

Northern Star Marine  
**NARROWBOAT SURVEYS**

& BSS Certification

*Michael Clarke – Dip.S.C.Sur. AMIMarEST*

**....Survey Report....**

***This is to certify***

That I the undersigned carried out a full condition survey on the vessel below at the request of

..... ***on Thursday 24<sup>th</sup> May 2012.***

for the purpose of reporting on the vessels condition subject to stated limitations and in accordance to our standard terms of survey. The survey is carried out on the understanding that I am legally liable to the above client only and not to any subsequent holder of the said report or any other third party. Such liability must be constructed, as a contract under British law and any dispute arising hereunder shall be submitted to the exclusive jurisdiction of the courts of England and Wales.

Name: .....

For the purpose of: **Full Survey**

At: ..... marina



## Survey Statement:

This report is a factual statement of the examination carried out within stated limitations below and in accordance with our standard terms of survey, with all opinions given in good faith as far as seen and accessible at the time of the survey. It carries with it no guarantee against faulty design or latent defects, or suitability of the vessel for any particular purpose, nor any guarantee of compliance with any particular national or international rule, requirement, regulation, law, standard or code unless specifically requested as a special instruction on the contract form and confirmed in the text of the report. It is further agreed that no liability will arise for any consequential or economic loss, loss of profits, business interruption or loss of use.

## Definition of terms:

1. The use of the word **appears/appeared** indicates that a very close inspection of that component/system/area was not possible due to constraints imposed upon the surveyor.
2. The use of the word **serviceable/adequate** indicates that particular system, component or item is sufficient for a specific requirement.
3. The use of the word **good condition** indicates that the component/system is in a nearly new condition with only minor cosmetic or structural discrepancies noted.
4. The use of the word **fair** indicates that the component/system is functional as is with minor repairs and should be monitored to see if its condition deteriorates.
5. The use of the word **poor** indicates that the component/system is unsuitable as it is and will need to be replaced or repaired for it to be considered functional.
6. **Readily accessible** means capable of being reached for operation, inspection or maintenance without removal of any craft structure or use of any tools or removal of any item.
7. **BSS** is an abbreviation of Boat Safety Scheme.
8. **BMEA** is an abbreviation of British Marine Electrical association.
9. **RCD** is an abbreviation of Residual Current Device.

## Scope:

The purpose of the survey was to ascertain the general condition of the vessel for the prospective new owner. The structural condition of the craft was examined by hammer testing, visual inspection, and by taking ultrasonic meter readings. The rest of the vessel was examined by non-intrusive, listening, and visual inspection only.

## Location/ Conditions:

The survey was carried out on hard standing at ..... Marina. A slip trolley supported the vessel, which restricted access to parts of the hulls bottom plates. This report should be read in conjunction with the limitations of survey in section 12.

The weather was:        Fine and dry.

## Vessel Particulars:

<b>Name:</b>	.....	<b>Type:</b>	Cruiser style Narrowboat
<b>Builder:</b>	Harborough marine	<b>Fit-out:</b>	Owner
<b>Approx. Year of build:</b>	1979	<b>Index:</b>	.....
<b>CIN No:</b>	Not applicable	<b>Max Length:</b>	49ft 6In
<b>Max Beam:</b>	6ft 10in	<b>Max Draught:</b>	2ft 2in

## The Survey:

### Recommendations are defined by:

- Rec 1:** Items that should be addressed which may affect the vessel's insurability.
- Rec 2:** Items that should be addressed in order to pass the current BSS examination.
- Rec 3:** Items that should be addressed which affect the safe or normal use of the vessel or a particular system.
- Rec 4:** Items that should be addressed to prevent future problems arising.
- Rec 5:** General maintenance items.

***Recommendations are all in bold italic type for quick reference.***

## 1. External Hull, Decks, and Superstructure

### A Sides:

Originally fabricated from sections of nominal 5mm steel plate to a reasonable standard. The sides have been overlated with 6mm steel at the upper midsections.

The hull sides had a covering of marine growth and were not pressure washed prior to inspection. Approximately thirty sample areas were selected at random and prepared for inspection.

From the sample areas selected, ultrasonic measurements show the plate thickness to be between 1mm and 5mm which are not within acceptable limits. The lower readings were taken at the bow, transom, and at the counter swim which is due to internal corrosion. A small section on the starboard side counter swim was holed. A small section of the transom was also holed.

Light galvanic pitting was evident about the majority of the side plates not localised to any one area.

From the sample areas selected at random the maximum pit depths were measured to be 1mm deep.

The hull requires blacking.

**Rec 1:** *Over plate the bow from the stem post to the turn of the swim up to the top of the first rubbing strake. Over plate counter swim. Over plate transom up to the first strake. All using 5 or 6mm steel plate (More detail available on request)*

**Rec 5:** *Re-black hull using 2 + coats of a suitable hull blacking.*

### B Bottom:

Flat bottomed with an overlap to protect the chine weld, originally fabricated from nominal 6mm steel plate. The outer edge of the base plate has been overlated.

The bottom plate had a covering of marine growth and was not pressure washed prior to inspection. Approximately twenty sample areas were selected at random around the perimeter of the base plate and prepared for inspection.

From the sample areas selected, ultrasonic measurements show the plate thickness to be between 4.4mm and 6mm, which is within acceptable limits.

Light galvanic pitting was evident about the majority of the base plate not localised to any one area. From the sample areas selected at random the maximum pit depth was measured to be 1mm deep.

The bottom appears to have no visible coating which is normal industry practice.

Weld protection is provided by a sacrificial overlap of the base plate which has approximately between 5-15mm of wear edge remaining.

**Rec 5:** *It is generally believed that the base plate of the hull does not require blacking as the coating would quickly be worn off under normal use, and is sometimes not possible due to restrictions placed in the dry dock. This however does not always appear to be true and the coating can last just as long as the paint system on the rest of the hull. I recommend that wherever possible the base plate is coated to protect the steelwork.*

## C Counter/Uxter plate (Underside of engine bay):

Originally fabricated from nominal 6mm steel plate.

From the sample areas selected at random, ultrasonic measurements show the plate thickness to be between 3.2mm and 5mm which is not within acceptable limits.

The counter plate has light pitting corrosion.

From the sample areas selected at random the maximum pit depth was measured to be 1mm deep.

The counter plate requires blacking.

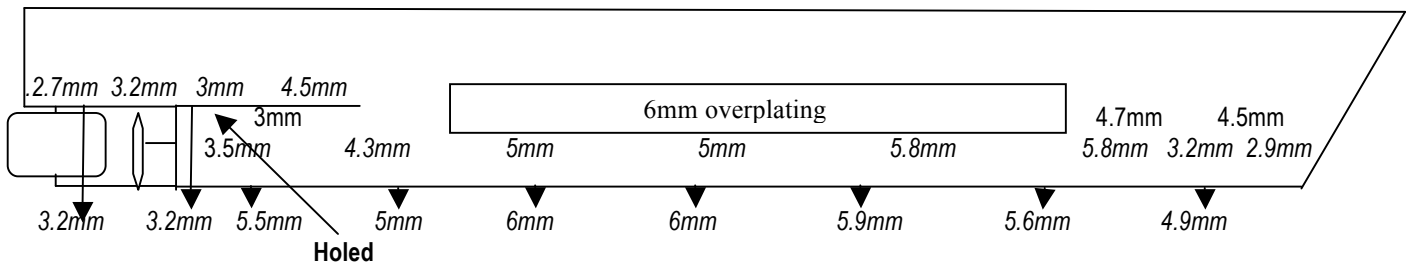
**Rec 1:** *Over plate the counter with 5 or 6mm steel plate (More detail available on request)*

**Rec 5:** *Re-black using 2+ coats of a suitable hull blacking..*

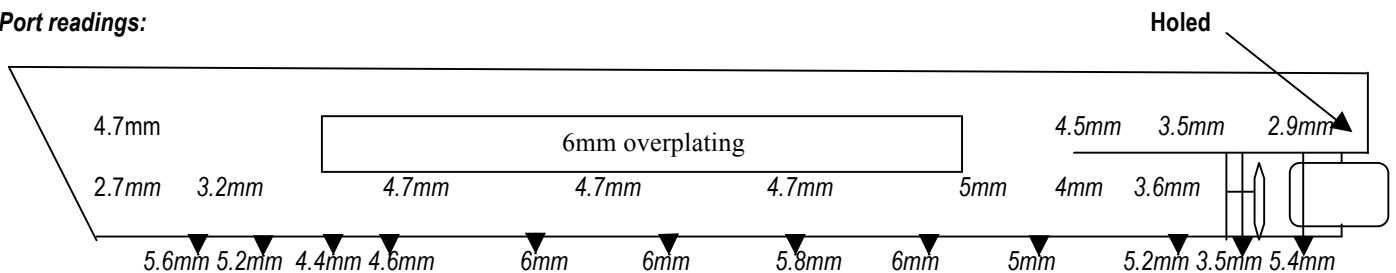
## D Ultrasonic measurements

The diagrams below are an approximate guide to show the position from where the ultrasonic measurements were taken from and the reading obtained.

### Starboard readings:



### Port readings:



## E Rubbing strakes (Weld on steel protection strips):

2 x D section mild steel strips are attached along the length of the vessel above the waterline by welding and 1 x strip is attached below the waterline.

In the sample areas examined, the rubbing strakes appear to be continuously welded at the top and intermittently welded at the bottom. Heavy crevice corrosion was evident and the strakes were not fully secure at the bow.

**Rec 4:** *Continuously weld the strakes at the bottom to prevent any further crevice corrosion or possible future detachment.*

## **F Cathodic protection (Anodes):**

12 x 2.5kg magnesium anodes are attached to the vessel by welding. 2 x at the stern, 4 x at the bow, and 4 x amidships.

8 x anodes are exhausted and 2 x anodes at the bow and 2 x at the stern are approx. 50% worn.

**Rec 4:**            ***Replace 2 x anodes amidships.***

## **G Rudder:**

A Single vain flat blade rudder is fitted at the stern which is welded to the rudder stock. General surface pitting and corrosion are present. The rudder and stock appear to be in a serviceable condition.

The rudderstock tube was hammer tested and appeared to be sound. The bottom of the tube was corroded but still appeared to be sound.

The skeg (the section of steel which protrudes from the base plate which the rudder sits on) hammer tested satisfactorily.

The bottom of the rudder sits in a steel bush (cup bearing) which has light wear but is still in a serviceable condition.

The top tiller bearing is damaged and requires replacing.

**Rec 3:**            ***Replace top bearing.***

**Rec 5:**            ***De-rust and apply a suitable coating to the rudder stock tube.***

## **H Stern gear:**

An 18" Turbine type propeller is fitted on a stainless steel shaft with a nut and a split pin. The propeller and shaft are in a serviceable condition but the propeller has some damage.

In the areas visible for inspection the stern tube bearing appears to be in a serviceable condition with approx 1.4mm of wear.

**Rec 4:**            ***Check stern tube bearing at each docking and replace or refurbish if excessive water ingress is evident. Repair propeller.***

## **I Through hull Outlets / Freeboard:**

It is a requirement of the Boat Safety Scheme for hire boats and unregulated passenger boats for all outlets to terminate to at least 10 inches above the normal laden waterline.

It is also a requirement by most insurance companies but does not normally become apparent until a vessel is approx. 15-20 years old when a hull survey is required to gain a certificate of insurance.

All the outlets appeared to terminate to at least 10 Inches above the waterline apart from the galley sink outlet which is only approx. 6" above the waterline and is not watertight internally.

**Rec 1:**            ***Modify the galley sink through hull outlet so that it is watertight.***

## **J Decks:**

Access to the front deck was limited as it was cluttered with wooden pallets but the deck boards appeared to be in a serviceable condition. I was unable to gain access to below the boards. The front deck drains to the cabin bilge but is covered with a cratch cover which should minimise any water ingress. The bow locker has heavy internal corrosion.

In the areas visible for inspection the rear deck supports appeared to be sound with areas of light surface corrosion. The wooden deck boards are in a fair condition but are sound as they are fixed to aluminium checker plate.

**Rec 4:** *De-rust and apply a suitable coating to any areas where the paint system has failed. Gain access to lower front deck and de-rust and recoat where necessary.*

## **K Cabin sides:**

The cabin sides are fabricated from sections of plywood with an Aluminium outer layer. The joints are covered with wooden trim which are in a fair condition and I could not verify that they were watertight. The end sections of the side panels are not fully secure and do not appear to be sealed.

The paint finish appears to be standard marine enamel, which has been applied to a reasonable standard and is in a serviceable condition.

The gunwales have been finished with a smooth finish and have normal wear to the sides.

**Rec 4:** *Refinish and reseal wooden trim sections. Seal the end of the side panels with polyurethane or silicone sealant and secure.*

## **L Cabin Top:**

The cabin top is fabricated from sections of plywood with a GRP outer layer. Small sections of the roof were found to be soft possibly due to delamination of the GRP outer skin. The wooden hand rails are in a serviceable condition but the paint system has failed. A small hole was noted on the starboard side, aft.

The paint finish appears to be standard marine enamel, which has been applied to reasonable standard and is in a fair condition with some cracking and flaking of the coating.

**Rec 4:** *Repair hole, and refinish roof with a suitable marine enamel.*

## **M Windows / doors / Security:**

The windows are all aluminium top and bottom openers. The windows appeared to be in a fair condition with some damaged and corroded latches and 1 x window has been silicone closed. The windows were not tested for water tightness.

The rear doors can be locked securely from the outside only and are in a serviceable condition. The front doors can be locked reasonably securely and are in a serviceable condition but have some trim missing. .

The rear hatch can be locked securely from the outside only and is in a serviceable condition. The front wooden lip is coming detached.

**Rec 4:** *Repair and lubricate window latches, and check for water tightness. Install barrel bolts to the inside of the rear doors and hatch.*

## **N Cratch**

A steel and aluminium cratch with a material cover are installed over the forward well deck. The cratch is poorly made and does not appear to be watertight as the edges have been sealed with duck tape. The cover is in a serviceable condition.

**Rec 4:** *Seal ends of cratch board and apply a suitable coating.*

## **2. Hull internal**

### **A. Engine room**

Moderate surface corrosion is present in the areas visible where the paint system has failed. A layer of water and oil were noted below the engine and water was noted in the bilges.

**Rec 4:** *Clean, degrease, de-rust, and apply suitable coating in the areas where the paint system has failed. Remove oil and water from bilges.*

### **B. Weed Box**

The weed hatch coaming and lid was hammer tested and found to be unsound, as a small hole was noted at the bottom forward face. The top of the hatch was corroded.

The top of the weed box is more than 6" above the waterline at the moment which is a requirement of most insurance companies.

The seal is in a fair condition.

**Rec 1:** *Replace weedhatch assembly ( The top of the hatch will require raising once the overplating has been carried out)*

**Rec 4:** *Install a quick release mechanism to the assembly for easier access, and replace seal.*

### **C. Internal Cabin (below aft cabin)**

The internal cabin was mainly obscured by the internal fit-out. No provision is provided for inspecting the cabin bilge.

The only area visible was at the water pump and the cabin bilge appears to be damp with moderate internal corrosion.

**Rec 5:** *Install an inspection hatch near to the aft steps for periodical inspection of the cabin bilge.*

**N.B** *To prevent any future corrosion of the internal base plate and the cabin sole supports, the cabin bilge should be kept dry and well ventilated.*



### 3. Propulsion

#### A. Engine /Gearbox

Lister SR3 3 cylinder inboard diesel / Lister hydraulic. Engine hours = Unknown

The engine was tested whilst the vessel was out of the water for approx. 25 Mins the findings are:

1. *The engine started easily once the starter battery was replaced but the starter motor was slow to turn.*
2. *A small amount of smoke was noted on start up that lessened once the engine was warm.*
4. *The material air intake shroud was not fully secure and was damaged.*
5. *The engine did not appear to overheat within the test period.*
6. *The engine oil was black, and the level was above the maximum.*
7. *The gearbox oil was slightly emulsified and the level was correct.*
8. *The reduction box oil was slightly emulsified and the level was correct.*
9. *The propeller shaft and associated joints appeared to be in a serviceable condition.*
10. *The exhaust system was correctly lagged.*
11. *The engine was secure on its solid mounts.*
12. *Both forward and reverse gears selected easily and ran smoothly.*
13. *No major visible lubricant or fuel leaks were evident although I could not verify this as the engine was covered in oil in places.*

**Rec 4:** *Clean starter motor and battery connections.*

**Rec 5:** *Service engine including gearbox oil. Repair or replace intake shroud.*

#### B. Fuel system

The fuel tank is fabricated from mild steel and appeared to be in a serviceable condition but the underside was not accessible for inspection. A second tank is fitted in the engine compartment which is not in use and appears to be badly corroded underneath.

The filler and vents are in accordance with the current Boat Safety scheme requirements.

The shut off valve is located on the rear deck and is labelled correctly.

**Rec 4:** *De-rust and apply a suitable coating where the paint system has failed. Remove unused fuel tank.*

#### C. Controls / instruments

The engine is controlled by a remote cable operated lever which functioned correctly when tested.

All the engine instruments appeared to function correctly apart from the ammeter.

**Rec 5:** *Repair or replace ammeter if required.*

#### D. Stern gland / Seal

(Stuffing box with gland packing) The stern gland appeared to be in a serviceable condition which appeared to have been letting in a small amount of water which is normal for this type of setup.

## **E. Bilge pump**

An electric bilge pump is fitted with a manual switch which switch tested satisfactorily.

The pump outlet is not water tight, and the wiring is hanging loose and is in contact with the steelwork. The connections are below bilge water level and the terminal block connections are poorly made. An additional wire is attached to the terminal block which is wrapped around the battery terminal.

**Rec 2:**            ***Secure wiring away from steelwork and connections above bilge water level. Remake terminal block connections. Fit correct battery terminal connection.***

**Rec 4:**            ***Remake outlet hose connection so that it is watertight.***

## **4. Batteries/Charging**

### **A. Batteries**

1 x 105 Ah Lead acid domestic battery + 1 x 105Ah Lead acid engine starter battery located in the engine compartment.

The batteries were connected to a Sealey BT02 battery analyser and the findings were:

1.        *Domestic batteries – Unserviceable condition.*
2.        *Engine battery – Unserviceable condition.*

The batteries are installed in line with current BSS requirements.

**Rec 3:**            ***Replace batteries.***

### **B Charging System**

1 x 12v alternator is fitted to the engine.

The charging output was tested to be approx. 13.2v at 1500rpm.

The belt has minor wear and is correctly tensioned.

## **5. Electrical System**

### **A. Battery isolators**

2 x single manual battery isolators are fitted to the vessel in aft cabin.

The isolators are installed in accordance with the current Boat Safety Scheme requirements apart from the cables from the batteries are in contact with the steelwork.

**Rec 2:**            ***Protect cables with conduit or similar.***

## **B. 12V System**

The majority of the 12v circuits are fed from the fuse box located in the aft cabin which appears to be in a serviceable condition. I was unable to ascertain if all the cables were of the correct current carrying capacity or if the fuses were appropriately rated.

The cabin lights all functioned correctly when tested.

One of the connections to the back of the instrument panel is poorly made and the conductor is exposed. The cable for the Morco water heater is not connected and the fuse block connection is poorly made.

**Rec 2:** *Remake poorly made connections.*

## **C. 230V System**

A 230v ring main is installed incorporating 13A sockets which are powered from the shoreline connection.

Protection is provided by a 30ma RCD unit which was not tested. I was unable to verify that the system was wired correctly or that a system earth connection was made.

The 230v system was not tested.

**Rec 3:** *Have the system checked by a competent marine electrician to ensure that it is safe to use.*

## **D. Inverter / charger**

Not applicable

## **E. Generator**

Not Applicable

## **F. Bow-Stern Thrusters**

Not Applicable

## **6. Fresh Water System**

### **A Water Tank / Pump**

The fresh water tank is located under the forward well deck and appears to be fabricated from mild steel. Access to the tank was limited to the forward corner which had light wastage corrosion and the inside of the tank was not accessible for inspection. I could not verify that the tank was watertight.

Water pressure is provided by a pump which is installed below the saloon floor which appeared to function but was not fully tested. The pump terminals are hanging loose and no switch is fitted. The system was tested and is not watertight.

**Rec 2:** *Install a switch for the pump and secure terminals.*

**Rec 3:** *Repair water leaks and test system.*

**Rec 5:** *De-rust and apply a suitable coating to the outside and inside of the tank.*

## **B. Shower / Bath**

A shower tray with mixer taps are fitted in the bathroom. No shower head or riser are fitted. The connections are not accessible. The unit was not tested.

A waste water pump is fitted adjacent to the shower to expel the waste water. The control switch is located adjacent to the shower. The pump did appear to function but was not fully tested and the switch is loose.

**Rec 2:**            **Secure switch.**

**Rec 3:**            **Test shower and pump when the water system is repaired.**

## **C. Calorifier**

Not applicable

## **D Toilet**

A Porta Potti is installed in the bathroom which appeared to be in a serviceable condition.

## **E Sinks**

The galley sink appeared to be in a serviceable condition but was not tested.

The bathroom sink appeared to be in a serviceable condition but was not tested. The connections are not accessible.

**Rec 3:**            **Test sinks when the water system is repaired.**

## **7. LPG System**

### **A Locker**

2 x 13kg propane bottles are installed in the locker at the stern with a bulkhead mounted regulator. The installation is in accordance with current BSS requirements.

The locker steelwork is corroded on the outside face.

**Rec 4:**            **De-rust, and apply a suitable coating to the gas locker.**

### **B Appliances / system**

1. Morco Eco plus water heater.

1. A flame test was carried out and the appliance did not appear to function correctly as the igniter did not function.

**Rec 3:**            **Repair unit (check wiring) and test.**

## **8. Cabin Internal**

### **A. Diesel heater.**

A diesel stove is installed in the saloon incorporating panel type radiators. The stove appears to be in a serviceable condition but was not tested. The hearth was not secure behind the stove.

The saloon radiator was corroded and leaking and the pipe work was not secured.

The fuel pipe for the stove is not secure in the engine compartment, and no filter appears to be installed to the system.

**Rec 2:** *Secure fuel pipe.*

**Rec 3:** *Replace radiator, secure pipe work, and test system.*

**Rec 4:** *Repair hearth. Install a fuel filter in the system and check antifreeze density is in line with the manufacturer's recommendations.*

### **B. Solid fuel stove**

Not applicable.

### **C Lining**

The cabin is lined with chipboard with a pinewood trim.

All the lining appears to be in a serviceable condition but the paint coating has failed. Water staining was noted on the port side amidships at the side panel to deck head joint but I was unable to locate the source.

**Rec 4:** *Monitor woodwork for water ingress.*

**Rec 5:** *Refinish woodwork with a suitable coating.*

### **D Cabin sole (floor)**

The cabin sole appeared to be reasonably sound throughout.

The floor covering is a mixture of tiles, laminated wood effect planks and vinyl. All the flooring appears to be in a fair condition with some damage and the laminate is badly fitted and not secure in places.

### **E Woodwork / Joinery**

The internal woodwork is all built to a very basic standard. The galley worktop is not secure and the galley cabinet doors are loose.

**Rec 4:** *Secure worktop and cabinet doors.*

## **F      Insulation**

The cabin is insulated with what appears to be polystyrene sheets. This may cause unwanted condensation to run behind the back of the lining panels if the sheets are not fully bonded to the steelwork.

Any electrical cables that come into contact with the polystyrene sheets may suffer from a chemical reaction which can cause the cable insulation to break down and short circuit.

I could not verify that all the cables are adequately protected.

## **9.      Safety**

### **A      Fire Fighting**

2 x 13A 70B & 1 x 5A 34B Fire power dry powder extinguishers.

0 x fire blanket

The units appear to be in a serviceable condition and are in compliance with current BSS requirements.

### **B.      Ventilation**

Low level                      1 x 6" x 3" grill aft and 1 x 9" x 4" grill forward.

High level                      1 x 6" x 3" grill aft and 4 x pancake vents.

The ventilation is compliant with the current BSS requirements.

## **10.     CE documentation**

Not applicable

## **11.     Conclusion**

The vessel requires overplating in several areas and attention to the galley sink outlet before it can be deemed to be in an insurable condition. Assuming all the recommendations are carried out the vessel should comply with the current BSS requirements, and give many years of service.

## 12. Limitations of survey

1. The purpose of survey was to carry out a structural and mechanical evaluation of the vessel for pre-purchase, finance and/or insurance purposes
2. The vessel was ashore supported on chocks / slings, allowing access to the hull bottom, apart from the chocking / sling positions
3. Machinery installations, auxiliary and ancillary equipment, gas and other services, electronic, pumping and plumbing, navigational aids, safety equipment, fuel systems, electrical systems, steering systems, hydraulic systems and other sundry items were visually inspected only. None of these items were dismantled nor were specific tests carried out.
4. The LPG gas system(s), appliances, piping, tanks and components are not tested for leaks or tightness
5. The fuel system(s), engine(s), piping, tanks and components are not tested for leaks or tightness
6. As surveyors (not technical engineers) we visually inspect engines, gearboxes and generator installations during our inspections, and where possible the engine is run up to access its general running characteristics, vibration levels, etc. No dismantling of the engine or associated equipment is carried out within the scope of a condition survey so no detailed comment upon the internal parts is possible.
7. Water tanks and plumbing (where accessible) are externally inspected (only) where visible, and are not pressure tested. No liability is accepted for any subsequent leaks not apparent at time of inspection.
8. Windows, hatches, port lights, external and watertight doors are not tested for water tightness
9. Skin fittings and associated sea cocks / valves are not tested or dismantled
10. If this report does not discuss a specific item, equipment or machinery, it is not covered by this report.
11. We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are, therefore, unable to report that any such part of the structure is free from defect
12. No liability whatsoever is accepted for any injury, death or damages arising from those parts of the vessel to which access could not be gained at the time of inspection.
13. The report is not undertaken with any intention to ascertain that the vessel would comply with any authority under whose jurisdiction the vessel may operate
14. Information is included within this report that is gathered from various sources, such as Brokers / Owner's Details of Sale, Ship's Papers and other third parties, and such information is neither confirmed nor guaranteed.
15. This survey makes no representation and does not purport to describe any condition which may have changed since the date of the survey and the recommendations herein are limited to those that, in the opinion of this surveyor, are reasonably necessary and appropriate, based upon the conditioned and circumstances as they existed at the time of the survey.
16. Ultrasonic measurements were taken from the sample areas selected at random only. The size of the ultrasonic probe is approx. 10mm in diameter so we can only verify that the steel thickness was acceptable at the point which the measurement was taken. If a low reading is taken at any one point further readings are taken at closer intervals to give a better idea of the plate thickness.
17. The maximum allowable thinning, wear, or wastage corrosion for a steel plate is approximately 40%. If the steel plates tested are within acceptable limits but are below 4mm in thickness, this may not still be acceptable by some insurance companies.

Signed..... Date.....

**MICHAEL CLARKE**  
**MARINE SURVEYOR & BSS EXAMINER - NORTHERN STAR MARINE**