

# Preliminary Report

## “PROSPERO”

### No. 0122



**Instructed jointly by**

LA - Law  
&  
Verisona

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## 1. Summary

This report sets out my findings in respect of alleged construction defects to the vessel and/or damage/defects arising from use or mis-use.

The inspection on the 17<sup>th</sup> August 2010 revealed clear indications of the existence of manufacturing defects. There are further defects caused by destructive investigation techniques. There are marks and minor defects as a result of ordinary use, wear and tear.

## 2. Description of Vessel

“Prospero” is a 30ft GRP yacht of the Huzar 30 class believed to have been designed by W Skorski and A Jusis and built by EM Yachts of Laski Poland in 2006.

The vessel’s principal dimensions are:-

LOA	9.10m	(29.85’)	Beam	3.22 m	(10.56’)
Draft	1.3m	(4.26’)	Displacement	4,735kgs approx	

The vessel’s HIN is PL-EMY30A07G606.

The vessel is fitted with 20hp Beta Marine BD 722 diesel engine driving through a sail drive unit.

The vessel is a 30ft auxiliary fractional rigged sailing yacht with accommodation for six crew. The vessel is laid out with the fore peak/anchor forward, a twin cabin forward with lockers, a saloon with table and seating for the crew, galley to starboard, navigation station to port. Aft of the companion way to port is the heads compartment complete with toilet, shower, wash basin and wet locker. Aft to starboard is a double cabin. The engine compartment is located aft of the companionway steps immediately below the cockpit. There is a sail locker under the cockpit seating on the port side. The helm position is in the cockpit.

## 3. Circumstances

Surface irregularities to the hull topsides were noted in 2008 and became obvious during 2009. These defects were investigated by the local advisors and were the subject of correspondence between them, the builders, suppliers and the Owner. Legal advice was sought and obtained by both the Suppliers and the Owner. In June 2010, lawyers representing these two Parties agreed to instruct me as a single joint expert.

At the time of my inspection on 17<sup>th</sup> August 2010 the vessel was blocked off, on the hard standing at Marina Neuhof, Stralsund, Germany. I am informed

that the vessel had been in that location for approximately 18 months. The vessel appeared to be adequately supported in an adjustable steel cradle. The mast and rigging were in place. Protective PVC tape covered two areas on the starboard side where samples had been taken from the hull. This protective material was removed at the beginning of my inspection; Herr Greger undertook to replace it following my inspection. The weather on 17<sup>th</sup> August 2010 was benign, overcast with occasional breaks in the cloud, no precipitation and a temperature of 21°C.

#### **4. Background**

I am informed that the vessel was purchased by Mr N Hill (the Owner and the Claimant) from Wittey Marine (the Supplier and the Defendant) in June 2006 for an amount of approximately £60,000. The vessel is reported to have given acceptable performance apart from a propeller shaft failure and the hull defects that are the subject of this report.

#### **5. Response to Complaints**

I have seen copy correspondence from the Suppliers and Advisors to the Owner. I have not seen all of the letters/emails from the Owner or the recent correspondence from the Suppliers. I am aware that one or more complaints have been made but, so far as I am aware, these have not been accepted by the Suppliers nor have any proposals for rectification/recompense been put forward.

#### **6. Response to requests for information**

My initial response for construction data was not answered. On the 11<sup>th</sup> August I received a copy email from the Builders setting out the laminate schedule in the area of the chain plates. I subsequently requested further construction data and was advised that this could only be supplied by the Builders, who were at that time, on annual summer leave. I finally received construction data as attached at Appendix 1.

In an attempt to establish construction data I visited the EM Yachts website and downloaded the Huzar 30 specification and the Huzar 30 data sheet, attached at Appendices 2 and 3.

I have now received three drawings from Wiktor Witwicki of EM Yachts. These plans show the extent and limits of the core together with some very simple laminate data, as attached at Appendices 4, 5 and 6. The details received are less comprehensive than I had anticipated but, taken together with the laminate schedule previously provided enable me to understand the builder's intentions.

## 7. Loss of Use

From the information provided I understand that the vessel has been ashore and unusable since the Spring of 2009. Up until that time the yacht had been used in accordance with the Owner’s requirements. Accordingly, the Owner has been deprived of the use of the craft, due to unseaworthiness, for approximately 18 months to the date of this report.

## 8. Findings

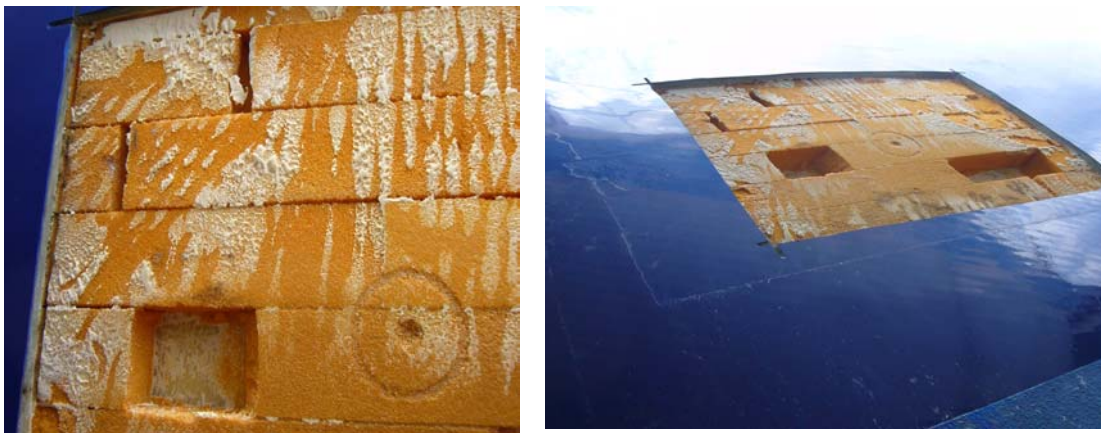
Externally the hull above the waterline has been finished in mid blue gel coat with a white style line. The surface of the hull was visibly irregular. The surface generally was affected by the reinforcement materials of the structural laminate in a pattern commonly known as “print through”. This surface irregularity or print through was extensively visible on both sides.



Inspection inside the vessel indicated that the hull below the waterline was a single monolithic laminate stiffened by the interior structures and a substantial GRP interior module. Above the waterline which coincides with the location of the bunk tops the hull consists of GRP laminates either side of a foam core. This foam core appears to extend from the stem to the stern apart from in the vicinity of the chain plate support structures. In this last area the foam core has been omitted and the support structures are bonded onto the inner face of a monolithic shell.

The overall hull thickness where the core has been omitted was found to be approximately 15mm thinner than the cored area indicating that the total laminate schedule was similar in the monolithic area to the combined total laminate schedule in the cored area.

The hull was examined externally where samples had previously been taken. The removed section of GRP outer skin was also examined. This examination revealed non-uniform thickness of the outer skin, irregular application of the skin to core bonding material and a very poor quality of core installation. Examination of the hull in way of the boundary of the sample areas clearly showed a total lack of bond between the outer surface of the core and the inner surface of the outer skin. Tap testing of the shell above the waterline indicated that the outer skin was not bonded or had become de-bonded from the core over the majority of the shell surface both port and starboard. Tap testing of the hull below the waterline did not reveal any significant defects.



Inspection of the hull profile below the waterline indicated the presence of a concave area aft of the keel, symmetrically about the centre line. A 55mm diameter sample was removed from the hull below the waterline on the port side forward of the mast. The sample location was selected to be within the highest stressed part of the hull structure but accessible from both sides for ease of repair.



The rudder was examined and tap tested. The surface coatings were then removed by abrasion and the structure examined again. The rudder appears to be constructed of two GRP skins bonded together at the centreline. There is evidence of a substantial repair in the centre of the blade. During the course of my inspection water was seen to be emanating from the joint between the hull shell and the rudder trunk. The passage of water was continuous suggesting the presence of a reservoir or at least 10 litres capacity. The inside of the hull was examined in way of the rudder trunk but the location of the reservoir could not readily be established.



The support structures for the chain plates were examined port and starboard. These structures consist of stainless steel plates bolted to a laminate that is bonded to the inside of the shell and the outside of the GRP interior module. The adjustable tie rods supporting the chain plates on deck are pin linked to these plates. There is no evidence of significant disturbance of these structures.



Three shell samples were retained for detailed examination. These were the two samples previously removed from the outer skin on the starboard side and the monolithic shell sample taken below DWL on the port side. These have been designated as sample 1, sample 2 and sample 3. Sample 1 measures 270mm x 125mm with a 35mm diameter hole and was taken from the upper part of the sample area approximately midway up the topsides of the hull. Sample 2 measures 250mm x 55mm and represents the balance of the sample area. Sample 3 from below DWL measures 55mm diameter. The three samples were subjected to detailed examination for construction quality and specification.



CSM – Chopped strand mat. WR – Woven rovings.

Location	Dimensions	Quality	Laminations
Sample 1	270 x 125	Good	CSM 220 g/m <sup>2</sup>
Mid topside	Min 3.6mm	Good	CSM 300 g/m <sup>2</sup>
	Max 5.7mm	Good	WR 450 g/m <sup>2</sup>
		Fair	CSM 450 g/m <sup>2</sup>
		Poor	Bonding paste

Location	Dimensions	Quality	Laminations
Sample 2	250 x 55	Good	CSM 300 g/m <sup>2</sup>
Lower topside	Min 3.4mm	Good	WR 450 g/m <sup>2</sup>
	Max 4.6mm	Good	CSM 450 g/m <sup>2</sup>
		Poor	Bonding paste
Sample 3	55mm Ø	Good	CSM 220 g/m <sup>2</sup>
Below DWL	Min 9.2mm	Good	CSM 300 g/m <sup>2</sup>
	Max 10.1mm	Good	WR 450 g/m <sup>2</sup>
		Good	CSM 450 g/m <sup>2</sup>
		Good	WR 450 g/m <sup>2</sup>
		Good	CSM 300 g/m <sup>2</sup>
		Good	CSM 300 g/m <sup>2</sup>
		Good	WR 450 g/m <sup>2</sup>
		Good	CSM 450 g/m <sup>2</sup>
		Good	Flowcoat

## 9. Conclusions

- The cosmetic appearance of the hull externally above the waterline is unsatisfactory due to the extensive existence of print through. There is also visible distortion of the hull surface due to core separation.
- The structural condition of the hull is unsatisfactory due to near total separation of the outer skin from the core.
- The hull outer skin is not of uniform thickness.
- The outer skin laminate is not uniform or consistent with the Builders declared laminate schedule. In each sample location the laminate was less than the minimum required.
- The sample of the hull below DWL does not appear to comply with the declared lay-up schedule, RCD or ABS rules.

- The vessel is currently unseaworthy due to the core shell separation. There are clear indications that this lack of bond existed in November 2009 and a strong indication that it existed in 2008. The lack of bond is directly related to the absence of core bond material on the surface of the core together with a lack of contact between the core bond material on the surface of the outer skin and the core.
- Restoration of the bond between the outer skin and the core would not serve to render the vessel fully compliant with the requirements of the RCD and/or ABS guide for offshore racing yachts.

## 10. Reply to instructions

The instructions from Verisona on behalf of both Parties specifically required a response to the following questions.

i. *Is the vessel suffering from defect?* Yes - The vessel has 3 significant defects to the hull.

ia. *The nature, extent and likely cause of such defect?*

- The outer skin is not bonded to the core over the majority of area of the hull shell.
- The hull shell is not uniform and does not confirm to the Builders laminate schedule. It is likely that the outer skin laminate does not comply with the requirements of RCD and/or the ABS Guide.
- The surface of the hull above the waterline is unsatisfactory due to print through and surface irregularities.

Defects 1 and 3 above extend over the majority of the hull above the waterline on both sides. Less than 1% of the outer skin has been sampled and defect 2 is present in this sample. Statistically this would suggest that defect 2 exists in a high proportion of the hull. Without further samples or a comprehensive ultra-sonic report I am unable to be accurate regarding the extent of defect 2.

The lack of or failure of the bond between the outer skin and the core would appear to have three causes all of which relate to construction errors.

1. No core bond material was applied to the surface of the core.
2. The core is not regular and closely fitted.

3. The core was not brought into firm and maintained contact with the surface of the outer skin through the cure period of the core bond material.

ib. *Whether such defects are or are not capable of being properly repaired to restore the vessel to her proper condition and value?*

There are methods of retrospectively achieving a secure bond between the outer skin and the core, however, I have no knowledge of these techniques being used when the absence of bond is so extensive as in this case.

There is no way of rectifying the uniformity and compliance of the outer skin laminate short of replacing the outer skin.

There is no known method of restoring the cosmetic appearance of the gel coat short of applying replacement surface finishes.

The available techniques would not restore the vessel to a correctly built condition nor would the work serve to fully reinstate the value. Accordingly in my opinion the defects are not capable of being properly repaired.

ic. *If they are not, whether those defects now render the vessel unfit for its intended use and/or effects the vessel's open market value?*

The defects render the vessel unfit for its intended use as the structural strength of the hull relies upon a strong and consistent bond between the components of the shell.

The existence of these defects has a very substantial negative effect on the market value of the vessel.

id. *If the vessel is capable of being properly repaired etc?*

For the reasons given above I believe that the vessel cannot be restored to a fully satisfactory condition.

ie. *The prospect of the development of further and other defects within the vessels structure thereafter?*

See ib above. Notwithstanding this the vessel appears to be stable and if suitable repair methods could be found there is no obvious reason why the existing defects should recur.

ii. *In addressing such defects, please identify in respect of each defect, whether*

iii *It is the product of (i) poor design - No*

(ii) *inadequate construction* – Yes

(iii) *neglect*- No

(iv) *Mis-use* – No

(v) – *Inadequate post-delivery repair* - No

(vi) *Servicing* – No

ii**b** *It is a direct or indirect result of the grounding of the vessel in 2007* – No.

ii**c**. *The defects found are an effect of the grounding in 2007 or any works undertaken in respect of repairs at that time* – No.

ii**d**. *It is the natural consequence of fair wear and tear given the vessel's age and usage by Mr Hill.* – No.

iii. *Please estimate the current respective open market value*

a. *Of the vessel in her present condition based on the assumption that she is sold within the UK second hand yacht market, with full and frank disclosure of that condition and your report.* - £4,000

b. *Of the vessel upon completion of all and any repairs as necessary to rectify all defects, with full and frank disclosure of such repairs,* - £25,000, however, the vessel may prove hard to sell at any price.

c. *Of a sister ship of similar age and use, but defect free.* - £40.000

## 11. Costs to date

I have received no information about costs to date from either Party. I understand from Herr Gregor that the cost of storage for the last summer and the last year has been €1,839. My invoice for the attendance, inspection, research and report is attached.

## 12. Recommendations

I am unable to recommend a process of repair as the difficulty of such process, evaluation of the outcome, the cost of execution and the value of the restored vessel are too difficult to accurately predict. If the vessel is not to be repaired, it probably is worth more to the builders than it would sell for on the open market.

Signed .....

11 October 2010

J P Freeman