The helm dashboard consisted of instruments for the monitoring of the engine. Instruments included engine revs, fuel level for each tank, alternator output, oil pressure, engine temperature, trim tab adjustment and outdrive tilt angle. These instruments were monitored whilst the engine was running. All appeared to operate correctly, except for the engine temperature gauge which did not function.

5.5.2.3 The viewing window of one of the fuel gauge dials was obscured by condensation.

5.5.2.4 The viewing window for the rev counter dial was broken, with a crack across the plastic.

5.5.3 Fuel System

5.5.3.1 There were two painted aluminium fuel tanks mounted forward of the engine, under the cockpit floor. Access to the fuel tanks was very limited as they were completely covered by the cockpit sole, with one small inspection hatch over each tank. The visible parts of the fuel tanks were clean and free of damage but with some light surface corrosion.

5.5.3.2 The fuel filler caps were mounted at the tops of the backrests of the two straddle seats. The rubber o-rings that seal the caps were in good condition.

5.5.3.3 The two fuel shut-off valves were located on the bulkhead at the forward end of the engine housing. It was found that the hose clips that secured the fuel hose to the fuel supply shutoff valves were made of inferior grade stainless steel. It is RECOMMENDED (type A2) that these hose clips are replaced with items made from marine grade stainless steel.

5.5.3.4 It was found that the terminals that connect the fuel hose to the primary fuel filter (mounted next to the shut-off valves) were made from mild steel and were corroding. It is RECOMMENDED (type C recommendation with an implementation time of six months) that these terminals are replaced.

5.5.3.5 The fuel lines and all other hose clips were in sound condition with no evidence of damage or deterioration.

5.5.3.6 Fuel level was measureable by means of two analogue gauges, mounted in front of the helm position. Both gauges worked but the upper dial was obscured by internal condensation.

5.5.4 Steering

5.5.4.1 QUICKSILVER was fitted with a Volvo Penta Stern Drive, which provided the steering for the vessel. The steering wheel at the helm was connected to the stern drive via push-pull cables, assisted by an engine-powered hydraulic pump. Where access allowed, the cables, sheaths and mounting brackets were inspected and found to be in good working order and well secured.

5.5.4.2 The helm wheel was fitted with a thumbscrew that was normally used to lock the wheel in one position. This screw had corroded and seized.

5.5.5 Stern Gear

5.5.5.1 The stern gear and propellers could not be inspected with the vessel in the water.

5.5.5.2 A visual inspection of the upper-most surfaces of the stern drive indicated that these parts were well protected by paint.

5.5.5.3 A pair of aluminium alloy propellers was stowed in the cuddy area. These appeared to be unused, with no damage to the black paint coating.

5.5.6 Trim Tabs

5.5.6.1 At the time of survey the trim tabs were submerged and partially covered in algal growth. It was not possible to determine the material and condition of the trim tab plates. The plastic housings of the hydraulic cylinders were inspected where access allowed and were found to be in serviceable condition.

5.5.6.2 The trim tabs were tested and were found to move correctly between their end-stop positions. The hydraulic pump, lines and fluid reservoir were found to be in serviceable condition and free evidence of fluid leakage.

5.6 SYSTEMS AND SERVICES

5.6.1 Anchor and Chain

5.6.1.1 At the time of the survey, the anchor, chain and anchor warp were stowed in a locker beneath the bunk in the cuddy of QUICKSILVER.

5.6.1.2 The 15 lb galvanised plough anchor was inspected and found to be free of wear and with only minor surface corrosion.

5.6.1.3 The anchor chain was attached to the anchor by two galvanised steel shackles. The chain was generally free of wear & corrosion and in good working order. The shackle that was linked to the chain was heavily corroded. It is RECOMMENDED (type A2 recommendation) that the shackle is replaced.

5.6.1.4 The anchor chain was made from short plain linked galvanised steel. Dimensions of the chain were 8 mm x 25 mm x 40 mm and 6 metres in length. The chain was spliced onto 22 metres of 16mm diameter warp. The warp and splice were in good condition.

5.6.2 Electrical System

5.6.2.1 QUICKSILVER had a 12 volt dc electrical system, with a single 96Ah battery for engine starting and services. The battery was located at the aft end of the engine compartment, on the starboard side of the engine in an adequately ventilated area. The battery was securely tied down to prevent movement. The battery was tested using a load test device and the capacity was found to be good. An attempt was made to measure the specific gravity of the electrolyte in each battery cell. This was only achieved in one cell as the others had insufficient electrolyte to fill the measuring device. The specific gravity of the one tested cell was good. It is RECOMMENDED (type A2 recommendation) that the battery fluid is topped up. There was a space on the port side of the engine for a second battery, complete with a tie down strap.

5.6.2.2 The quarter-turn battery isolation switch was mounted on the forward, starboard side of the engine compartment housing. This operated correctly but was made using mild steel and was corroded on its external surfaces. This switch should be cleaned and greased or replaced entirely.

5.6.2.3 A switch panel was mounted to starboard of the helm wheel and access hatch. These switches were for engine blower, bilge pump, running lights, vhf radio (not installed), 12 volt power, spare. The engine compartment blower fan did not work. This was attributed to the broken contact for this switch. The recommendation dealing with this defect is addressed in paragraph 5.5.1.4. The contacts of the switches were inspected

from inside the cuddy space.

5.6.2.4 Battery charging was from the engine alternator.

5.6.2.5 The wiring that could be seen appeared to be serviceable but untidy, with long unsupported lengths of wire exposed in the cuddy space.

5.6.3 Navigation Lights & Equipment

5.6.3.1 A steaming light unit was mounted on the roll bar. Port & starboard navigation lights were mounted on the sides of the foredeck moulding. These lights were tested and found to function correctly.

5.6.3.2 QUICKSILVER was equipped with an Aqua Meter console mounted compass, positioned in front of the helm position.

5.6.3.3 A Garmin Fishfinder 140 unit was stowed in the cuddy space. Serial number was 48867029. It was tested and found to give a depth reading.

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 An electric bilge pump was also installed on QUICKSILVER. The pump was fitted with a float switch and could also be activated manually by a switch on the cockpit bulkhead. The pump and float switch were located beneath the engine. The tilt switch and pump functioned correctly.

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

6.1.3 Two self-bailing devices were installed on the stern of QUICKSILVER. The orange plasticised canvas tubes were in satisfactory condition and well secured to the transom by stainless steel clips. The aft ends of these tubes were held above the waterline by a length of cord and tied back to the roll bar.

6.2 FIRE FIGHTING EQUIPMENT

6.2.1 One small fire extinguisher was found on board, located in the cuddy space. There was no date on the extinguisher but it was clearly very old. It is RECOMMENDED (type A2 recommendation) that this unit is replaced with at least one 1kg dry powder fire extinguisher.

6.2.2 One dry powder automatic fire extinguisher was installed in the engine compartment. The pressure gauge indicated that the extinguisher was correctly pressurised, but the unit was very old. The plastic mounting bracket was broken. It is RECOMMENDED (type A2 recommendation) that this unit is replaced by an inert agent gas equivalent. This type of fire extinguisher creates less mess and damage than the dry powder type.

6.2.3 A fire blanket was located in the cuddy area.

6.3 FIRST AID KIT

6.3.1 There was no first aid kit found on the vessel. It is RECOMMENDED (type A2 recommendation) that one is procured and stowed on board.

6.4 CARBON MONOXIDE ALARM

6.4.1 There was no Carbon Monoxide alarm installed on QUICKSILVER. It is RECOMMENDED (type A2 recommendation) that one is procured and mounted in the cuddy space. If a fully enclosed canopy is ever fitted to the vessel, an additional Carbon Monoxide alarm should be installed in the cockpit.

6.5 LIFEJACKETS & HARNESS LINES

6.5.1 No lifejackets were found on the vessel. It is RECOMMENDED (type A2 recommendation) that an appropriate number are stowed on the vessel.

6.6 MAN OVERBOARD RECOVERY EQUIPMENT

6.6.1 There was no life ring on the vessel. It is RECOMMENDED (type A2 recommendation) that one is stowed on board and should ideally be fitted with a floating light. The vessel's name should be applied to both sides of the buoy in large black lettering.

6.7 ENGINE KILL-CORD

6.7.1 There was no kill-cord installed on QUICKSILVER. It is RECOMMENDED (type A2 recommendation) that one is fitted for attachment to the helmsman's leg.

6.8 PYROTECHNICS

6.8.1 None found on 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.

Appendix 1. 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.

Appendix 2. Abbreviations Used in This Report

dc	Direct current
GRP	Glass Reinforced Plastic
IIMS	International Institute of Marine Surveyors
LCD	Liquid Crystal Display
PVC	Polyvinylchloride
UV	Ultra Violet