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MARINE SURVEYOR
Accredited Member of the Yacht Designers and Surveyors Association

REPORT OF A CONDITION SURVEY CARRIED OUT ON THE VESSEL:

‘[redacted]’

Accredited Member YDSA

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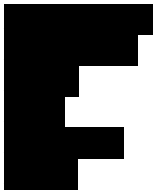
A. GENERAL NOTES

The following survey was carried out at Littlehampton Marina on 29 September 2009 on behalf of



The survey is for the client above. No liability is extended to anyone else.

Scope

The survey was carried out as a pre-purchase measure to assess the structural and material condition of the vessel. Where equipment was tested this is detailed in the text. References to condition are in relation to the vessel's age (i.e. good condition does not necessarily mean new).

Recommendations are restricted to:

(A) items which should be addressed before the vessel is used and/or which may affect insurability and;
(B) items which should be addressed in the near future order to prevent future problems.

Recommendations are printed in red for quick reference within the body of report and are also listed in the summary. They do not cover cosmetic or minor defects, although suggestions to address these may be included.

Conditions

The vessel was inspected initially ashore and then afloat at Littlehampton Marina. The weather was dry but overcast, temperature 17°c, 58% humidity and 6°c above dew point. These are satisfactory conditions for getting moisture meter readings. A 40 minute sea trial was carried out. Conditions were SW3, slight swell.

Limitations

Parts of the vessel that were covered, unexposed or inaccessible due to fixed panels, mouldings etc. were not examined so I cannot say these areas are free from defects other than where specified. No fittings or fastenings were removed for examination other than where specified. Note it is not possible to detect some latent and hidden defects without destructive testing which is not possible without the owner's consent.

SUMMARY

[redacted] is a Larson 274 single petrol engine performance motor cruiser built in 2006. There are few signs of wear or damage to her systems and structure and 101 hours on the engine counter.

The engine is a direct seawater cooled installation. This will need to be regularly serviced and flushed through with fresh water in order to keep it in good condition especially if the boat is used in sea water.

There are some minor faults which the brokers have indicated will be fixed before handover. These are listed below and once completed, she can be considered in very good overall condition.

It is planned to keep the boat in freshwater on the River Shannon. This will require the zinc anodes to be replaced with magnesium ones.

Recommendations

(A) Items which should be addressed before the vessel is used and/or which may affect insurability.

1. The VHF radio hand microphone should be replaced or its plug repaired to allow the transmit switch to work (A).
2. The float switch for the engine compartment bilge pump should be replaced (A)
3. There are no flares, adult lifejackets or lifebuoys onboard – these should always be carried (A).
4. There should be a fire blanket and fire extinguisher in the cabin (A)
5. Fit mooring ropes (only one short stern line onboard) (A)

(B) items which should be addressed in the near future order to prevent future problems or to maintain value.

1. Scrape all loose antifouling off, renewing the grey epoxy primer where needed, particularly over the two areas with hairline surface cracks and then recoat the underwater hull with a suitable freshwater antifouling (B).
2. Replace adhesive stripes where required, polish out scuffs marks and fill and polish out deep scratches to the stem and below the fuel cap. (B)
3. Remove the starboard trim tab, clean crevice corrosion from under its base and re-fit with new stainless bolts (B).
4. Remove, clean as above or replace as necessary the corroded ‘U’ bolt to the port side transom below the swim platform (B).
5. Remove scale from the propeller blades (B)
6. Replace all zinc anodes with magnesium (freshwater) ones (B)
7. Clean and grease both below waterline sea cocks (toilet flushing water and air conditioning unit intakes) so that the handles move smoothly (B)
8. Remove the anchor chain and wire brush zinc oxide corrosion off to free the links and prevent jamming on the windlass (B).

9. Fasten the horn wires (grey and yellow) in the bow compartment (using a cable tie to the underside of the cleat bolts) such that they can not hang down and be abraded or caught by the anchor cable (B).

10. Replace the cracked plastic engine blower outlet on the starboard quarter (B).

11. Clean out and sterilize the water tank (has brown mouldy water in bottom) (B)

12. Check the operation of the shower drain pump (not possible to test with near empty water tank) (B)

13. Replace missing bolt on the port side fender holder (B)

14. Replace the 'O' ring on the fuel filler cap (B)

15. Replace the engine starting and service batteries (both showed less than 12v after charging) (B)
16. Remake the seal between the brown helm consol moulding and the deck (B).

C. VESSEL DATA

Dimensions taken from broker's literature, not checked.

TYPE	:	Larson 274 Cabrio	
LENGTH OVERALL	:	8.53m	28'
BEAM	:	2.59m	8' 6"
DRAFT (drive down)	:	0.85m	2' 10"
DISPLACEMENT	:	2.727 tonnes	
BUILT	:	2006 Larson Boats, Little Falls, Minnesota USA	
REGISTRATION	:	None	
HIN	:	[redacted]	
RCD CATEGORY	:	10 persons Category C (inshore, Force 6, waves to 2m)	
FUEL CAPACITY	:	322 lts	
WATER CAPACITY	:	106 lts	
ENGINE	:	Mercruiser 5.7 TKS 250hp. V8 configuration naturally aspirated petrol engine.	

USE OF MOISTURE METERS

A 'Sovereign Quantum' capacitance type moisture meter which measures both shallow and deep seated moisture was used to check for ingress of moisture into the GRP laminate. References to moisture meter readings throughout the text are in relation to a relative scale of 0-100, not moisture content as a percentage of dry weight.

Readings of between 0-17 are considered low and no cause for concern; 18-24 medium and 25 -100 is high and at a level where the risk of moisture related defects being present (but not necessarily physically detectable) is significant.

Whilst high moisture content (i.e. greater than 25) is not generally a structural defect in itself and should be expected in older boats, if moisture has been absorbed, the likelihood of problems occurring are higher. The actual state of the laminate cannot be completely guaranteed without destructive testing followed by chemical analysis. The opinions in this survey are based on all the evidence available at the time, but without destructive testing.

D. Hull, Deck and Structure.

D1. Hull below Waterline.

The vessel has a hard chine, deep V hull with two spray rails, a flat spray deflector at the chine and a step amidships. This is trade marked as a 'Duo Delta Conic High Speed Planing Hull'. The design helps the boat rise onto the plane more quickly without 'climbing the hump' (i.e. taking a bow up attitude between displacement and planning speeds). It also reduces resistance by drawing air under the hull and reducing drag. Construction is GRP with solid bottom panels and cored sides using chopped strand mat and woven rovings reinforced with polyester resin.

The underwater area was hammer sounded and visually inspected and no visible signs of osmotic blistering or delamination found. Chines and spray rails were gently hammer sounded and no voids found.

Two areas of impact damage were found on the bottom, the first on the starboard side 1m aft of the bow between the first and second spray rails and the second to port midships between the flat keel section and first spray rail. Both have longitudinal cracks in the antifouling which, when removed and examined under magnification, extends into the gelcoat as hairline cracks (shown below). These areas were pressed hard with a hammer handle and no movement seen in the gel coat cracks. Moisture meter readings were 14 deep and 17 shallow which is low and comparable with other areas on the laminate. Taking all this into account, it is thought unlikely that these areas need attention beyond scraping old antifouling off, renewing the primer and then antifouling the entire hull (B).

There were no visible signs of impact damage or past repairs to the chines, forefoot or other underwater surfaces.

Several antifouling patches were removed for moisture readings. These were found to vary between 14-19 on deep and shallow settings which show the hull laminate has no signs of potential moisture related defects. It is understood the boat had been ashore for three months.

The hull has several layers of antifouling which has built up and is flaking off in places. It will be necessary to scrape all loose material off before recoating with a suitable freshwater antifouling such as International Waterways Plus (B).

D2. Topsides above Waterline including Rubbing Strake etc.

The topsides are GRP sandwich construction, finished in a blue and white gel coat with various vinyl stickers and logos. A knuckle is moulded into the sides.

There are no signs of any deformation as a result of damage, poor repairs or build quality. No evidence of cracking or hard spots were found on areas adjacent to bulkheads. There is a slight gel coat imperfection to midships on the port side.

Moisture meter readings on the topsides and transom range from 11-16 deep and 14-17 shallow. These are low and show no significant moisture ingress has taken place.

All areas were closely inspected for damage. A scrape mark is on the stem below the trailer eye (shown overleaf). This is too deep to polish out and will need filling if it is desired to restore cosmetic appearance.

There has been one or more impacts on the starboard side causing scuff marks, the removal of some of the vinyl tape (shown) and two deep scratches below the fuel filler. Scuffs can be polished out but, as with the stem, the scratches will require filling with matched gel coat before they can be polished out. Adhesive stripes should be replaced (B)



D3. Deck Moulding.

The deck moulding is integral with the coach roof, cockpit and bathing platform. Horizontal surfaces are foam cored GRP sandwich construction and have an effective moulded non-slip pattern. There is no side deck although a narrow ledge with a smooth gel coat surface is moulded into the topsides. This would not be a safe means of getting forward from the cockpit – the only access is by closing the cabin slide door which doubles as a step and folding down the windshield.

The deck, coachroof and cockpit sole was lightly hammer sounded and weight loaded and no signs of deflection or delamination found. No cracks or crazing found on any flat surfaces or within corner areas.

Where possible on smooth areas, the deck was tested with a moisture meter and found to be between 16-18 shallow and 14-17 deep which is satisfactory. The cockpit sole was 15-17 deep and shallow, and firm underfoot.

A gap was noted in the sealant securing the edge of the helm consol (the brown moulding shown in the photo) to the deck. This sealant needs to be removed and replaced otherwise the gap will channel water into the cabling beneath (B)

D4. Coachroof as for deck.

D5. Cockpit.

Fitted with press studs for a carpet (not seen). A hinged access hatch into the engine compartment opens and locks smoothly and is in good condition. A further bolted section aft of this allows the engine to be removed.

A dashboard moulding and up-stand for the windscreen is securely bonded to the coachroof moulding.

D6. Hull/Deck Join.

The deck overlaps the hull and is bonded with semi flexible sealant. The joint is further secured by self tapping screws which hold a plastic and stainless steel rubbing strake over the external join.

Where accessible in the anchor and engine compartments this joint was seen to be secure with no signs of movement.

D7. Bulkheads and Structural Stiffening including Internal Mouldings.

The vessel has an internal moulding which provides stiffness to the hull together with the longitudinal chine rails and internal bulkheads. The space between the hull and internal moulding is filled with rigid foam. Further stiffness is provided by 20mm plywood transverse bulkheads between the engine compartment and the sleeping area which is over the fuel tank. A further bulkhead forward separates the anchor locker from the cabin. Where seen these bulkheads are well bonded into the hull moulding and flow coated with resin or painted. Cut outs for pipe and cable access are coated.

The cabin was checked whilst the boat was travelling at speed and no signs of looseness or movement noted to any of the panels or bulkheads.

E. **Steering, Stern Gear, and Skin Fittings etc.**

E1. Outdrive

The vessel has a Mercury outdrive which has stainless steel contra-rotating propellers. These are secure. There are some minor dents on the leading edge of the forward propeller which are of no significance.

There is a buildup of scale on the propeller which will reduce efficiency and should be removed (B).

The outdrive unit is securely mounted. Tilt and steering controls were tested and found to work satisfactorily. The rubber bellows, where visible, are securely clipped and in good condition. The bonding wires are stainless steel and securely attached. The hydraulic pipes and connections are secure and show no signs of damage. The black enamel coating is in good condition with no signs of wear or chipping. The base of the skeg is in good condition and shows no signs of having hit objects at speed.

Steering is hydraulic, controlled from a wooden and stainless wheel which has three turns lock to lock. No signs of hydraulic fluid leakage were seen when held at full lock.

There are twin trim tabs which were tested ashore and during the sea trial and seen working. There are some signs of crevice corrosion beneath the starboard trim tab and around the heads of its six stainless steel securing bolts (shown).

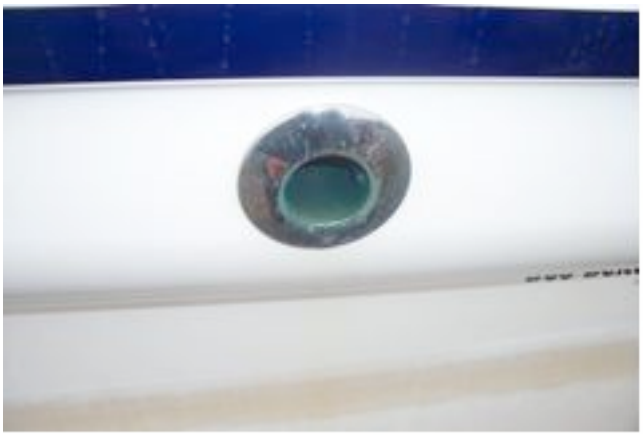
It is recommended this trim tab is removed, corrosion under the base cleaned, resealed and fitted with new bolts (B).

E3. Cathodic Protection.

The outdrive has anodes on the pistons of the tilt rams, on the propeller hub nut and at the front of the outdrive unit. All of these are about 50% corroded and should be replaced. As the boat is going to be used in fresh water on the River Shannon, they should be replaced with magnesium anodes (B).

E4. Skin Fittings and other through Hull Apertures.

There are two through hull skin fittings below the waterline; one immediately forward of the engine supplies flushing water to the sea toilet and the other, accessed beneath the companionway step, provides water to the air conditioning unit.



Both fittings were hammer sounded inside and out and found to be securely fastened. The hoses are double clipped, secure and in good condition.

The valve handles on both are extremely stiff from lack of maintenance and should be disassembled, cleaned and greased (B).

The air-conditioning water passes through a glass bowl filter. This is secure and in good condition.

Above the waterline skin fittings appear to be chromed brass. All are secure but all show minor signs of cosmetic corrosion (toilet outlet shown as example).

F. **Deck structures.**

F1. Main Companionway and other Accesses to Accommodation.

The main companionway is a sliding door, moulded to form step access on to the foredeck when closed. This slide smoothly and locks securely.

The fore hatch is aluminium with opaque acrylic glazing. This opens smoothly and locks securely. The seals are in good condition. There are no signs of leakage to the surrounding cabin lining.

F2. Ports Windows etc.

There is wrap around laminated glass windshield in five sections, mounted on an aluminium frame with rubber seals. This is in good condition and secure. A central section hinges to allow access on to the foredeck.

The windshield has a single wiper which is in working order.

There are paired opening oval port lights set into the top sides, port and starboard. The screw securing nuts on aftermost starboard side one are stiff and should be greased. All others open and close smoothly and their seals are in good condition.

There are some minor signs of corrosion outside at the base of the forward light on the port side (shown) and it would be advisable to ensure the joint is thoroughly coated when the boat is wax polished to prevent damage to the seals.

F3. Pulpit, Stanchions.

The boat has a wrap around stainless steel guard rail welded from 22mm tubing. The rail is securely attached and in good condition with no signs of damage beyond some minor scratches on the starboard side.

Fender carriers are bolted to this rail. The bolt on the after most one on the port side is missing and should be replaced (B).

F4. Ground Tackle and Mooring Arrangements.

A 'Maxwell' electric windlass was tested and found in working order. This hauls a 7.5kg stainless steel 'Bruce' type anchor which is of adequate size for the boat. It self stows on a stem head roller which is secure. The anchor has a stainless swivel and about 20m of 7mm galvanised chain spliced to about 20m of 12mm 3 strand nylon, the end of which is secure. The rope to chain splice is well made. The chain appears to have rarely been used and its galvanized coating has oxidized causing some of the links to become seized. These may jam in the windlass and so should be laid out and wire brushed clean (B). A 150mm circular waterproof hatch gives access to the chain locker. The end of the rope is securely fastened to an eye plate within the locker.

There are two 120mm stainless cleats mounted at the bow, two amidships and two at the stern. These are of adequate strength.

There are insufficient mooring lines, a 10m length of 20mm nylon rope being all that could be found. There should be at least two more 10m lengths to make up bow and stern lines which can also be used as springs.

A towing or trailer U bolt at the stem was weight loaded and found secure.

There are two similar bolts at the stern beneath the bathing platform. The one to port (shown) has crevice corrosion at its base and should be removed and cleaned or replaced (B).

The transom waterskier tow point was gently tested with a lever and found secure.

F5. Other Deck Gear and Fittings.

Vinyl cushioned seating is mounted on stowage boxes in the cockpit. These are all well made, in good condition and securely fastened to the deck.

Various handrails around the cockpit were tested and all found to be secure.

A gantry made of pressed aluminium supports the GPS and TV aerials. This is well made and secure. It was checked for drainage openings. None could be found by opening the overhead panel above the sleeping compartment. There is a red cable which can be used to pull through replacement wires if needed. This can also be accessed through an inspection panel at the top of the gantry.

A blue Dacron canopy was seen but not set. This appears to be in good condition with no loose stitching and zips working smoothly. A blue Dacron bimini cover is attached to stainless steel rails over the cockpit. This appears in good condition although the rails are not particularly strongly mounted.

F6. Davits and Boarding Ladders.

A folding boarding ladder is mounted on the stern platform. It was weight loaded with the boat out of the water and found secure.

G. Rig n/a.

H. **Safety.**

H1. Navigation Lights and sound signals

A combined port and starboard navigation light is mounted at the stem and an all round white light on the gantry. Both were tested and seen in working order.

A searchlight is mounted on the pulpit and controlled from the helm. This was tested and seen working.

The horn is mounted within the anchor chain stowage with a grill through the foredeck. It was tested and heard working.

The wires for this hang down within the locker where they could be abraded or caught by the anchor chain. They should be fastened back to the underside of the bolts securing the cleats with a cable tie (B).

H2. Bilge Pumping Arrangements.

There are two bilge pumps operated by float switches, one in the engine compartment and one beneath the shower drain. The float switch for the one in the engine compartment does not work and should be replaced (B). The pump can be directly operated by a switch at the helm. It was not possible to access the pump beneath the shower drain although it could be heard working.

H3. Firefighting Equipment.

A 5kg automatic HFC 227ea (a halon gas substitute that cools and smothers flames) fire extinguisher is mounted in the engine compartment. It was manufactured in February 2005. Although no expiry date could be seen (it was not possible to remove it from its mounting), it is likely that it will need service or replacement by 2010.

There are no fire extinguishers or a fire blanket in the cabin. These should be carried, especially given a fixed spirit stove is mounted in the cooking area and could easily spill burning fluid onto the carpet if the boat moves (A).

H4. Lifesaving and Emergency Equipment.

No flares, adult life jackets or lifebuoys could be seen on board. These must be carried (A). There were two children's lifejackets in the stowage space beneath the forward settee.

The RNLI operate 'Sea Check', a free boat safety inspection service which can advise on appropriate safety equipment. See
http://www.rnli.org.uk/what_we_do/sea_and_beach_safety/sea_safety/sea_check

I. <u>Engine.</u>

I1. Installation.

The engine is a Mercruiser 5.7 TKS 250hp V8 petrol inboard. Although 102 hours is shown on the dashboard hour counter, it believed that the engine has been replaced. From external appearance, it has had very little use and is in virtually new condition.

The installation is well laid out with good access from the lifting cockpit floor hatch. A screw down panel aft of this can also be removed.

The engine is direct seawater cooled – there is no heat exchanger for a secondary coolant. It can be flushed through with a freshwater hose attachment to the out drive and this should be done at regular intervals if the boat is used in saltwater.

The underside of the sump was inspected with a camera held at arm's length and no signs of corrosion or oil leakage found.

The engine space blowers are manually controlled from the helm position. One of the plastic vents on the starboard quarter is cracked and should be replaced (B). Some more recent models have stainless steel discs as vents, drilled with a ventilation hole pattern. This would be a more robust fitting.

I2. Running and service checks

No service records were available. An invoice for replacing the ignition leads, rotor, distributor and coil was seen, dated 21/7/8 for £449. It would be prudent to service the engine when the boat is laid up for this winter. In my opinion the engine has probably run for less than 50 hours so far.

The oil was checked and seen to be up to level and clean.

The engine was started ashore and then afloat for a 40 minute sea trial with three people aboard. It started smoothly on the first attempt and warmed up with no undue exhaust smoking or vibration.

The engine accelerated smoothly and was run at 4000 rpm for most of the trial and briefly at its 4800rpm maximum. With adjustments to the trim tabs, the boat was measured by an independent GPS as reaching 32 knots (38mph). This is close to the maximum achievable speed noted in the designers literature and the engine specifications. Cleaning the propeller and only having two people on board would probably add another knot or so.

The stepped hull is effective in preventing a bow up/ high drag attitude as the boat comes onto the plane. The full lock turning circle at speed is about 75m.

The engine was checked for any signs of fuel, oil, water or exhaust gas leaks before during and after the trial and none found.

I3. Controls and indicators

The single lever control is stiff and needs lubricating (B). The linkages to the carburetor and gearshift operate smoothly and the cables appear in good condition.

The outdrive tilt mechanism works smoothly

The following helm indicators were checked.
Speed in miles per hour slightly under reading compared to the GPS.
Oil pressure steady at about 50 psi
Temperature steady 180ºF
RPM works smoothly
Trim indicator and fuel gauges seen working
Voltmeter rose to 13v on starting

A kill cord is attached to the base of the single lever control. This is in working order.

I4. Exhaust system

Within outdrive. No leaks seen to manifold and associated pipework.

I5. Fuel system

A single, 320lt, fuel tank is installed beneath the sleeping compartment and separated from the engine by a solid bulkhead. This could not be fully inspected owing to a fixed paneling. The supply hose is flexible rubber, in good condition and marked ISO 7840. The filler and breather hoses are secure and in good condition.

The fuel supply cap has an 'O' ring as a gasket. This is perished and should be replaced (B)

J. Accommodation and on Board Systems.

J1. Accommodation General.

The accommodation is laid out with a double berth in a compartment beneath the cockpit, a settee forward, a toilet and shower compartment to starboard and galley is to port. Most of the cabin is lined with white leather effect vinyl which is in good condition. The upholstery is also in good condition. A table in the cabin is secured by a single post in a socket mounted in the cabin sole.

A flat screen TV is securely mounted forward and is in working order. There is a carbon monoxide detector in the cabin which worked after a loose connection was fixed.

The spaces beneath the saloon settees are lined with carpet. These were found to be dry. Note on this type of boat, any leakage from the window seals may cause moisture to collect in this area.

There are stainless steel drink holder inserts around the cockpit sink. These are loose and should be secured with a drop of sealant under their rims.

J2. Gas Installation. None.

J3. Fresh Water Tanks and Delivery.

A 100lt white nylon water tank is secured in the port side of the engine compartment. This was virtually empty at the time of the survey and what little water that was in the bottom was foul smelling. The tank and associated pipe work will need to be flushed through several times and then filled with sterilization fluid or a solution of 1% solution bleach, left to stand for several hours and then pumped out and further rinsed through (B).

An engine heated hot water calorifier was tested after the sea trial and found to work effectively.

Water supply outlets to the transom shower, cockpit sink, galley sink, heads sink and head shower were all tested and found to work satisfactorily. It was not possible to test the shower drain pump with a limited amount of water in the tanks.

J4. Heads.

There is a manual sea toilet which was tested and found in working order. This flushes into a holding tank which is securely mounted in the starboard side of the engine compartment. A macerator pump was tested and heard working.

An extractor fan in the heads compartment was tested and seen working

J5. Electrical Installation.

The vessel has a 240v and 12v system. The 240v system is shore supplied via a galvanic isolator to a control panel to port of the companionway which supplies the cooker hot plate, microwave and battery charger. The panels also control supply to the various 12v circuits. All switches and indicator lights were tested and found in working order.

A three pole battery isolator switch is mounted in a separate compartment aft in the cockpit and is in working order.

The 12v system is supplied by two batteries; an 85AH engine starting battery and 70AH services battery. Both were found to be discharged with 11.4v and 11.5v respectively, this after several hours charging. The acid level in the forward (70AH) battery was low. The engine starting battery was replaced before the sea trial. It is recommended the service battery also be replaced (B).

A 20amp shore power battery charger was seen working order. The engine mounted alternator works effectively as seen by the rise in voltage when the engine was running.

J6. Electronic and Navigation Equipment.

A Garmin 550S combined GPS, chart plotter, depth sounder and log display unit is mounted below the helm. All of its functions were seen to work during the sea trial.

A separate depth sounder is mounted to starboard. This was also seen to work. It appears the Garmin depth sounder shows depth from the surface whereas the separate depth sounder indicates depths some 3' less which may suggest it has been adjusted to show the depth beneath the lowered outdrive. It was not possible to check the discrepancy in the time available, but it would be advisable when the boat is afloat to use sounding line or pole and make sure both are reading correctly.

A magnetic compass is mounted forward of the helm. This has a clear plastic globe, has no bubbles and swings freely, returning to its original direction when deflected.

A Simrad VHF was tested and heard working on receive but could not transmit. This may be due to a faulty connection on the microphone switch which should be checked and replaced as needed (A).

A CD player has speakers in the cabin and cockpit. All work.

All cabin lights work.

J7. Heating and refrigeration.

A forced air system supplies heated air by the 240v system and could not be checked. The cooling system is 12v, using a seawater supplied heat exchanger. This was tested and found working.

A 240v hot plate in the galley is in working order. The spirit stove could not be tested.

Refrigerators in the cockpit and the cabin were both tested and found to work.

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AMYDSA

October 2009.