fieldhouse yacht surveys

ORCA

Damage Inspection

Insurance Company Reference Number: ABC1234 - Mr Smith "ORCA"



Completed for

Insurance Company XYZ, Address

On Monday 8th June 2018

fieldhouse-yacht-surveys.com

Blank page

Page 2 of 14

ORCA	Issue
Damage Inspection	1
Insurance Company XYZ Reference Number: ABC1234 - Mr Smith "ORCA	
TADLE OF CON	TENTO

TABLE OF CONTENTS

Table of Contents	3
Data Protection	4
Copyright	4
Disclaimer	4
Law and Jurisdiction	4
1. Introduction	5
2. Vessel Particulars	6
2.1. Details	6
2.2. Serial Number	6
2.3. Carving Plate	6
3. Description of Damage	7
3.1. Location of Water Damage Relative to Saloon	7
3.2. Condition of Soft Linings and Woodwork in Saloon Area	7
3.3. Condition of Soft Linings and Woodwork in Second Cabin	7
3.4. Evidence of Water Ingress to Engine Compartment	8
4. Source of Water Ingress	9
4.1. Fresh Water System	9
5. Conclusions1	0
6. Recommendations1	1
7. Diagram and Photographs of ORCA1	2

DATA PROTECTION

The information contained in this report is the intellectual property of Fieldhouse Yacht Surveys. This document contains confidential information that is legally privileged and is intended for use of the addressee only. All information contained herein is covered by the EU Data Protection Directive (95/46/EC).

COPYRIGHT

This report, the international copyright of which is vested in Fieldhouse Yacht Surveys, is confidential to the named client and is non-transferable. It must not be copied, reproduced, kept in any data bank, stored in any retrieval system or transmitted in any form or by any means whatsoever or otherwise or given or sold to any third party without the prior written consent of the copyright holder.

DISCLAIMER

If this survey does not discuss a specific item, equipment or machinery, it is not covered by this survey. Every effort has been made to ensure the accuracy of the information presented within this report. The report is issued in good faith as a statement of facts ascertained at the time of the survey, during which due diligence and reasonable skill were exercised and reasonable care taken, using common professional practice and where available published guidelines or codes such as those published by the International Institute of Marine Surveying.

LAW AND JURISDICTION

This document is to be construed under English Law and English Law shall be used in interpreting the document and for resolving all claims or disputes arising out of or connected with the document.

Damage Inspection 1 Insurance Company XYZ Reference Number: ABC1234 - Mr Smith "ORCA"

1. INTRODUCTION

ORCA

- 1.1. This is to certify that Nic Fieldhouse, Principal Surveyor of Fieldhouse Yacht Surveys and Consulting Ltd, carried out a Damage Inspection on ORCA in accordance with instructions received from Bob Johnson of Insurance Company XYZ.
- 1.2. The brief from Insurance Company XYZ stated the following:

Mr Smith came to see ORCA on 17/05/2018 and noticed that the water tank had leaked in the second cabin. The bulkhead lining is bulging with accumulated water behind, soft furnishings and mattress are wet but not mouldy.

PH [Mr Smith] is running dehumidifier to minimise the damage and took out all removable items.

He's [Mr Smith] not sure when he last went into the second cabin, must be a few weeks ago. He thinks about 40 to 50 litres of water are missing from the water tank.

- 1.3. The file from Insurance Company XYZ also included an Investigation Report from an independent Marine Surveyor, dated 24th May 2018. The scope of the survey & resulting report dated 24th May was to: *Inspect reported water damage and report as to probable cause and associated damage.*
- 1.4. The primary aim of this document is to report on the origin and cause of the water ingress into the second cabin. The report will also report on the factual condition of ORCA in relation to the damage sustained as a result of the water ingress discovered by Mr Smith on 17th May 2018.
- 1.5. ORCA was inspected whilst she was afloat and tied to her pontoon in Chichester Marina, West Sussex on Monday 8th June 2018.
- 1.6. The inspection of ORCA was conducted by Nic Fieldhouse, Principal Surveyor of Fieldhouse Yacht Surveys and Consulting Ltd.
- 1.7. The inspection was carried out in accordance with Fieldhouse Yacht Surveys Standard Terms and Conditions and with relevant codes of practice published by the International Institute of Marine Surveying.
- 1.8. Those present during the inspection were:

Eur Ing Nic Fieldhouse BEng (Hons) CEng MIMechE AssocIIMS

Marine Surveyor, Fieldhouse Yacht Surveys.

Address 5 Sheepdown Close, Petworth, West Sussex, GU28 0BP

Email nic@fieldhouse-yacht-surveys.com

2.1. DETAILS

Name of vessel	ORCA
Boat Number	xx/xx
Vessel Serial Number	ххх
SSR Number	xxx (believed to be expired)
Official Number (Part I Registration)	ххх
Registered Tonnage	20 ⁵⁵ / ₁₀₀ Tons
Built by	Fairline Boats plc, Oundle, Northamptonshire
Model	41
Туре	Sedan, sports cruiser with deep 'V' planing hull
Length overall (published figure)	44' 3" (13.49 metres)
Build date	1989
Hull construction material	GRP
Engine type	Twin Volvo Penta TAMD71A, diesel fuelled

Table 1: Vessel Details

2.2. SERIAL NUMBER

2.2.1. The vessel's Serial Number was stamped onto a small aluminium plate. This plate was bonded to the inside of a small locker in the cockpit and is shown in Figure 1. The vessel's Serial Number was xxx.



Figure 1: Vessel's Serial Number

2.3. CARVING PLATE

2.3.1. The vessel's Official Number was stamped onto a brass plate plate. This plate was screwed onto the side of the supporting structure of the saloon sole and is shown in Figure 2. The plate shows that the vessel's Official Number was xxx and had a Registered Tonnage of 20.55 Tons.



Figure 2: Vessel's Carving Plate

3. DESCRIPTION OF DAMAGE

3.1. LOCATION OF WATER DAMAGE RELATIVE TO SALOON

- 3.1.1. The water damage in the second cabin was generally confined to the soft linings and plywood structure at the aft end of the cabin. The soft linings were attached to a GRP 'bulkhead' that ran athwartships. This bulkhead was located immediately below the backrest of the helm seating. The damaged surface of the plywood semi-bulkhead ran fore-aft and was positioned close to the vessel's centreline. This plywood panel formed the side of the second cabin and divided the cabin from the forward passageway.
- 3.1.2. The starboard sliding side window of the saloon was also located above the area of water damage. Part of the investigation therefore concentrated on determining if there was any evidence that the water damage was due to water ingress via this window. Refer to Figure 3 for a plan view of the vessel, showing the relative positions of the second cabin, helm seating, saloon seating and starboard side windows of the saloon.

3.2. CONDITION OF SOFT LININGS AND WOODWORK IN SALOON AREA

- 3.2.1. The vinyl linings of the saloon, located beneath the port and starboard sliding side windows, were found to be loose. This is fairly typical of foam-backed, soft vinyl linings in vessels of this age. The adhesive bond between the GRP coachroof and the vinyl fails when the foam backing of the vinyl decays and turns from a foam to a powdery substance. This decay develops even in dry vessels. Moisture levels in the vinyl panels in the saloon, located beneath the sliding side windows, were measured with a moisture meter. All readings were found to be very low, indicating that the foam had decayed through age rather than any moisture-related process.
- 3.2.2. The varnished plywood shelf panels of the saloon, located beneath the sliding side windows, were found to be in good cosmetic condition and free of evidence of significant water damage. Minor stains, possibly due to condensation dripping from the windows, was noted. Moisture levels in these plywood panels was measured and found to be low. These moisture readings were similar to the parts of the plywood structure in the saloon that were remote from windows or other areas that might suffer from water-related damage. This indicates that there was no water ingress around the sliding side windows that were mounted in the port and starboard sides of the saloon.

3.3. CONDITION OF SOFT LININGS AND WOODWORK IN SECOND CABIN

- 3.3.1. The soft bulkhead linings of the aft bulkhead of the second cabin were heavily stained from moisture ingress. These can be seen in Figure 4. It could not be confirmed, but the 'tide marks' on the woven fabric material suggested that the damage had been developing over a period of months, rather than over a shorter space of time. The foreaft plywood bulkhead panel of the second cabin, positioned towards the centreline of the vessel showed evidence of water damage. This area of damage was positioned next to the bunk cushions, suggesting that the cushion material would have held on to a certain amount of moisture. When pushed with a metal spike, the outer layer of the plywood in the discoloured area was found to be slightly soft.
- 3.3.2. The foam-backed soft vinyl lining that was fitted above the woven fabric was found to be loose. As discussed in paragraph 3.2.1, this type of degradation is typical of foam-backed vinyl on this age of vessel.
- 3.3.3. Moisture readings of the plywood and soft linings of the aft cabin were taken. The plywood was generally found to have medium to high levels of moisture, which is to be expected in an area that has recently suffered from a leak, even after several weeks of drying with a dehumidifier. Moisture levels in the woven fabric were also medium to high, as shown in Figure 4. The moisture levels in the sagging vinyl were very high and often 'off the scale' (Figure 5). The hull side in the second cabin was found to be also lined with a soft vinyl. This was well bonded to the hull side and free of visible degradation. Moisture levels at the aft end of this hull lining, located near to the damaged woven fabric, were found to be high. Readings in this vinyl reduced to low in areas well away from the damaged fabric & vinyl.
- 3.3.4. There was one stainless steel, inward opening window in the hull side of the second cabin. There was no evidence of moisture ingress around this window. Moisture levels in the surrounding vinyl lining were low.

3.4. EVIDENCE OF WATER INGRESS TO ENGINE COMPARTMENT

3.4.1. Prior to the operation of the vessel's fresh water system, the forward, starboard end of the engine compartment was inspected to determine if there was any evidence of water damage in this area. No evidence of significant or recent water ingress was noted. The sides of the hull in this compartment were dry, apart from a small amount of standing water in the lowest part of the 'V' shaped bilge.

Page

8 of 14

3.4.2. In the latter part of the inspection, the surveyor ran the cold water taps in the galley and in the starboard heads compartment. Water was then found to be dripping onto the hull side, located forwards of the starboard diesel fuel tank. See paragraph 4.1.5 for a description of this water ingress.

4.1. FRESH WATER SYSTEM

- 4.1.1. In consideration of the lack of evidence to indicate that rain water had leaked through the starboard sliding side windows of the saloon, the investigation changed focus in order to assess the condition of the vessel's fresh water system. This system was tested and inspected to determine if a leak from the fresh water tanks, pipework or attached equipment had lead to the damage reported by Mr Smith.
- 4.1.2. The water pump of the vessel's fresh water system was powered up by the surveyor. Prior to this stage of the survey, power supply to this system was set to the 'off' position. The fresh water system was of the pressurised type, with a 12 volts d.c pump and a pressure accumulator located inside the lazerette. Water was stored in two stainless steel tanks, also mounted inside the lazerette. The water supply lines were constructed from semi-rigid plastic, connected to each other with plastic junctions.
- 4.1.3. When the system was initially powered up, the pump ran for less than five seconds. The pump automatically switched off when the system reached its normal pressure. This pattern of events was considered to be normal for a correctly installed pressurised water system. The fresh water system was left for approximately 30 minutes, during which time, none of the taps were operated by the Surveyor. Within this 30 minute period, no running of the fresh water pump was noted. This simple test indicated that there were no leaks in the pressurised part of the fresh water system.
- 4.1.4. The cold water taps in the galley and in the heads of the second cabin were then run at medium flow for approximately 10 minutes and then switched off. The woven fabric cloth of the second cabin was re-inspected and it was noted that a small stain had developed in the lower outboard corner of the cloth. This stain was found to be due to a recent (less than 30 minutes) appearance of water.
- 4.1.5. The forward, starboard section of the engine compartment, located forwards of the starboard fuel tank, was reinspected for evidence of water. Drops of water were found to be dripping down onto the plywood supporting base of the starboard fuel tank and also onto the hull surface. Further visual inspection found that these drops of water were originating from the enclosed space that was immediately behind the backrest of the helm seat. The seating cushions on the starboard side of the saloon were lifted to reveal a number of screwed down plywood access panels, in the backrests of the saloon seating. The panel located immediately above the area of water leakage was removed by the surveyor. This is shown in Figure 6. The removal of this panel revealed an open space behind the backrest of the helm seat. The solenoid control valve of the vessel's fresh water system was mounted within this space. This valve was connected to one of the vessel's fresh water hoses (Figure 7). A small diameter (< 5mm) copper pipe was fitted to the outlet of this valve. The length of this copper pipe was approximately 150 mm. When the galley or heads tap was turned on, it was found that water leaked out of this small pipe at a rate of approximately one drop every two seconds. The water drops were observed and were found to drip onto part of the vessel's 12 volts d.c. wiring loom and then down into the engine compartment, just in front of the starboard fuel tank. In addition to dripping onto the wiring loom, some of this water was seen to be leaking onto a grey coloured GRP moulding, which formed part of the saloon seating support structure. The water then drained off the shelf and onto the GRP moulding that formed the athwartships bulkhead of the second cabin, which is identified in Figure 3.
- 4.1.6. Following this observed water leakage from the solenoid control valve, the vinyl lining at the aft end of the second cabin was re-inspected. The lining was partially pulled away from the bulkhead by the surveyor and the foam backing material was found to be heavily saturated with water. In consideration of the lack of rainfall in the three weeks prior to the survey taking place, the evidence strongly suggests that the water in the vinyl lining of the second cabin could only have originated in the previous ten minutes and was due to the leaking of water from the solenoid control valve.
- 4.1.7. Inspection of the small diameter copper pipe of the solenoid control valve revealed that a small diameter, green-coloured hose was installed next to the control valve. It could not be confirmed, but it is very likely that this green hose was originally attached to the end of the small diameter copper pipe. This hose was re-attached to the end of the surveyor.

Damage Inspection 1 Insurance Company XYZ Reference Number: ABC1234 - Mr Smith "ORCA"

5. CONCLUSIONS

ORCA

- 5.1. The evidence gathered by the surveyor indicated that the water damage reported by Mr Smith had most likely been developing for some months. The water leak originated from the solenoid control valve and was due to a detached hose on the outlet end of this valve. Water was only found to leak from this valve when the taps were running, making it likely that the leak had been in existence for some time and was leaking water into the engine compartment and second cabin at a very slow rate.
- 5.2. There was no evidence to indicate any water ingress from around the sliding side windows in the saloon or around the small, inward opening window in the hull side of the second cabin.
- 5.3. The vinyl linings of the saloon (beneath the sliding side windows) and in the second cabin had most likely de-bonded from the GRP deck moulding and bulkhead moulding as a result of ageing and degradation of the backing foam. The sagging vinyl lining of the second cabin has been further damaged by water ingress.
- 5.4. This water ingress has lead to the damage of the woven cloth lining of the forward end of the second cabin. It has also lead to cosmetic damage of some of the varnished plywood panelling.
- 5.5. Some of the leaking water was observed to drip onto the plywood panel that supported the starboard diesel fuel tank. It is likely that some water will have found its way underneath the painted, mild steel fuel tank. The extent of the water travel beneath the fuel tank can not be determined without the draining and partial lifting of the fuel tank.

6. RECOMMENDATIONS

- 6.1. Although the green plastic outlet hose of the solenoid control valve was re-fitted by the surveyor, this was not intended to be a long-term fix. A suitably qualified marine plumber should be tasked with servicing the solenoid control valve in order to prevent further leakage. The work should include the cleaning of all corrosion deposits on the copper pipe. Once it has been confirmed that the green hose is meant to be fitted to the copper pipe, the green hose should be blown-through with air to ensure that the hose is not blocked along its length. The green hose should then be firmly secured to the copper pipe, ideally with two hose clips constructed from stainless steel or other non-corroding material.
- 6.2. For the next six months, the access panels of the engine compartment and the locker covers of the second cabin should be kept open when the vessel is left unattended for more than a few days at a time. The de-humidifier should be kept in operation for as long as possible, ensuring that the water collection tank is emptied regularly.
- 6.3. The damaged lining of the second cabin (aft bulkhead only) should be removed and the area fully dried. This includes the removal of all of the woven cloth material and the foam-backed vinyl above the woven cloth. These linings should be replaced. Although slightly damp, the vinyl cloth on the hull side of the second cabin was not found to be damaged and therefore does not need to be removed.
- 6.4. The areas of damaged plywood in the second cabin should be thoroughly dried. The damaged varnish of the plywood panel should be sanded and re-varnished.

Date of publication: Tuesday 9th June 2018

WATER SYSTEM Hot & Cold Damaged linings System Drains Toilet Inlet Cocksof Second Cabin Shower Sump-Shower Control Toilet Outlet Cocks Helm Seat in Pump Saloon Second Shower Control-Cabin(Below helm seat) Starboard Sliding Saloon Window GRP bulkhead in second cabin Engine Bay Bilge Pump Saloon Seating -For Detail see pg.10 -Fresh Water Tank Solenoid Control Fresh Water Tank -Valve -Calorifier Aft Bilge Pump Transom Shower

Figure 3: Plan view of vessel



Figure 4: High moisture in stained woven cloth of aft bulkhead, second cabin



Figure 5: High moisture in PVC lining of aft bulkhead, second cabin



Figure 6: Access panel behind backrest of saloon seating



Figure 7: Detached hose on solenoid control valve