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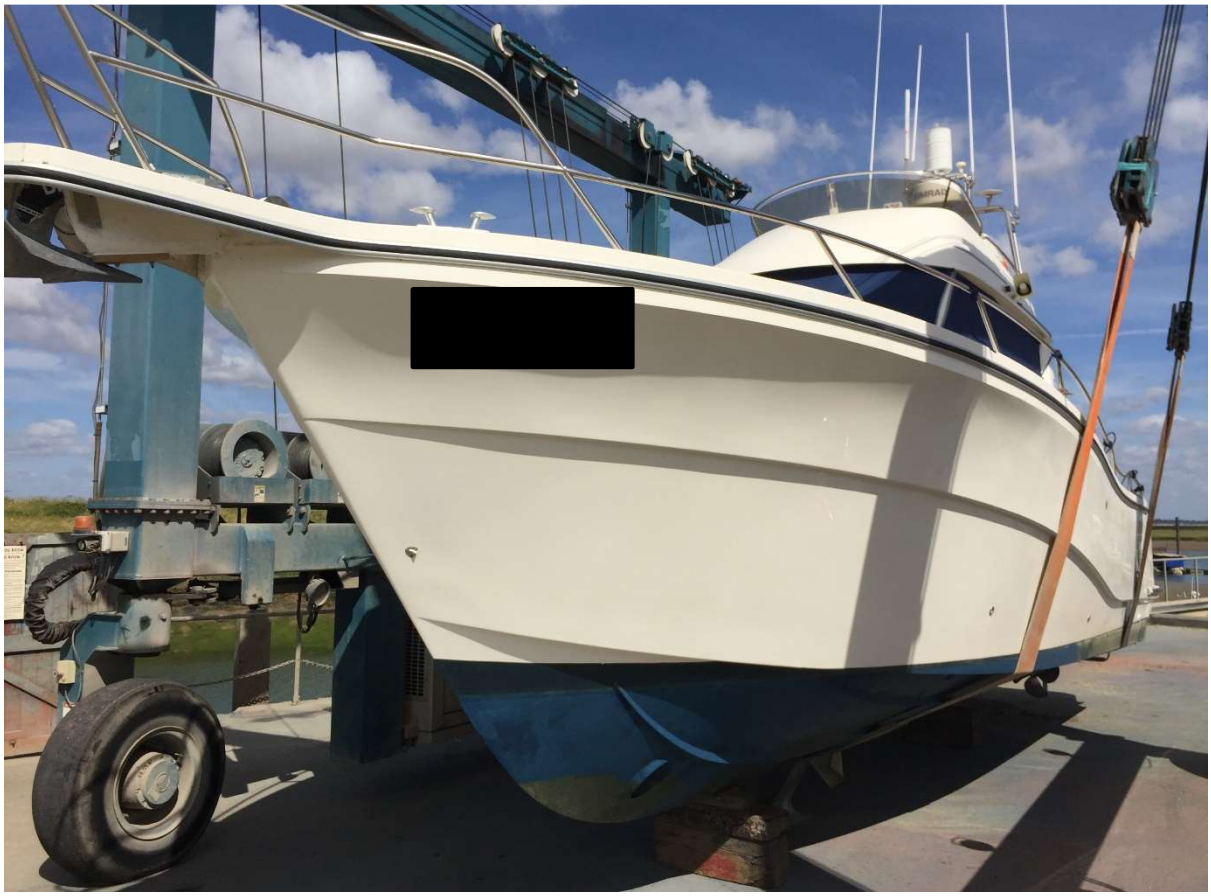
Pre-purchase full condition survey report on:
Rodman 1120 [redacted]



For:
Mr [redacted]

The Royal Institution of Naval Architects

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UK Ship Register
Tonnage Measurer

Survey Report on MotorYacht [redacted]

This survey was carried out on the 30th July and 9th August 2016 on the instructions of:

[redacted]

Contents **Page**

1) General notes.

a) Responsibility

Any responsibility is to the above client only and their insurers, and not to any subsequent owner of the vessel under survey or holder of this report. Copyright is retained by Medusa Marine and copies must not be made or distributed except to the vessels insurers or repairers without permission of the copyright holder.

b) Location

The vessel was afloat and then laid up ashore at [redacted] on the 30th July and the 9th August 2016

c) Purpose and scope of survey

Survey was carried out under Medusa Marine terms and conditions. These are YDSA standard terms of engagement and are available on our website: www.medusamarine.co.uk/index.php/terms-and-conditions/

This survey was commissioned by the purchaser for the purpose of establishing the condition of the vessel prior to completion. Unless otherwise stated, the vessel was not surveyed for compliance with any build standards (RCD) or operational codes of practice or local licenses. The vessel has also not been surveyed for suitability for any particular purpose or location. This survey report is a factual statement of the surveyor's examination as carried out and his opinion given in good faith as to the relevance of disclosed facts and defects so far as seen. It implies no guarantee against faulty design or latent defects.

d) Limitations

Areas inspected were limited to openings and access available during normal operations and maintenance of the vessel. No fastenings or skin fittings were removed, keel bolts drawn or joinery or head linings removed. Closed compartments were visually inspected by means of a Ridgid CA100 endoscopic camera. Materials used in the construction were tested as far as was possible by industry standard Non Destructive Test (NDT) test equipment.

Unless the vessel was afloat, the mechanical condition of the engine was not covered by survey, only the installation and components normally available to routine maintenance could be assessed. If afloat, only assessment of the engines no load running condition was possible. Sails where present, were examined for general condition. The sails were not set, so no assessment of

shape or stretch could be made. Spars where stepped were examined from deck and ashore only.

Navigational equipment, electrical installations and domestic appliances were assessed subject to limitations if battery charge or shore power was available. If there was no opportunity for sea trialling the vessel, no assessment of the vessel and her equipment under seaway conditions was possible. No opinion could be made or responsibility undertaken for condition or defect of those aspects of the vessel not accessible or evident due to the above limitations.

e) Recommendations

Recommendations have been subdivided into three categories. All Recommendations are annotated thus and are summarised at the end of the report

Category 1 (Cat 1) Recommendations are safety related defects which should be corrected before the vessel is put into commission.

Category 2 (Cat 2) Recommendations relate to defects which affect the efficient operation of the vessel in normal use and should be attended to at the earliest opportunity. They do not affect the safe operation of the vessel.

2) The Vessel specifications and description

Note: Dimensions and measurements given have been derived from manufacturers published data, and have not been verified by survey.

Dimensions:	
LOA:	10.90 metres
Beam:	3.50 metres
Draft:	0.90 metres
Displacement: (light)	7.800 tonnes
Manufacturer:	Rodman Polyships, Vigo, Spain
HIN No.	ES – ROD[redacted]
Model or Type:	Rodman 1120
Year of Build:	2001
Registration (part one)	ON. [redacted] RT 11 02/100
Designer:	Rodman Design Office
Construction:	GRP hull and deck
Engines:	2 x Volvo Penta KAMD 44 EDC
Gearboxes:	2 x HS63AE - A

This vessel was built after the 16th June1998 and therefore is subject to the requirements of the Recreational Craft Regulations (SI 1996/1353). It was built before the 2005 (Directive 2003/44/EC) to include environmental emission limits.

The boat is CE classified to RCD category B (offshore) Designed for offshore voyages where conditions up to, and including winds of wind force 8 and significant wave heights up to, and including 4m may be experienced. Vessels that were built before 1st January 1985 and within the EU prior to 1992 are considered VAT paid. This boat was built in the EU after those dates so proof of VAT paid status should be seen and retained on board.

The vessel registration is Part One on the UK Ships Register. This means the owner has proof of full title and provenance back to the builder. This is a superior legal title to the SSR register. The registered tonnage is a theoretical calculation of cargo carrying capacity and has no relation to the vessels displacement. Part One registrations need to be renewed every 5 years. The registration is transferable and due for renewal before the 4th October 2016. If allowed to lapse, the vessel with require re-measuring by a tonnage measurer which will involve an additional fee payable to MCA.

The Rodman range of fast fishing boats have a distinctive style. This is based on the traditional Iberian fishing boat design developed to cope with the ferocity of the North Atlantic winter. The high bow freeboard and characteristic reverse sheerline sweeps down to a low aft freeboard to the large open fishing deck and cockpit.

The topsides has excessive flare and a deep swage line which combine to keep a dry ride in a head sea. The planing hull bottom has a rounded forefoot and a fine entry which flattens as it runs aft to a relatively shallow deadrise. The propellers are semi tunneled and there are two full length spray rails and a reverse chine to generate lift on to the plane. A shallow full length moulded keel gives good directional stability and reduces the tendency for a planning hull to wander at displacement speed.

The open fishing cockpit is a good working space but of a modest size to allow for a comfortable saloon and accommodation. The saloon features a galley and bar to port aft of the two seater lower helm. to starboard is a four seater dinette around a large fixed table. Down a narrow companionway leads to a small lobby with three doors, heads to port, guest cabin to starboard and master cabin forward.

The heads compartment is fully equipped and designed as a wet room with a shower. The guest cabin has a double berth athwartships running under the saloon. The master cabin has a full sized double on the centre line. Both sleeping cabins have good storage and hanging lockers. The ‘walk round’ side deck and well deck forward gives exceptional security to the crew when working forward.

A ladder up from the cockpit leads to a flybridge helm. This has a duplicate suite of engine instruments, navigation instruments and thruster controls. Forward is an aft facing semi-circular seating area. Above is a radar arch carrying floodlights and antennae.

3) Survey details

a) Hull general

Hull construction is of solid skin glass reinforced plastic (GRP) laminates of woven rovings (WR) and chopped strand mat (CSM) bonded with polyester resins. The actual materials used cannot be established within the scope of this survey, but this hull would have been built long after the problems associated with moisture absorption into permeable laminates were fully understood by the industry.

The hull would have been moulded in a single mould with the transom deeply recessed allowing the trim tabs and stern thruster to be protected by the bathing platform. The hull bottom is strengthened by a matrix of longitudinal, vertical and transverse stringers made up of laminated over moulded channel sections. There are three full width bulkheads up to saloon and cockpit sole level. The hull is also stiffened by fully bonded and laminated joinery. The whole construction is considered to be of sound design and manufacture.

b) Bottom

The bottom is finished with a blue antifouling paint. This is an uneven coating being painted over several layers of wasted coatings. The underlying coatings are soundly adhered however and have provided a good, although uneven base. The antifoul itself is an old application as there is a clear waterline staining evident. The composition of the paint could not be established but it appears to be a hard copper based coating.

The hull bottom was sounded over its entire surface with a small pin hammer and was found to be free of delamination or voids. Particular attention was paid to the sharp moulded edges of the chines and spray rails where air inclusions are most likely. It was also visually inspected and there were no visible distortions or undulations in the hull bottom.

Moisture readings were taken with a Sovereign Quantum Marine Moisture meter. This meter is a capacitance type tester and is equipped with both deep and shallow reading scales. This is useful to trace the depth of penetration of, and correspondingly the drying out of moisture.

All polyester laminates will absorb some moisture to a degree without it effecting the structure or strength of the construction. The two scales can also be used to eliminate spurious readings generated by condensation or metallic components inside the bilges Shallow scale readings should always be higher than deep scale if the moisture is due to absorption through the gel coat.

The comparative scale is 0 to 100, which is an arbitrary scale, and does not represent actual percentages of moisture in GRP. Thus figures are thus quoted as scale readings and not as percentages.

Representative readings on a Sovereign Quantum comparative scale for moisture content in GRP laminates approximate as follows:

0-15 Regular readings for a ‘dry’ GRP laminate
16-20 Slight absorption typical of permeability of weather exposed GRP
20-30 Medium moisture content, could be osmotic but unlikely to blister
31-45 High moisture, osmotic process but not necessarily physical effects
46-60 Very high, usually physical effects, blistering and wicking evident
61-100 Extreme saturation moisture with a visible structural defects

The atmospheric conditions at the time of survey were as follows:

Weather:	Clear sky with sunshine and occasional light cloud
Wind:	NE 10 / 12 kts
Air temperature:	20.2°c
Hull surface temperature:	19.5°c (stbd) 20.7°c (port)
Relative Humidity:	49.8%
Dew point:	9.6°c
Hull temp over dewpoint	+ 9.9°c to + 10.1˚c

It is usually considered necessary for the hull temperature to be at least 5° above the dew point for moisture readings to be representative.

Readings were taken in the topsides and showed a consistent level of 8 to 10 on the deep scales. Readings were taken in the antifoul above the waterline and showed readings of 9 to 11 on the deep scales. It can be see that the antifoul is affecting the moisture readings by about a unit of one and the hull bottom readings can be discounted by about this measure.

No areas of antifouling are scraped back if the readings indicated that the hull moisture levels are satisfactory. This practice is beneficial as it avoids the possibility of damaging any preventative coatings. Painted coatings can only influence laminate moisture readings to appear higher than they actually are.

The vessel was hanging in slings having been lifted the previous afternoon. Drying conditions had been good but as it was the last job of the day the hull bottom had not been as diligently pressure washed off as might be expected. Readings were taken over the whole hull bottom. Shallow scale readings varied generally 20 to 31 with a several peaks of 44. Deep scale readings varied generally in the range 15 to 26 with a peaks of 34 in the same elevated areas.

The shallow scale peaks appeared to be of a darkened hue and were considered to be not fully cleaned with some dried slime retained in the coarse texture of the painted coatings. The patches were highly localised and when hammer tested were sound and free of visible defects.

The readings were considered to be satisfactory given that there were also no physical signs of defects of deformations in the hull structure. Consideration

was also given to the imperfect cleaning of the hull bottom. The hull bottom was cleaned again before the vessel was blocked up in the yard but no further readings could be taken.

A regular routine of laying up on hard standing for a couple of months every season should prevent any chance of the hull suffering any physical degradation. This preventative routine is good practice for a hull of any age. (*See explanatory note 1)*.

c) <u>Topsides</u>

The topsides are constructed of solid GRP laminates with a white coloured gel coat finish. There are no cove lines or boot tops. There is a narrow section of raised topsides above the hull to deck seam. This seam is covered by an aluminum rubbing band with a hard rubber insert.

In the aft quarters there is a lapped over section in the topsides where the ring deck moulding sweeps down to incorporate the cockpit transom and bathing platform top. The bathing platform under part is an extension of the hull moulding. A hard rubber D profile rubbing band is fitted all round bathing platform extending to the section change in the topsides.

The hull topsides are reasonably fair with only very slight distortions visible from bonded in internal structures. Overall the hull surface is in very good cosmetic condition. There are some light abrasions but none of these are down to the laminate. Around the aft quarters where the ring deck moulding sweeps down to meet the transom the bare cut edge to the laminate is left unfinished and a bit untidy.

There is one small area of an old and poorly executed repair at the corner of the starboard bathing platform where it meets the topsides. This is only evident to close inspection. Overall the topsides condition is very good and clean.

The topsides were tested with a Barcol Impressor. This tests the hardness of the laminate and so in theory establishes the consolidation of the lay-up and the level of cure of the resins. These readings can vary so up to 20 readings were taken around the hull. In the topsides the figures ranged from 44 to 49HBa. This averages out well above the normal range, (38 to 40Hba is considered satisfactory for marine grade isothalic/orthothalic resins). These readings were satisfactory and would normally be seen as evidence that the hull lay-up was well consolidated and at a good level of cure.

The hardness and cure state of the gel coat is tested with a Shore D Durometer. This will also show any progressive softening due to oxidisation. Readings ranging from 91.0 to 93.5 HSD where made, which are good. (88 to 90 is considered normal). These high readings indicate that a good gloss level

could be achieved when polished. Overall the tests show a well specified and well executed hull construction.

d) <u>Hull to deck construction</u>

The hull to deck construction is made up of the intersection of three mouldings. A moulding, incorporating the side deck and superstructure, has an upward facing flange forming the internal bulwark. This is laid into the hull and topsides moulding. The two mouldings having matching upstanding profiles are bonded and laminated together.

The third part is a ring moulding which incorporates the dolphin nose, the bulwark capping, cockpit transom and bathing platform. This is screw fastened and bonded over the hull and deck mouldings with a ‘biscuit tin’ type joint and the fastenings securing the aluminum fender strip.

The cleats and stanchions to the pulpit rail are all fastened through the bulwark capping and the fastenings are accessed underneath the capping. The bulwark capping to the cockpit is covered with a 20mm thick teak moulding all round. This is in very good condition. The whole hull and deck assembly is well designed and executed. It is strong and leak free where it can be examined.

e) <u>Deck and Superstructure</u>

The deck is a GRP construction of two layers of laminations with an end grain balsa wood core. The foredeck and side deck moulding has a pyramidal non-slip moulded texture to the gelcoat in the tread areas. This is in good condition with no signs of break out or chipping in the raised profiles.

The deck moulding was tested for moisture in the laminate and in the core material. Moisture readings were taken with a Tramex Skipper Plus Marine Moisture meter. This meter is also a capacitance type tester but is preferable to the Sovereign Quantum in this application as it uses soft rubber pads for the sensors and gives better results on textured or uneven surfaces. It is also has wider spaced sensors and can read deeper through thick cored decks.

Representative readings on a Tramex Skipper Plus are different to the Sovereign Quantum and the comparative scale for moisture content in GRP laminates approximate as follows:

0-15 Regular readings for a ‘dry’ GRP laminate
16-38 Slight absorption typical of permeability of weather exposed GRP
39-65 Medium moisture content, could be osmotic but unlikely to blister
66-100 High moisture with a possibility of physical degradation at higher ranges

Readings of 15 to 40 were recorded over the whole of the side decks. Lower readings of 10 to 25 were recorded over the coachroof top and to the flybridge deck. All these were considered to be satisfactory. The deck areas were walk tested for springiness and possible de-bonding to the core. All felt firm underfoot. Vulnerable areas penetrated by deck fittings were tested by hammer soundings and were seen to be good and well consolidated.

Sat above the superstructure is a separate moulding which forms the flybridge. This has an upper helm station to port with engine instrumentation and engine and thruster controls. Forward, behind the flybridge screen, is a curved seating area. The helm module contains the gas locker in the forward face.

All is in good condition, but there are cracks in the curved acrylic screen where the fastenings have created stress risers. It is not practical to repair these and the defects should be left as is. The screen would need to be replaced if the cracks get significantly worse.

f) Cockpit and bathing platform

The cockpit sole and inner transom is all integral with the deck and superstructure moulding. There are numerous apertures and profiles moulded in for hatches and fittings. The two principal hatches are opposite each other and are outward opening with flush lockable lifting handles. The starboard hatch is open to the hull bottom and is for general storage. It also gives access to the starboard steering gear.

The hatch to port has a lift out GRP liner which is an open topped tank. This is intended to be used as a keep tank and a seawater supply fitting is in the adjacent cockpit side. This can be used to pump seawater into the tank for keeping live bait or live catch. The empty tank liner can be lifted out and access gained to the port steering gear, the fresh water tank and the stern thruster battery box.

Alongside the pump fitting is another pump outlet for a deck wash. Both draw from a skin fitting beneath but have separate pumps, Both worked when tested but could not deliver water as the vessel was lifted. The deck wash pump is of a higher pressure and there are a number of scuppers in the transom moulding for drainage of the cockpit sole.

The smaller central hatch forward is for access to the after engine space. This is hinged on the forward edge and is latched with a similar fitting. This hatch also gives access to the engine seawater intake valves and the fuel valves and manifolds. The three hatches all have integral gutters with drains in the corners. These drains run to skin fittings in the topsides above the waterline.

All these hatches are in good condition but none have stays or bungees to secure them open. The lids barely open beyond the vertical and can easily fall. It is recommended that a means of securing these hatches open should be provided for safe use in a seaway.

Recommendation

(Cat 2) Provide a means of securing the cockpit hatches in the open position

There is an opening gate of a GRP construction which is capped with teak to match the cockpit bulwarks. This is well secured when shut with a strong hinge and latch. This gives access to the bathing platform. This platform has an opening panel on the port side with a boarding ladder which is detailed elsewhere.

g) Hatches & Companionways

The main companionway is a large ‘patio door’ type opening at the after side of the saloon opening into the cockpit. This is of a white powder aluminum construction with double glazed panels retained in rubber gaskets. The single sliding door is retained by a hook latch with a lever lock. This can be secured from the inside also. This worked well and is secure and smooth in action.

There is a Lewmar acrylic above the master cabin in the coachroof. This gives light to the forecabin and also forms escape hatches as alternative exit in the case of needing to evacuate the accommodation. The bunk base provides a firm foothold within 1 metre of the hatch. The glazing is in acrylic and is quite crazed by uv attack but not to the extent that it would be unsafe to walk on.

The glazing is frameless and the base frame is in aluminium. This is in good condition operates well. There is a roll away blind underneath with provision for a flyscreen mesh. The fore cabin door opens from a narrow companionway which is forward of the saloon. There are two other doors opening from the companionway giving access to the guest cabin to starboard and the heads compartment to port. These are all of a solid and secure construction.

h) Windows and ventilators

There are four opening portlights within the coachroof. All are Lewmar inward opening aluminium framed portlights. There is one each side to the master cabin forward and one each to the guest cabin and heads compartment. All are well seated and apparently watertight. The acrylic glazing is optically clear and there are curtains to all these windows. There is also provision for fly screens to be attached. Fly screens for these and the fore cabin hatch were seen stowed on board.

To the saloon each side are large trapezoidal shaped feature windows. These are custom made aluminum framed windows. There is a fixed pane and a sliding pane to each window, all in toughened glass. These are also in good optically clear condition, leak free and have curtains internally.

The main forward facing screens to the helm are three aluminum framed fixed windows. The glazing to the front screens is in toughened glass and is in good, optically clear condition. There are three large pantograph screen wipers mounted in the top frame edge. These wipers all worked when tested. There are no fixed ventilation fittings to the accommodation other than the opening portlights, side windows and hatches.

There are ventilators to the engine space incorporated into the rear pillars to the superstructure. These are separate mouldings which create ventilation stacks between them and the superstructure moulding. The size is considered suitable to the capacity of the engines.

i) Deck gear and fittings

The majority of deck gear fittings are related to mooring and anchoring which are detailed elsewhere.

The radar arch is a large all stainless steel tubular framework which is fabricated integral with the flybridge hand rails and rear safety frame. This carries the radar scanner, antennae for VHF and AIS and also a passive and an active radar reflector. The frame and arch is in good undamaged structural condition.

Access to the flybridge is made via a substantial stainless steel ladder with teak treads on the starboard side of the main companionway doors opposite the fixed glazed panel. This has good strong handholds and is well seated and secure.

j) Safety equipment

The wrap around pulpit extends from the cockpit beside the side deck to port all round to the cockpit side to starboard. Despite the lack of inherent stability in the shape, the pulpit is very secure and supportive. There is little movement in the stanchion bases which are polished stainless steel discs with single bolt fixings through the bulkwark capping. The pulpit is all welded and fabricated from 1” polished tubular stainless steel.

On the side of the superstructure is a pair of stainless steel hand rails. These are well situated to give a good hand hold when passing along the side decks. These are well seated and secure. A long curved stainless steel hand rail runs around the bulwark along the back of the cockpit transom.

On the bathing platform is a hinged cover with a boarding ladder housed beneath. This ladder has teak treads and a lowest rung is provided well below the waterline for a crew member to climb from the water. There are also two good hand holds. Ideally, as a safety device for re-boarding unaided, this should be able to be deployed by someone in the water. This would be difficult with this design.

There is a horseshoe life ring installed on the radar arch to the flybridge. This life ring would be difficult to deploy quickly if there were no crew on the flybridge. in its present location. Attached to the life ring is a floating flashing light. This did not illuminate when inverted. The lifering ought properly to be labelled with the vessels name and port of registry.

Recommendation

(Cat 1) Replace batteries and or bulb to the flashing light and label the lifebelt with the vessels name and port of registry.

k) Skin fittings & seacocks

Note; Bronze is conventionally an alloy of copper and tin, but the term is now popularly used to describe a wider range of copper based alloys which have no tin content but zinc and other elements which can provide similar dezincification resistance. There is no non-destructive test for alloy composition which is practical within the scope of this survey. Where visible casting marks or apparent magnetic flux can indicate a particular alloy, it will be described. Otherwise, where the term ‘bronze’ or ‘brass’ is used in this report it denotes a copper based alloy of indeterminate composition. *(See explanatory note 7)*

There are 5 through hull skin fittings under the waterline. Two are the cooling water intakes for the engines and they are located in the after engine space. These are 1 ¼” nickel plated brass ball valves. Both were tested by hammer sounding on valve body and skin fitting and the hose tails were tug tested. The valves were seen to be good and the handles turned open and closed easily.

A single ¾” nickel plated brass ball valve was fitted in the after port hull bottom. This is the intake for the keep tank and deck wash pumps. This was also hammer and tug tested, opened and closed and seen to be good. All these three valves have the handles drilled and fitted with long cross bolts. This is to enable the valves to be operated remotely using a boat hook.

The other two valves are associated with the sea toilet. The flush water intake is a ¾” nickel plated ball valve and the discharge is a 1 ½” nickel plated ball valve. These were similarly tested and seen to be good. All The valves are fitted with double hose clips. Double clips are recommended unless the hose tail is too short to accommodate the second clip fully. A poorly seated clip can actually cause a hose to become detached.

These fittings are not manufactured from naval bronze or marine quality brass. Marine quality fittings are never plated. These fittings do comply with the minimum requirements of the RCD for a five year service life but they can be subject to dezincification

Where dezincification occurs in brass the metal turns an orange carrot colour and becomes dull when sounded. This is often also combined with a white crystalline powder of Zinc or Nickel Hydroxide. This can be identified from ordinary salt deposits by the fact it will not dissolve in water.

Valves should be regularly checked for colour and soundness. When replacing valves or skin fittings always use dezincification resistant alloys which will be marked DZR or CR or with the alloy classification CW602N or CZ132

There is no electrical bonding system to the underwater skin fittings. *(See explanatory note 8)*

There are no tapered bungs attached to any skin fittings for sealing a skin fitting in an emergency. This is advisable should any skin fitting fail in service.

Recommendation

(Cat 1) Install appropriately sized tapered soft wood bungs to each skin fitting.

The other under water skin fittings are for the Airmar depth sounder and paddle wheel speed log transducers. These are glass reinforced nylon mouldings. There are no signs of leakage or deterioration of the plastic mouldings

There are additional skin fittings above the waterline. These are drains for the cockpit hatches, basins and sinks, electric and manual bilge pumps. These are all of moulded plastic and have no valves. All the hoses are in nylon reinforced PVC. The hoses are only single hose clipped. As these fittings are substantially above the waterline, their security is less critical.

I) Engine

The engines are Volvo Penta KAMD 44 EDC. These are 3.6 litre 6 cylinder 24 valve supercharged and turbocharged diesel engines delivering 260 hp at 3,900 rpm. The port engine serial number is 2204408306. The starboard engine serial number is 2204408367. These numbers match those given in the builders certificate. The port engine has 345.2 hours recorded and the starboard engine 343.0.

The engines are in good physical condition. The painted surfaces are almost unbroken except around some of the routine service components. The oils were carbon laden but clean and free of particulates. The belts were well

tensioned and there was negligible residue of black powder around the rotating components which would indicate if it was present that the belts were wearing. The engines are mounted on resilient mounts and the rubbers were seen to be good and free of residues from degradation

The engines are controlled by the Electronic Diesel Control (EDC) system which manages fuel metering as well as the compressor, turbocharger and charge air cooling systems. It also has an engine diagnostic and error code storage facility. This was interrogated both before and after the sea trial and no faults (code 1.1) was recorded on both engines.

The gearboxes are HS63AE-A hydraulic bevel gear, reduction and reversing gearboxes. Port box serial number 50630110039. Starboard box serial number 50630110038. These boxes use electromagnetic engagement operated by Volvo Penta powercommander electronic throttles at the helm and the flybridge.

The gears engaged easily and effectively. The EDC control panel has push buttons for electronic selection of neutral. There is an EDC panel at each helm and there is a command button to select engine control between the upper and lower helms.

The gearbox are cooled by oil coolers incorporated into the engines raw water cooling system. These are the first components after the intake valves. The gearboxes are balanced boxes with identical reduction ratios forward and reverse of 2.04:1 allowing contra-rotation of the propellers.

The engines were subject to a full sea trial. The engines started easily without undue cranking and settled into an easy idle with both engines at an indicated 600 rpm. The engines revolutions were measured with a Venture ATH-6 mechanical revolutions counter acting directly on the crank shaft pulley.

This showed that the port engine was under reading at the helm by 3.9%. The starboard engine was under reading by 0.5%. All subsequent engine revolution measurements are from the helm instruments and adjusted figures Are given in brackets ().

The engine initially emitted small amounts of blue smoke at idle. This is not unusual for cold diesel engines, particularly engines with pressure induction systems such as turbochargers. The compression ratios are lower than for naturally aspirated engines and until the temperatures build the engines are running at lower than designed efficiency. Once the engines warmed to running temperature the smoke disappeared.

A series of runs were made at different engine revolutions. The speeds selected were a typical restricted water speed limit, an optimum cruising revolutions for a light duty marine diesel of 70% to 80% of the maximum, and at peak power. Performance was measured at 1,100 rpm, 2,800 rpm and at full power rpm.

Sound levels were also measured in the saloon at different engine revolutions. This is an indication of sound proofing of the engine compartment and the comfort of the crew. The Health and Safety Executive gives the maximum safe exposure time for sound levels above 85 Db at eight hours. A 3 Db increase is double the noise level and the safe exposure time is halved

Engine revolutions	GPS Speed (knots)	Sound (Db)
1100 rpm	6.8	70
2800 rpm	16.9	84
3550 (3688) port rpm 3650 (3668) strbd rpm	23.8	86

This maximum performance is well below the theoretical maximum. A calculation based on waterline length and beam, displacement, engine power and drive train characteristics indicate a theoretical maximum speed of 28.6 knots. At this speed the engines would be achieving their maximum revolutions of 3900 rpm but it would require a lightly laden boat and a clean bottom.

The vessel has been afloat for four months and the bottom was seen to be quite fouled. It also had full tanks and much personal equipment. The performance seen was considered to be satisfactory for the conditions of the weather and the vessel.

The engines were also subjected to a stress test. This involves runs with one engine at full power and the other engine at idle. This tests the comparative output as each engine is placed under full load.

Engine under load	Revolutions	GPS Speed (knots)
Port engine	2960 (3075) rpm	9.9
Starboard engine	3050 (3065) rpm	11.0

In these tests it is seen that the port engine is under delivering compared to the starboard engine despite achieving slightly higher revolutions. This could be due to a number of factors not related to the engine itself such as possible damage to the propellers.

The engines exhibited no unusual sounds or vibrations during the power runs. There were apparent emissions of light steam at full power. This is not unusual when the sea water temperature is low and the exhaust outlets are at the waterline. Diesel exhaust is high in moisture from the combustion process and that moisture condenses into visible steam when it hits the cold seawater in the vessels wake.

The engine temperature and pressures were recorded during the full power runs.

	Port engine	Starboard engine
Oil Pressure	75 psi	85 psi
Oil temperature (filter)	62 ˚c	60 ˚c
Block temperature	96 ˚c	94 ˚c
Head temperature	88 ˚c	84 ˚c
Intercooler temperature	60 ˚c	68 ˚c
Gearbox temperature	51 ˚c	48 ˚c

There are not significant engine temperature differences across the two engines given that it is difficult to measure exactly the same point on each component due to access. The port engine does seem to be showing slightly higher temperatures but is also showing a markedly lower oil pressure which could be the consequence of higher temperature leading to a drop in viscosity.

The port engine closed cooling system feeds the hot water calorifier which would normally add to the cooling efficiency. This is seen in the lower intercooler temperature which is the first component after the calorifier. This extra cooling may mask the actual higher running temperatures of the port engine.

Overall however, the temperatures seen were not excessive in any area. The block will always be hotter as there is no direct cooling below the water jackets. The engines were viewed with a thermal imaging camera and no significant hotspots were seen on either engine.

m) <u>Fuel system</u>

Fuel is stored in a twin welded aluminum tanks, each of 400 litres capacity, located outboard of the engines within the engine space. The tanks are in good physical condition, there are no signs of leakage in the mounting plinths or in the compartment bilges beneath. The tanks are filled from flush deck fittings in the adjacent bulwark cappings.

Fuel is drawn from fittings near the bottom of the tanks and feed fuel to a pair of Volvo Penta branded Racor centrifugal type fuel filters in the after engine space. The fuel filters have water separator bowls at the bottom with drain taps. When tested both drain taps delivered clean fuel. The presence of water in the bowl would indicate the presence of water in the tank. This would lead to the formation of bacterial gel which could block filters and stop an engine.

There are shut off valves in the line after each drain point. The fuel feed pipes are all fuel hose to ISO 7840 A2 to the filters and from the filters to the engine. The return feed is also in fuel hose. There is a balancing pipe between the fuel tanks which runs across the engine space with shut off valves on each end. There is no transfer pump in the hose. The hose is of a small diameter and is not intended to enable both tanks to be filled from one filler fitting.

There are shut off valves between the filters and the engine with remote operating cables. These are run with Bowden cables to pull handles under the helm seat. This is to shut off fuel in an emergency but ideally these should be fitted to the valves immediately after the tank outlets.

Fuel can be transferred between tanks to assist with trim in the vessel by managing the fuel return line from the engines. There is a manifolding system of valves on the aft bulkhead which enables either tank to be filled from either or both engines return lines.

n) <u>Stern gear</u>

The propeller shafts are 2” diameter stainless steel shafts turning in conventional stuffing boxes as stern glands. These do not have greasers indicating that they are packed with pre-impregnated gland packing. There was slight marking in the bilges beneath the glands of historic water leakage but the glands were dry for the duration of the sea trial.

The shafts exit the hull stern tubes and are held in bronze P brackets laminated into the hull bottom. These brackets are firm in the hull with no sign of movement. The brackets were scraped back and checked for colour and seen to be good. Internally it was seen that they are electrically bonded to the engines and shafts.

Installed on the transom below the waterline is a large block anode. This is 50% eroded. A continuity check between this anode and the propellers, P brackets and rudders showed good continuity of less than 1 ohm.

The propellers are 15” diameter, four blade equipoise propellers. They are retained on the shafts by a tapered keyway and secured by bronze nuts and tab washers. The propellers appear to be cast from aluminium bronze as they exhibit no magnetic flux.

Both propellers were covered by calcareous deposits. They were scraped back and tested for condition. The starboard propeller was right hand rotation and seen to be in good condition, free of dezincification and cavitation damage. The port propeller was left hand rotation and there was distinctive discolouration by dezincification. There was a serial number clearly marked on the hub of starboard propeller whereas the port propeller hub was badly eroded and the serial number illegible.

The port propeller was heavily pock marked on the rear faces by cavitation. Cavitation damage is caused by the water flow detaching from the low pressure back face of the blade. This forms vacuum bubbles in the water which collapse and impact the surface leaving the pock marks. This damage is a consequence of the blade losing its shape and therefore its efficiency.

The two forms of damage to the propeller are different. Electrolytic erosion is caused by faulty electrical bonding of the stern gear leading to a loss of material and strength. This results in a loss of propeller efficiency. Cavitation damage is the subsequent result of that loss of efficiency.

This damage to the port propeller explains the results of the sea trial where the port engine was delivering less performance whilst using slightly higher revolutions. The detachment of the water flow reduces the ability of the engine to deliver thrust. The port propeller is damaged by two forms of defect at the blade roots. This is critical as it can lead to the loss of a blade. The propeller should be replaced.

Recommendation

(Cat 2) Replace the port propeller.

Both propellers were fitted with Spurs® type rope cutters. These were in good condition with the correct clearance between the static and rotary blades. There were shaft anodes on the shafts and nut anodes on the propeller shaft nuts. These anodes were all 50% eroded and should be replaced.

Recommendation

(Cat 2) Replace the shaft and nut anodes to the stern gear.

o) Steering system and handling

The steering system is a Vetus hydraulic helm operating a hydraulic ram on the port rudder tiller arm and a drag link to the starboard rudder. There is a duplicate hydraulic steering helm unit on the flybridge. Each helm has a fluid filler point in the top of the unit. The filler on the lower helm must never be removed as it will drain down the upper helm. Filling must only made at the upper helm.

The flybridge steering helm had no working effect and the wheel revolved freely. This helm was dry of oil. Flybridge helms are very vulnerable to loss of fluid as there is no reservoir other than the helm unit itself. This needs topping up. There are reservoir systems available that do not have to be mounted at the highest point in the system and use an accumulator tank system to replace lost fluid.

Recommendation

(Cat 2) Top up flybridge helm steering unit. Consider installing accumulator type reservoir system.

The rudders are cast aluminium bronze one piece blades and rudder stocks. These turn in bronze rudder glands with conventional stuffing boxes. The stocks are tight in the glands and there were no signs of leakage. The blades are fitted with button anodes which are 50% eroded.

The port rudder stock has a square milled end onto which an emergency tiller can be fitted. There is a removable fitting in the cockpit sole for the tiller to be deployed. The emergency tiller was seen stored in the starboard cockpit locker. There are no valves in the hydraulic manifolds which enable the hydraulic ram to be isolated for emergency steering. The ram would need to be detached from the tiller arm for the emergency steering to be operated. The system was not tested.

Trim and level was managed by Lenco electric actuator trim tabs installed on the transom below the chines. These are stainless steel planes and control is by rocker switches at the helm. The trim tabs levelled the boat effectively when trialled. The planes are fitted with button anodes which are also 50% eroded. All these anodes should be replaced.

Recommendation

(Cat 2) Replace the hull, rudder blade and trim tab anodes

Steering at low speeds is assisted by Sleipner Side Power 6 hp bow and stern thrusters. The bow thruster and stern thruster both worked effectively although the stern thruster is less efficient due to its proximity to the stern gear which is the usual point of rotation.

The thrusters are operated at the lower helm by a single joystick in a vessel silhouette which enables one or both to be operated for full manoeuvrability. This control is intuitive in use and effective. The flybridge helm thruster control is simple with two individual switches.

The vessel handled easily when exiting a tight marina berth. The electronic throttles are ideal at giving short duration pulses of power. The vessel can be turned within her own length by use of opposing propeller thrust. The vessel is equipped with a Simrad AP24 autopilot. This was engaged and tested. The vessel steered a course and responded correctly to dodge inputs.

The vessel tracked accurately at displacement speeds. This is assisted by the short projecting keel incorporated into the hull bottom. There is a tendency for planing hulls without projecting keels to wander excessively at displacement speeds requiring continual steering inputs to track correctly. The keel will however reduce ultimate performance so it is a compromise.

The vessel performed well in sea trial. The weather conditions were good with only a slight swell running. The flare at the bows gives a dry ride and the deep V hull allowed a soft ride with no slamming.

p) Anchoring and mooring gear

Stowed on the Dolphin Nose stem head is a galvanized Delta anchor with a length of 10mm welded link chain. This stows and launches through the stem head moulding on a large nylon roller. The chain runs to the gypsy of a windlass in the chain locker. This locker can be accessed through a hinged lid in the foredeck. The chain locker drains through clam shell vents in the topsides.

The windlass is a Lofrans Vertical windlass mounted horizontally on a vertical moulded panel within the anchor locker. This is an unusual installation but it appears to work well in use. The vertical windlass design is intended to be mounted though the deck and therefore the motor unit is usually protected from the elements by being within the accommodation space.

The motor unit is not sealed and in this installation the motor is exposed to atmosphere within the locker. Care should be taken to protect the motor and it has been wrapped in plastic as a preventative measure

The windlass has a chain gypsy and a warp drum and is operated by a rocker switch at each helm and also by a push button switches in the foredeck. The windlass operated well when tested. There is no protection of the stem from damage when weighing anchor but the Dolphin Nose at the stem makes contact between the anchor and the stem unlikely.

Either side at the bows are bitts for mooring warps. There are no associated fairleads as they are mounted on top of the bulwarks. On the bulwarks amidships are another pair of mooring bitts. At the aft quarters the bitts are mounted inside the cockpit sides and a substantial stainless steel fairlead is built into the bulwark capping. All these fittings are in anodized aluminium and are well seated and in good condition.

q) Heating and Air Conditioning systems

There is no heating or air conditioning installed on this vessel.

r) Sea toilet and shower compartments

The sea toilet is installed in the heads compartment. This is a Jabsco toilet with an electric pump conversion. This conversion is a direct replacement for the manual pump and can be easily converted back in the event of failure. A

manual pump is often carried as a back up but one was not seen on this vessel. This is a wise precaution as the electric units are prone to failure.

Recommendation

(Cat 2) Consider carrying a Jabsco manual toilet pump as a spare

The toilet valves are located under the moulded basin plinth and are accessed through a cupboard door. These are detailed elsewhere. The toilet discharge hose is in a white HT-Alimpomp sanitation hose and the flush water hose is of a similar manufacture. Both these hoses run direct to the toilet without swan necks or siphon breaks. These are usually not thought necessary on motor vessels.

The heads compartment has a moulded plinth base incorporating the toilet mount and an integral basin and cupboard unit. The remainder of the compartment fit out is in polyester faced plywood. The compartment includes a large mirror and a shelving unit. There is also an access panel to the electrical wiring panel behind the helm.

The compartment sole has a sump which drains directly into the central bilge area. The faucet to the basin can be drawn out and used as a shower head and waste water can be discharged overboard by the central compartment bilge pump.

s) Fresh water system

Fresh water is stored in a welded aluminium tank located under the cockpit sole. The tank is filled from a flush deck filler in the aft cockpit bulwark capping. deck. There is a sender unit installed in the top of the tank and a gauge is situated at the helm. Located in the same compartment is a diaphragm pump. This tank and pump fittings are accessed through the port cockpit locker and by removing the keep tank moulding.

An ATI stainless steel bodied calorifier is located in the accommodation on the port side. The water is heated from the closed fresh water cooling system on the port engine. There is also an immersion heater in the calorifier which runs off the shore power supply. Hot and cold water is delivered to two mixer faucets within the accommodation. One is for the galley sink and one for heads compartment basin. There is also a cockpit shower in the starboard side transom which is cold water only.

All outlets were tested. Water was delivered through the faucets. The pressure pump powered up as the pressure retained in the accumulator tank was exhausted. This indicated that the system was leak free. All the pipework was well clipped along their runs where visible and in good condition.

t) Galley

The galley is located on the port side of the saloon. The work tops are in grey laminate and the joinery is all in a high gloss lacquered cherry veneered finish plywoods. The cooker and sink are recessed into the worktop and are covered by a large retracting joinery panel which is housed in the joinery behind.

The galley cooker is a two burner LP hob. Alongside the cooker is a large deep rectangular stainless steel sink. The mixer faucet folds down to enable the panel to close. The sink drains through a plastic skin fittings in the topsides above the waterline in the adjacent port side below.

There is a front opening isotherm fridge alongside under the helm seat. This chilled down when tested. There is ample storage provided by drawers under the worktop. These are compartmented and one is a dedicated cutlery drawer. There is also substantial storage under the dinette seating and in the joinery on the starboard side.

All are cupboards are fitted with magnetic catches. These can be vulnerable to contents becoming dislodged and the doors being knocked open when the vessel is in a seaway. All the joinery is in good condition and the galley appliances are clean and soundly installed.

u) Electrical system

The main batteries are located in the forward part of the engine space. There are five 120 amp/hr batteries. These are arranged in two pairs for two separate domestic battery banks and a single dedicated engine start battery. The domestic banks recorded 12.48 volts and 12.65 volts which are 60% and 80% charged. The engine battery recorded 12.50 volts which is 60% charge. All the banks were tested for drain with the isolators open and negligible drain was recorded.

There are also two separate additional batteries. One located forward for the bow thruster and windlass and one aft for the stern thruster. These recorded 12.25volts for the bow and 12.05 volts for the stern. These are both low voltages and may indicate that the batteries were not holding charge and may need replacing.

All the batteries were in battery boxes and fastened down with straps. batteries are charged by the engine driven alternators and also by a mains voltage switch mode battery charger in the engine space.

The electrical systems are controlled by primary breaker switches. These are located under the lower helm seat. There are four separate isolators, one for each battery bank positive pole and one for the common negative. All operated satisfactorily.

Individual circuits are supplied from a switch panel in the saloon companionway. This panel has 20 breaker switches which control the various electrical installations on the vessel. There are a further 14 subsidiary rocker switches at the helm.

All the circuits were tested. Port and starboard navigation lights are mounted either side of the coachroof and an all-round white light is set on the radar scanner. All worked when powered up. Saloon lights are four recessed halogen down lighters operated by rocker switches by the main companionway. The cabins and heads have individually switched halogen downlighters and swivel reading lights to the berths. All the lights worked when tested.

The bilge pumps powered up satisfactorily although there was no water to discharge. The FM/CD player and the two VHF transceiver powered up and voice was heard. The navigation displays both powered up and were operated during the sea trial. The volt meters indicated that both alternators were outputting and charging the batteries. The engine hours meters reflected accurately the duration of the engines running times during the trial. The main navigation instrument is a Simrad NSS12. This is a multifunction touch screen display.

The display showed depth and GPS speed, both were accurate and consistent with hand held instruments. The chartplotter and fish finder and radar features all operated effectively. There is a rudder position indicator at the helm which appeared to be correctly aligned.

The 240 volt shore power input socket is located on the inner cockpit transom side. The AC circuits are distributed by breaker switches in the access panel in the heads compartment. This panel also contains the vessels own RCD device. Individual breaker switches are for the immersion heater, battery charger and power sockets

There is no galvanic isolation device installed. There is also no warning light for reverse polarity. This is not an issue as this vessel has been wired to continental standards and all the breaker switches are double pole. The live and neutral poles are reversible in Europe and all European sockets use double pole switching. UK sockets use single pole switching only which can cause problems when connecting to European marina supplies. (*See explanatory note 17)*

v) <u>Gas system</u>

The gas locker is installed in the forward part of the flybridge helm console. This contains a single 2.7kg gas bottle. There is space in the gas locker for a second spare bottle but a spare is located in the cockpit locker. Spare cylinders should be stored in the gas locker as they can be subject to corrosion if stored in a damp environment and can leak gas into the bilges.

Recommendation

(Cat 1) Re-locate the spare gas cylinder to the gas locker.

The gas supply hose in the locker is dated 11/2010. The regulator is undated but appears to be of the same age. Both have been installed by a local gas engineer W Hayward Engineering and a gas safety certificate dated 2012 was seen on board. It is usually recommended to replace flexible gas hoses after 5 years *(See explanatory note 10)*

Recommendation

(Cat 1) Replace the gas hose to the regulator in the gas locker

The gas cooker is an Eno 2 burner hob with pan clamps and flame failure devices on both burners. This is in good clean condition. There is a shut off tap underneath the cooker accessed through a hole in the joinery in the cupboard. This turned when tested. There were no other gas appliances installed.

w) Firefighting equipment

Installed in the engine space is a 6 kg automatic halon replacement gas extinguisher. This is an automatic type which is triggered by abnormal heat. Automatic powder type extinguishers should not be installed in engine rooms. Powder extinguishers can cause damage to engines if used whilst engine is running. *(See explanatory note 11)*

There are three manual fire extinguishers seen on board this vessel. Two are 2kg 13A 55B C powder extinguishers. One is installed in the master cabin forward and the other loose in a cupboard in guest cabin. Also in this cupboard is a 2kg 34B CO_2 extinguisher. All three have a gauge reading good pressure and manufacturing dates of 2011. There are no service records attached. There is no fire blanket located in the galley.

Recommendation

(Cat 1) Service or replace the fire extinguishers. Install a fire blanket in the galley area.

x) Bilge pumping

There are three electric bilge pumps installed in the hull bilges. The aft pump is a Rule and the forward two are Johnson 700 gallon per hour centrifugal pumps. These are switched both manually at the helm and automatically by a

Rule float switch located alongside. This float switches are mounted on one of the hull stiffening members and so would not operate the pump until a large quantity of water was in the bilge.

All the electric pumps powered up when tested but there was no water in the bilge to test their effectiveness. The saloon bilge compartment pump could not be seen as it was beneath installed joinery but it could be heard running. There is a Rule bilge audible bilge water alarm installed at the helm. This could not be tested.

There is also a manual bilge pump. This is a Whale bulkhead mounted diaphragm pump installed in the main bulkhead beside the flybridge ladder. The handle is secured on clips alongside. This draws from the main engine bilge and discharges through the topsides. This was operated but no water was in the bilges for it to work. The valves in manual diaphragm pumps can dry out and fail if not regularly used

y) <u>Interior fit-out</u>

The fit-out is typical of a 21st century motor yacht style. There is little use of internal mouldings and the fit out is executed in good quality veneered plywoods finished with a high gloss lacquer. The veneers are of light cherry. Fruit woods generally have a very close grain and so there is very little grain sinking. The veneers have been coated with many layers of UV curing lacquer.

The panel work is all finished with hardwood cheery lippings with no plywood core or hardwood end grain showing. This has all been well executed and is in good condition. The cupboard doors to the saloon are plywood doors with cherry edge banding. All the fittings and door furniture are in good quality polished stainless steel.

The saloon sole is GRP and covered with a tailored latex backed dark blue polyester carpet. The other part is covered with a cream Berber type wool carpet. This is well fitted and also laid to the master cabin sole and the guest cabin sole. The carpets are not bonded down and rely solely on the good fit for location

The head linings do make use of GRP mouldings for the main structure but are mostly covered with cream vinyl covered panels. There are lacquered hardwood strips inset which carry the downlighters This vinyl is also used for the hull linings. This is all in good condition and clean.

The windows all have dark blue lined curtains on plastic tracks. Upholstery to the saloon is in a grey plaid fabric with sculptured foam. Upholstery to the cabins is in a striped cotton. All appeared to be original and in fair condition but with some fraying to the high wear areas in the saloon.

The flybridge upholstery is all in white vinyl. With the possible exception of the saloon upholstery, the overall presentation of the fit out is very good for the vessels age.

z) <u>Additional equipment</u>

The following equipment was seen on board the vessel. Inclusion does not guarantee that the equipment is necessarily included in the sale inventory

Plastimo main steering compass, good condition, no bubble

Silva steering compass at lower helm, good condition, no bubble

Plastimo steering compass at flybridge helm, good condition, no bubble

Simrad NSS12 multifunction display at lower helm, powered up, working

Simrad NSS8 multifunction display to flybridge helm, powered up, working

Simrad BR24 radar scanner

Simrad AP24 autopilot, 2 x displays

Standard Horizon Eclipse DSC VHF, Powered up and working

Standard Horizon Matrix DSC VHF, Powered up and working

Advansea AIS transceiver

Black cased clock on overhead console, working

Black cased barometer on overhead console, working

Black cased thermometer on overhead console, working

Clarion FM/CD player on overhead console, working

Pair of waterproof speakers to cockpit, powered up, working

Pair of speakers to saloon, powered up, working

Remote control spotlight on arch, untested

Echomax radar reflector

Echomax active radar reflector

Unidirectional TV antenna

Floodlights to cockpit

2 x VHF antennae

FM antenna

AIS antenna

Horn on arch, untested

3 x deck scrubber and hose

3 x boathooks

Shore power cable, working

Various warps and quantity of fenders

Blue canvas cockpit cover, poor condition

Plastimo MOB recovery system

China Marine KHYR 6 man liferaft, next service date 2014

RORC offshore flare pack, expiry 2006 and 2012

Catch net

Four rod holders on cockpit door

Four auto inflating life jackets

240 volt kettle

240 volt heater

240 volt toaster

240 volt microwave

Quantity of engine oils and lubricants

Quantity of cleaning products

Cutlery and crockery

Recommendation

(Cat 1) Service the liferaft

(Cat 1) Dispose of time expired flares legally, contact local Coastguard or MRSS office for advice.

4) Summary of Recommendations

This is intended as a check list. Full details must be read and can be found in the body of the report. The relevant page numbers are indicated *(P ?)*

Category 1 Recommendations are safety related defects which should be corrected before the vessel is put into commission.

(P 12) Replace batteries or bulb to flashing light, label lifebelt name and port

(P 13) Install appropriately sized tapered soft wood bungs to each skin fitting

(P 24) Re-locate the spare gas cylinder to the gas locker

(P 24) Replace the gas hose to the regulator in the gas locker

(P 24) Service or replace the fire extinguishers. Install a fire blanket

(P 27) Service the liferaft

(P 27) Dispose of time expired flares legally, contact Coastguard or MRSS

Category 2 Recommendations relate to defects which affect the efficient operation of the vessel in normal use and should be attended to at the earliest opportunity. They do not affect the safe operation of the vessel.

(P 10) Provide a means of securing the cockpit hatches in the open position

(P 18) Replace the port propeller.

(P 18) Replace the shaft and nut anodes to the stern gear.

(P 19) Top up flybridge helm steering unit. Consider a reservoir system.

(P 19) Replace the hull, rudder blade and trim tab anodes

5) Conclusions

[redacted] is now 15 years old but there is little evidence of the expected wear and tear usual in a vessel of that age. That is with the possible exception of the saloon upholstery. The fit-out generally appears little used and has been maintained in good condition.

The hull condition assessment is good with low retained moisture and well consolidated and cured lay-up. The hull construction specification and the method of hull deck assembly is of a high quality. There is negligible damage to the topsides.

The vessels engineering is presented in a good clean condition and is a well thought out installation. Routine access is awkward having only small hatches at each end of the engine bay. Full engine bay covers are integrated into the deck moulding but they require the removal of joinery.

The engine hours are very low for a 15 year old vessel averaging at only 23 hours per year. However the operation of the engines over that time is more important than the total hours. Engines should be run at 75% of the peak output frequently to ensure efficient combustion and the prevention of build-up of carbon in the valves and burnt oil glazing on the bores.

A fast fishing boats usage tends to be a fast short passage to fishing grounds at the beginning of the day and then an evening sprint home. The low hours suggest this has been the type of use that this vessel has had over its life. This cycle of use is far more beneficial use than trolling at displacement speeds all day in speed restricted rivers.

The only significant defect is the port propeller which ought to be replaced. All the category 1 recommendations are safety upgrades and time expired components. Category 2 recommendations are mostly routine maintenance items. Once these things are attended to the vessel will be in very good, safe and seaworthy condition.

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