

Insurance Survey

Report No: [REDACTED]

Name of Vessel: [REDACTED]



Survey Commissioned by:

[REDACTED] Southend-on-Sea [REDACTED]

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[REDACTED]

Macwester 26

Built	1966
Designer	CSJ Roy
Builder	Macwester Marine Co. Ltd
Hull No	n/a
[REDACTED]	[REDACTED]
Length Overall	26ft 0ins
Beam	9ft 2ins
Draft	2ft 9ins
Displacement	6,720lbs
Ballast	2,265lbs
Rig	Sloop
Sail No.	[REDACTED]
Engine	Volvo Penta

All particulars were compiled according to available information and it has not been confirmed unless stated.

## SUMMARY

A structural and general condition survey was undertaken for [REDACTED] while she lay ashore at Suttons Boat Yard, Great Wakering, Essex, on 25th April 2012.

Though a GRP vessel of some vintage (46 years), [REDACTED] has been well maintained by her current owner who has owned the boat for 22 years. The survey found no major structural defects affecting the hull, deck or superstructure. There has been recent replacement of the forestay, backstay and cap shrouds and the mast, spars and rigging was found to be serviceable. Most systems were serviceable and in good condition. However, there were a number of defects that needed addressing including replacement of flexible fuel hoses, attention to raw water hoses for the engine and provision of a gooseneck in the heads intake hose.

### List of Recommendations

1. *Draw stainless steel bolts holding stainless steel shoe to skeg, inspect bolts and make good fastening of shoe to skeg. Complete before vessel is relaunched.*
2. *Establish resistance free electrical continuity (less than 1 ohm) between hull anode and stern gear by cleaning contacts and ensuring connection across shaft couple. Complete before vessel is relaunched.*
3. *Replace sacrificial anode protecting shoe on skeg before vessel is relaunched.*
4. *Service seacocks serving cockpit drains before the vessel is relaunched.*
5. *Replace rusty shackles; before vessel is used.*
6. *Replace securing nut for mast slide on boom; complete before vessel is used.*
7. *Check all locking nuts are tight on rigging screws before the vessel is used under sail.*
8. *Unfasten overtightened hose clamps and inspect raw water hoses on engine. Where hose is damaged it should be replaced or shortened so the damaged section is removed. Complete before vessel is relaunched.*
9. *Replace flexible fuel hoses with fuel hose specified to ISO 7840 or copper pipe. Complete before the vessel is used.*
10. *Exchanged glass bowl on primary fuel filter for a metal bowl or move primary filler out of the engine compartment closer to the fuel tank. Complete before vessel is used.*
11. *Create a vented gooseneck in the hose between the heads intake and the sea toilet pump; complete before the vessel is used.*
12. *Secure hose to discharge side of sea toilet pump with hose clamp; complete before the vessel is used.*
13. *Ensure batteries are securely fastened in battery box, before vessel is used.*
14. *Provide covers for battery terminals before vessel is used.*

### List of Advice

1. *Secure or remove backing pad on deckhead in forepeak.*
2. *Provide means of preventing anchor chain jumping from stemhead roller.*

3. *Mouse shackles securing anchor.*
4. *Use double locking nut to secure bolt in tabernacle that holds mast.*
5. *Remove close fitting plastic protection from shrouds.*
6. *Install residual current device (RCD) to 240v mains electric system.*
7. *Install fixed vent in coachroof above galley.*

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### Appendix A - Methods

## 1. About the Survey and this Report

This survey was carried out by Hugh Ellacott at the request of [REDACTED] who is the owner of [REDACTED]

### Scope of Survey

This is an insurance survey and its purpose is to establish the structural and general condition of the vessel. Where items of equipment have been tested this is stated in the text.

### Limitations

- The hull could not be inspected where the vessel lay on shores.
- Where access was restricted by fixed panels, linings etc. it was not possible to carry out an examination and I cannot say those areas are free from defects; in addition, it was not possible open the locker under the sink to inspect inside.
- In some cases it was not possible to detect latent and hidden defects without destructive testing.
- A general inspection of the engine and its installation was be made, but this was a visual inspection only without running engine. It should be appreciated that some components may appear serviceable but may be defective when the engine is run.
- This report has been prepared for the use of the commissioning client and no liability is extended to others who may read or rely on it.

### Conditions of Survey

The survey was undertaken for [REDACTED] while she lay ashore at Suttons Boat Yard, Great Wakering, Essex, on 25th April 2012. The vessel had been ashore approximately five months at the time of the survey.

The weather on the morning of the survey was awful with a strong wind and driving rain. However, the rain cleared by early afternoon with only occasional spots of rain in the wind and long periods without rain at all. The day remained overcast.

### Recommendations

Recommendations in this report fall into two categories, which are explained below.

#### *Recommendations*

Recommendations are limited to those defects which should be rectified before the vessel is used (or within a given time span if specified) and may affect the ability to obtain insurance for the vessel.

#### *Advice*

Advice is given concerning defects that do not restrict the use of the vessel or her safe use. These defects may be cosmetic or concern actions that will prevent more serious defects developing in the future. Although these defects may be considered minor, do not assume repair costs are low.

## 2. General Description of the Vessel

[REDACTED] is an early Macwester 26, which are solidly built sloops with bilge keels and a long skeg supporting the rudder. She has four berths and an inboard engine under the cockpit aft of the accommodation.

## 3. Hull and Bilge Keels below Waterline

- ✓ Underbody hammer sounded no defects identified.
- ✓ Underbody was covered by numerous coatings; seven were discernible.

Visual inspection identified the following defects.

- ❖ *Minor damage noted to forward edge of both bilge keels at root. Further investigation indicated structural integrity not affected and no further action required.*
- ❖ *Filled chips in gelcoat on port bow. There was newly painted section where a minor repair had recently been completed. Hammer sounding indicated repair to be sound. No further action required.*
- ❖ *Widespread crazing of gelcoat present where coupons of coating were removed for moisture measurement. The condition of the gelcoat is not considered to affect the structural integrity of the hull. No action required.*

- ✓ Hull fair and no deflection identified.
- ✓ Underside of bilge keels and rudder skeg inspected with mirror and no defects identified.
- ✓ No access to bilge keel attachment inboard.
- ✓ Nineteen randomly selected locations had moisture measurements as shown in the table below (See Appendix A for methods). No evidence of moisture-related defects, e.g. osmotic blisters, were noted during the visual inspection.

Mode	Range Below Waterline	Range Above Waterline
Shallow Mode	19 – 47	17 – 21
Deep Mode	12 – 62	9 – 20

## 4. Topsides Above Waterline

- ✓ Topsides were finished in white gloss that appeared to have been applied not more than one month prior to survey. Presence of the gloss paint prevented visual examination of the underlying gelcoat.
- ✓ Topsides hammer sounded, no defects identified.
- ✓ Timber rubbing strake finished in brown low gloss coating. No defects identified.

## 5. Deck

- ✓ Decks appeared to be constructed from solid laminate rather than sandwich construction.
- ✓ Treaded areas of decks painted sky blue and this coating was failing in some locations.
- ✓ Hammer sounding did not identify any defects.
- ✓ Timber toerail finished in brown low gloss coating. No defects identified.
- ✓ No moisture tests performed because of water lying on deck at time of survey.
- ✓ Two strong but poorly finished repairs were noted on the foredeck where original pulpit was fastened.

- ❖ *In forepeak deckhead a loose backing pad was noted. Structure above was not identified and it could have been redundant. It should be investigated and either tightened or removed.*

## 6. Coachroof

- ✓ Coachroof hammer sounded and no defects detected.
- ✓ Hand rails to port and starboard aggressively tested and found to be secure.
- ✓ Coach roof sighted by way of mast tabernacle; no deflection visible.
- ✓ Treaded areas of coachroof painted sky blue.

## 7. Cockpit

- ✓ Cockpit, white gelcoat with timber sole grating and slats on bench seats.
- ✓ Gelcoat in good condition for age of vessel.
- ✓ Timber grating, slats and trim finished in brown non gloss coating.
- ✓ Two drains to aft of cockpit.

## 8. Hull to Deck Join

- ✓ Hull to deck join was seen in chain locker. The join was of mechanical type fastened with bolts that had been overlaminated with GRP at construction. Consequently condition of bolts could not be ascertained.

## 9. Bulkheads and Structural Stiffening including Internal Mouldings

- ✓ All accessible structural bulkheads hammer sounded and no defects identified.
- ✓ Engine mounted on two strong fore and aft girders constructed from GRP. Hammer tested where access possible – no defects detected.
- ❖ *Structural timber bulkhead aft of forepeak had high moisture measurements in places. Hammer sounding and spike testing indicated bulkhead was structurally sound. No action required.*

## 10. Rudder and Steering

- ✓ Lower rudder bearing mounted on stainless steel shoe bolted to aft edge of long skeg.
- ❖ **Shoe is bolted to skeg with three stainless steel bolts. Bolts and fastening nuts were hammer tested and found to be slightly loose. Bolts should be drawn inspected and shoe then securely refastened – complete before vessel is used.**
- ✓ Rudder was aggressively tested and found to be secure.
- ✓ Rudder turned freely from hard starboard to hard port.
- ✓ Underside of rudder inspected with mirror and no defects were identified.
- ❖ *Moisture measurements taken of the rudder were in similar range as hull but one measurement indicated moisture ingress (shallow 44, deep 80). No action necessary, but condition of rudder should be monitored prior to launch each spring.*
- ✓ Rudderstock tube was visual examined and hammer tested – no defects identified.
- ✓ Rudder operated with a tiller that was not shipped at the time of survey.



## 11. Stern Gear

- ✓ Propeller shafts non magnetic and therefore assumed to be of marine grade stainless steel.
- ✓ Right handed, three-bladed propeller of yellow metal assumed to be manganese bronze.
- ✓ Propeller scraped and slight mottling of metal surface noted, though propeller was serviceable (see Section 12.)
- ✓ Propeller nut secured with split pin.
- ✓ No visual of corrosion seen between shaft and propeller.
- ✓ No significant play of shaft in outboard bearing.
- ✓ Propeller turned freely through 360 degrees.
- ✓ Inboard gland of lip seal type.
- ✓ Seal fastened with double hose clamps, all four had no visible evidence of corrosion.
- ✓ Rubber of gaiter was malleable to touch and easily retracted indicating it was in good condition.

## 12. Cathodic Protection

- ✓ Anode mounted on port side of hull near stern gear. It was approximately 33% wasted and not in need of replacement.
- ✓ Fastenings hammer tested and found to be secure.
- ❖ **Electrical continuity confirmed between hull anode and propeller, but resistance in circuit was too high. Establish resistance free electrical continuity (less than 1 ohm) between hull anode and stern gear by cleaning contacts and ensuring connection across shaft couple.**
- ✓ Anode protecting rudder was 40% - 50% wasted and was not in need of replacement.
- ❖ **Anode protecting shoe on skeg was 80% - 90% wasted and required replacing before relaunch.**

## 13. Skin Fittings and Other Through Hull Apertures

No skin fittings or their valves were dismantled as part of this survey. Instead the following tests were carried out to all skin fittings, as appropriate.

- Visual examination inside and outside the vessel.
  - All valves were opened and closed through the full extend.
  - All fixing bolts were hammer tested where accessible.
  - The bodies of all valves and seacocks were tested with a hammer.
  - All metal fittings were aggressively tested for security of attachment to the hull (plastic fittings, e.g. log housings, were also tested but with less vigour)
  - Hoses were tested for security and hose clips were visually examined as far as access would allow.
- 
- ✓ All skin fittings on exterior of hull scraped and no evidence of corrosion seen.
  - ✓ All seacocks found to open to open and close freely excepting cockpit drains described below.
  - ❖ **Seacocks (gate valves) for cockpit drains were stiff; the port drain opened and closed with difficulty but it was not possible to operate the starboard seacock. Gate valves should be serviced prior to relaunch of the vessel.**

- ✓ Engine intake was a traditional seacock; seacocks of this design are almost invariably made of bronze. Seacock found to be secure and free from visual corrosion.
- ❖ *Heads intake, heads outlet, heads and galley sink outlets were ball valves with nickel plated bodies. It is highly probably these valves were constructed of brass and the heads outlet was marked as brass. The ISO standard relating to metallic valves and skin fittings below the waterline, ISO 9093-1, only requires the valves and associated fittings to have a service life of five years in terms of corrosion resistance. The valves and fittings here passed all the tests described above but consideration should be given to replacing them with DZR (dezincification resistant) brass or bronze, both of which have a much longer potential life.*
- ✓ Depth sounder transducer fastenings hammer tested and found secure.

#### **14. Cabin Access, Hatches, Windows and Ports**

- ✓ Forward hatch constructed of GRP - secure.
- ✓ Main hatch of timber construction - secure.
- ✓ Windows in saloon and forepeak were Perspex and fastened to the coachroof with stainless steel screws. Windows tested by hand from interior and found to be secure.
- ✓ Opening ports in galley and heads; tested by hand and found to be secure.
- ✓ No evidence leaks were noted around any windows or ports despite the rain.
- ✓ Ladder in companionway found to be secure.
- ✓ Washboards made of timber and in serviceable condition.

#### **15. Stanchions**

- ✓ Pulpit tested and found to be secure.
- ✓ Three stanchions to port and starboard attached to deck by with two stainless steel screws. Stanchions were found to be secure though they would be sturdier if their bases had three fastenings.
- ✓ Guard wires were not in place at the time of the survey.

#### **16. Ground Tackle and Mooring Arrangements**

- ✓ Stemhead roller and fastenings hammer tested and found to be secure.
- ✓ Manual operated winch mounted on wooden block on foredeck. Bolts hammer tested and found to be secure. Block spike tested and in serviceable condition.
- ✓ Samson post on foredeck secure.
- ✓ Alloy fairleads and cleats tested with wrecking bar and block and all found to be secure.
- ✓ Plastic cleats by way of cockpit secure.
- ✓ Of two original wooden cleats, starboard cleat has lost arm and is unusable. The other should be used with caution and for light loads only.
- ❖ *There was no means of preventing the anchor chain jumping out of the stemhead roller. There were holes in fitting and provision of bolt or pin would achieve requirement.*
- ✓ There was a stockless anchor in chain locker.
- ✓ A second CQR anchor in forepeak
- ✓ Anchor chains was not inspected and it was not established whether the chain in locker was securely clenched to strong point in chain locker.
- ✓ Both anchors were adequate for the boats size.

- ❖ Shackles securing chain to CQR anchor were rusty and should be replaced before the boat is used.
- ❖ *Shackles on anchor/chains were not moused; cable ties are a quick and effective way of mousing shackles.*

## 17. Rigging Attachment Points

- ✓ Forestay securely fastened to stemhead fitting, no distortion.
- ✓ Babystay fastened to foredeck by U-bolt, no distortion by way of deck.
- ✓ External chain plates for shrouds attached to topsides; no distortion to topsides; heads of fastenings all hammer tested and found to be secure.
- ✓ Backstay attached to external chain plate fastened to transom; no distortion; heads of fastenings all hammer tested and found to be secure.

## 18. Spars

- ✓ Mast surveyed while stepped so inspection only possible from deck level to head height.
- ✓ Mast stepped on mild steel tabernacle; fastenings hammer tested and found to be secure.
- ❖ *Stainless steel bolt secured mast in tabernacle. It was fastened with single nut; it is advisable to use two locking nuts.*
- ✓ Mast seen to be in column.
- ✓ Anodised mast and boom in serviceable condition.
- ❖ **Wing nut securing slide on boom to mast track was rusty. Replace securing nut for mast slide on boom. Complete before the vessel is used.**
- ✓ Spinnaker boom of timber; serviceable condition.

## 19. Rigging and Sails

- ✓ Shrouds and stays of 19x1 stainless steel wire.
- ✓ Cap shrouds swigged; no unacceptable movement of spreaders noted.
- ✓ Forward and aft intermediate shrouds and babystay terminated with traditional bronze rigging screws and talurit terminals with thimbles.
- ✓ Forestay, cap shrouds and backstay recently replaced and terminals different to original terminals; consist of swaged terminals and stainless steel bottlescrews.
- ✓ Articulation of stays and shrouds satisfactory.
- ❖ **Locking nut for rigging screw on starboard aft intermediate shroud was loose and required tightening. Check all rigging screws before vessel is used under sail.**
- ❖ *Close fitting plastic protection on some shrouds should be removed as it may, in some conditions, promote crevice corrosion. Loose fitting plastic protectors are acceptable.*
- ✓ Running rigging in serviceable condition.
- ✓ Winches aggressively tested well secured to attachment points.
- ✓ Sails onboard but not inspected.

## 20. Navigation Lights and Aids

- ✓ Steaming, port, starboard, stern navigation lights tested and operational.
- ✓ Horn was a Plastimo fog horn, blown by mouth.
- ✓ Radar reflector onboard.

- ✓ Folding ball and cone onboard.
- ✓ Plastimo Contest 130 compass on bulkhead in cockpit.

## 21. Bilge Pumping Arrangements

- ✓ Hand operated bilge pump in locker port side of cockpit; its pick up was deep in skeg and not seen. The lever was attached to pump with a lanyard. When operated, the pump moved freely and suction was heard, though there was not enough water in skeg to see pump in operation.

## 22. Firefighting and Emergency Equipment

- ✓ 4kg dry powder fire extinguisher in saloon adjacent to companionway, pressure gauge showed in green sector.
- ✓ Fire blanket in galley.
- ✓ Dry powder automatic fire extinguisher in engine compartment, pressure gauge showed in green sector. Markings on the extinguisher indicated it was last tested in 2010 and the next test is scheduled for 2015.
- ✓ Fire fighting capacity is sufficient for the vessel.
- ✓ The following in date flares were onboard: 1 no. orange hand smoke, 1 no. white hand flare, 2 no. red hand flare.
- ❖ *There were also out of date flares on board including one red parachute flare. The RYA recommends four parachute flares when no VHF DSC radio is carried; [REDACTED] does carry a radio.*
- ✓ Jackstays were not fitted at the time of the survey. Lifelines were present onboard but were not inspected.
- ✓ There was an assortment of lifejackets and buoyancy aids on board.
- ✓ Horseshoe lifebuoy mounted to pushpit; seconded lifebuoy and dan buoy in accommodation.
- ✓ As part of inventory [REDACTED] has rubber dingy and outboard that were not onboard at time of survey.

## 23. Engine and Installation

- ✓ Engine was a Volvo Penta. No engine serial number identified.
- ✓ The engine was not started.
- ✓ Oil checked under filler caps for dirt and emulsion; none found.
- ✓ Oil dipstick checked to reveal correct oil level; no untoward odour, colour or emulsion seen in oil.
- ✓ Engine bolts hammer tested and found to be secure.
- ✓ Rubber in flexible mounts appeared to be in good condition.
- ✓ Hoses were securely clipped and no defects identified.
- ✓ Lever controls for throttle and gear selection found to operate smoothly and actuate arms on injection pumps. Operation of gear change not seen.
- ✓ Engine stops operate smoothly, but not tested on running engines.
- ✓ Syphon breaker fitted to sea water intake.
- ❖ **Rubber hoses for sea water cooling were overtightened and cutting into hose in at least one location. Hose clamps should be loosened off, the condition of the hose**

checked and refastened. Where hose is damaged it should be replaced or shortened so the damaged section is removed. Complete before vessel is relaunched.

- ✓ Exhaust discharged through transom via two muffler boxes; box at transom is designed to prevent ingress of water through discharge pipe.

## 24. Fuel System

- ✓ Fuel tank located in starboard quarter; constructed of GRP and securely retained.
- ✓ Deck filler was labelled "FUEL".
- ✓ Breather with flame arrestor located adjacent to filler point and at same level.
- ✓ Dedicated dip stick adjacent to filler point.
- ✓ Fuel stop cock located adjacent to fuel tank.
- ✓ Some section of fuel lines were of copper pipe that were well supported.
- ❖ Section of both fuel feed line and leak off return were of unmarked (as far as could be seen) flexible hose. Hose on feed line exhibited signs of deterioration. Replace flexible fuel hoses with fuel hose specified to ISO 7840 or copper pipe. Complete before the vessel is used.
- ❖ Primary fuel filter has plastic sighting bowl and is located in engine compartment. The glass bowl should be exchanged for a metal bowl or the primary filter could be moved out of the engine compartment closer to the fuel tank. Complete before vessel is used.

## 25. Gas Installation

The gas system was examined with the aim of finding visually identifiable deficiencies in the gas system. There may be other defects in the system that cannot be found by visual examination. The visual examination does not constitute any kind of gas safety certificate, which is only obtainable in the UK after comprehensive pressure testing and assessment by a qualified person registered by Gas Safe ([www.gassaferegister.co.uk](http://www.gassaferegister.co.uk)).

- ✓ Gas locker is located in port quarter, sealed and drains at lowest point.
- ✓ Gas hose had been replaced immediately prior to survey and was high pressure LPG hose specified to 3212/2.
- ✓ Two 4.5 kg butane bottles in locker that were adequately retained.
- ✓ Regulator mounted separately from gas bottle.
- ✓ Isolation valve in low pressure side of gas run, close to regulator.
- ✓ Bubble tester fitted in gas locker; tested for 30 seconds and no gas leaks detected.
- ✓ Gas delivered to single appliance by well supported copper pipe.
- ✓ Flavel Vanessa in galley with two rings, grill and oven. Unit secured in place and attached to gas supply with solid copper pipe.
- ✓ Isolation valve fitted for cooker.
- ✓ Flame picture for rings was adequate.
- ✓ Pilot mini gas alarm fitted in bilge; test button gave positive response.

## 26. Fresh Water and Sanitation

- ✓ Water tank was stored in tanks located under bench seats in saloon fuel tanks
- ✓ Jabsco sea toilet located in heads that is operated by hand pump.
- ❖ **There was no gooseneck between the heads intake and the sea toilet pump. The hose should be extended to form a gooseneck with vent above the height of the waterline at the greatest angle of heel. Complete before the vessel is used.**
- ✓ The discharge hose appeared to pass above the waterline level though there was no vent.
- ❖ **Hose clamp missing from discharge side of pump. Fit clamp before vessel is used.**
- ✓ Black water discharged to sea or to a holding tank. The holding tank (located under forepeak berths) can be discharged to sea or to via a suction line in the deck.

## 27. Electrical Installation

### 230/240 volt AC

- ✓ Very simple 240v system consisting of 16amp weather proof bulkhead-mounted plug adjacent to companionway in saloon connected to 13amp domestic double socket.
- ❖ *There was no residual current device (RCD) fitted between shoreline plug and domestic sockets. It is advisable to fit an RCD.*

### 12/24 volt DC

- ✓ Battery box located beneath cockpit sole to port.
- ✓ Battery compartment had space for two batteries; only one battery on board at time of survey.
- ❖ **No straps were present for fixing batteries in position. Provide means of fixing batteries in position prior to use of vessel.**
- ❖ **No covers were present for battery terminals. Provide covers for battery terminals before vessel is used.**
- ✓ Battery isolation switches present.
- ✓ Electrical panel with fuses and switches for 12v circuits located to starboard of saloon.

Electronic equipment (simple power up test performed which all equipment passed):

- M55-DSC VHF radio
- Garmin GPS 126
- Seafarer 5 Echo Sounder

### Bonding

- ✓ All external below waterline fittings, e.g. skin fittings were bonded. Electrical continuity of bonding connections not tested.

## 28. Heating, Ventilation and Refrigeration

- ✓ The vessel had no heating.
- ✓ 12v free standing cool box located under chart table.

- ❖ *One 100mm diameter vent located in heads compartment, which does provide adequate for ventilation for cooker. It would be advisable to fit a second fixed vent in the coachroof above galley.*



Hugh Ellacott, 4/5/12

## Appendix A - Methods

### Moisture Measurements

All moisture measurements on the vessel were taken using a Sovereign Quantum Marine Moisture Meter, a capacitance-type moisture meter. The calibration of the meter was checked on the day of survey, prior to any readings being taken. Readings were taken in the relative mode, which ranges between 0-100. The values should be regarded as an index and do not represent moisture content as a percentage of dry weight. Where appropriate both shallow and deep reading modes were employed. Direct comparisons between readings taken with the Sovereign Quantum and other meters, including those made by Sovereign, are not valid.

The conditions prevailing when the readings were taken are given below.

- Air Temperature 11.5°C
- Relative Humidity 68.9%
- Dew Point 5.2°C above surface temperature

In summary, the conditions were adequate for obtaining moisture readings within structural components of the vessel.