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HULL CONDITION SURVEY REPORT

CARRIED OUT ON THE VESSEL:

“SXXXXXX”, 57 feet, keel laid 1975, Tolladine Builders (Worcester, UK); cruiser stern narrowboat



Report number: UKMBS-22-011

Date: 19th March 2022

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A. GENERAL NOTES

The following hull condition survey was carried out on 19th March 2022 at the request of owner ("the Client"):

XX

Email: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Mobile: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

This survey was carried out on a 57 feet narrowboat **SXXXXXX** from 0900 to 1500 hours at Paul Barber's Boatyard, Long Eaton, Nottinghamshire.

A. GENERAL NOTES

A1. Scope

The survey type was a hull condition survey. No equipment was tested unless specified in the text. During the day of survey, the client was informed by text message of the Surveyor's hull condition findings at the end of day. The Yard Owner Paul Barber had applied a two pack epoxy paint finish to the craft during the times stated.

The survey was performed for the client named above. No liability shall be extended to anyone else.

A2. Limitations

Parts of the vessel that were covered, unexposed or inaccessible due to fixed panels, linings etc. was not examined. So, it cannot be stated these areas were free from defects other than where specified.

No fittings or fastenings were removed for examination other than where specified. Note: it was not possible to detect some latent and hidden defects without destructive testing or dismantling which was not possible without the existing owner's consent.

The underwater hull keel plating was checked over 6/10ths of the surface area apart from the areas where she was sitting on the trailer support blocks. I did what was possible to obtain random thickness readings to confirm underlying plate thickness used by the original boat builder and the over plating that was fitted 4 years ago. A **Cygnus 4** multiple echo ultrasonic thickness gauges was used to check the thickness of steel plating. This was done as part of a visual and physical examination. Using these devices meant there was no need to remove recently applied craft paint coatings to obtain readings.

A3. Conditions

Vessel was sat on trailer support blocks and the underlying ground was sheet steel and dried mud and small stones. There was 2' feet 00" inches (60cm) clearance along the length of the craft. It made some places very difficult to get close to on the central keel plate for much closer, observational purposes.

At 10:30 hours the Air temperature was 11.6 degrees Celsius, Relative Humidity 68.1 per cent and surface temperature of craft noted as an average of 24.1 C degrees through use of a specialist temperature measuring device. Weather: 0/8ths cloud, cool breeze, sunny, and dry. Craft was open to the weather on the hard standing.

SXXXXXX was 57 feet long by 6' 10" feet narrowboat. The hull was built by Tolladine Boatbuilders, Black Pole Industrial Estate, Worcester in 1975. Four years ago, Paul Barber Boatbuilders extensively overplated SXXXXXX on the keel and sides of hull running fore and aft. She had been moored for 8 years at Beeston Marina

SXXXXXX was an example of a traditional UK cruiser stern narrowboat design. It was constructed of mid-level grade mild steel construction.

Sacrificial chine (overlap) technique from keel plate to side plate was used. It protruded 2.0 cm. That in turn swept back aft to form the tuck and swim.

Overall, SXXXXXX was in good condition for her age. Over-plating a craft is not a solution as it merely hides the original defect. It is, therefore, an imperative to keep on top of maintenance on this craft. This craft was a normal risk for insurance purposes.

B2. Recommendations

Grade A. Defects which should be rectified before vessel is used and/or which may affect insurability:

(i) Third, Firemaster dry powder dial indicator was about to enter the red zone. Replace.

Grade B. Defects which should be rectified in order to prevent future problems:

(i) a long-term finish was applied by taking the hull back to bare metal using motorised sander and then coating it with a two-part epoxy coating. Now would be good time to do that. DONE.

(ii) The mild steel stern support gulleys were full of debris and needed a clean so any rain can drain overboard.

(iii) There was gap of 75mm behind the propeller that could allow a rope cutter to be fitted to the propeller shaft. Surveyor recommends this addition as it will cut through items that attach to the propeller; angling cord, plastic bags, plastic pallet straps, etc. Rope was noted around the prop shaft on the day.

(iv) Fit a Galvanic Isolator to protect the hull from stray 240V current.

(v) Water was observed in the rear area of the shaft coupling/ stern gland on the craft. This must be dry. It was mixture of oil, grease and water. This needed to be cleaned out and kept dry.

(vi) Engine Coolant needed a top up. Steam clean engine and engine room space to bring to optimum condition.

(vii) Water observed in the gas locker base. Bottle should sit on wooden duck boards to prevent contact with mild steel deck. Keep space dry. Drain hole blocked.

(viii) Base of chimney on roof was corroded and needed to be treated with rust cleaner, grinded down, red oxide applied and then topcoat paint finish.

C. VESSEL DATA - SXXXXXX

LENGTH OVERALL	57 feet (17.29 metres) – not measured to confirm
BEAM	6'11" feet (3.05 metres) – measured to confirm
DRAUGHT	2' 04" feet (0.70m) – measured to confirm (bow, midships, stern average)
AIR DRAFT	Not measured to confirm
DISPLACEMENT	Unknown
YEAR OF BUILD/YARD	1975 (confirmed by existing owner documentation) <ul style="list-style-type: none"> • Hull – Tolladine, Worcester, UK • Fit Out – By original owners.
HULL TYPE	Cruiser stern narrowboat
ENGINE	Raw Water cooled engine circulation arrangement with vent starboard swim. Thornycroft S41 4 cylinder diesel unit Engine Serial Number: S4126551790
HIN/CIN	None observed. Onboard documents stated C1975
FUEL CAPACITY	Unknown. 2 tanks connected by copper piping.
WATER CAPACITY	Unknown
HOLDING TANK	Not fitted
RCD CLASSIFICATION	"D" rating. Cruiser stern design for inland waterways usage.
CANAL RIVER TRUST NUMBER	65099
OTHER NOTES	Tolladine went into administration according to London Gazette 15 th January 1981. Boats in fleet were then operated by Black Prince Boats for a while afterwards.

D. Hull, Deck and Structure

D1. Hull plating

Ultrasonic readings were taken at 1 metre measured hull side points on the port and starboard sides, hull underneath, plus bow and stern deck areas plus readings taken at the tuck/swim.

The vessel was constructed of welded mild steel plating of varying thicknesses. The craft gave up its hull thickness details easily on the day because of recent overplating done on craft. Original hull form was made of a flat keel plate, vertical side plating and swim with tucked in aft section that used welding techniques from mid 1970s. The hull plating was marked out using chalk at 1 metre length lengths from bow to aft on the starboard and port sides. This acted as a reliable guide to ensure readings were consistent and could be represented accurately below in the table (fig 1). In addition, it confirmed the vessel's length (17.37 metres / 57 feet long) Also, it made it easier to locate and rectify specific areas for later repair needs, if required. Multiple Echo Ultrasonic readings were taken by **Cygnus 4** multiple pulse device from

a) top, above water line plates;

(b) at the waterline and

(c) to below waterline plates 5cm above the sacrificial chine (i.e., keel plate overhang), and with all readings noted on the hull report sheet.

Readings were taken of underneath the keel plates and shown on the diagram Fig 1. Readings were taken at the tuck/swim at random points – seen on Plan section of Fig 1.

No part of the keel plate that was hammered tested vigorously **was punctured**.

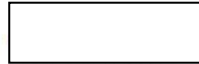
That is, not to say, that it was not possible for that to occur elsewhere on the craft. Should the hammer penetrated the plating that surrounding area would be mapped at much closer points to obtain readings to map the extent of the affected metal surface reduction. The findings on the day shown visually in the diagram Fig.1 below are in Millimetres.

No bow thruster was fitted to craft.

In 2018, mild steel side over-plating was welded to the original sides of the craft using 6mm mild steel both port and starboard. Height of footing was 60cm and situated above the sacrificial chine seam.

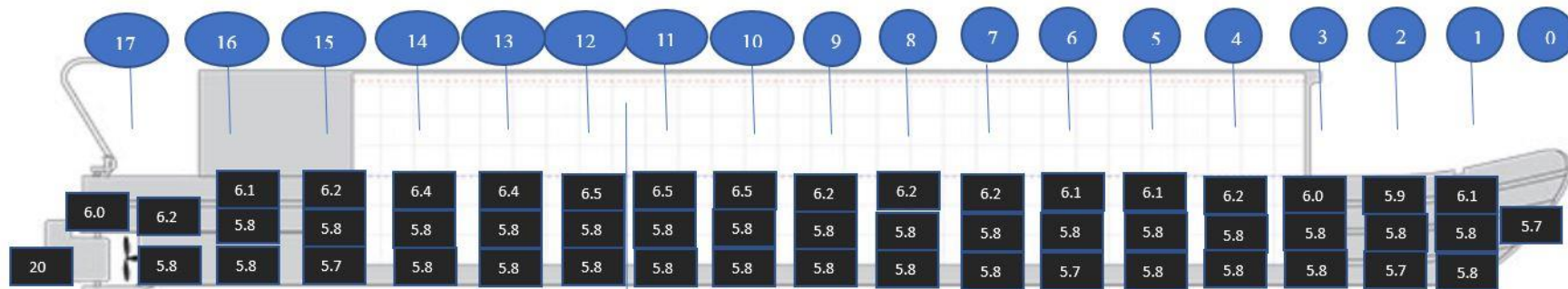
However, no structural weakness was observed. No hogging or sagging effects were noted.

HULL FORM: CRUISER STERN

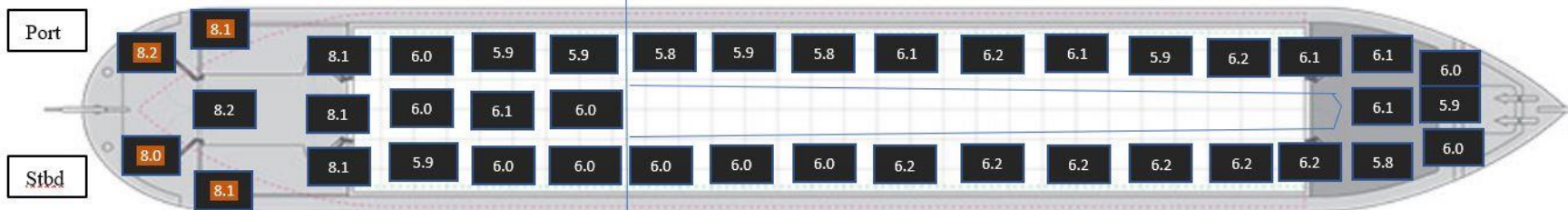


DATE: 19/03/2022

LOCATION: PAUL BARBERS BOATYARD, LONG EATON



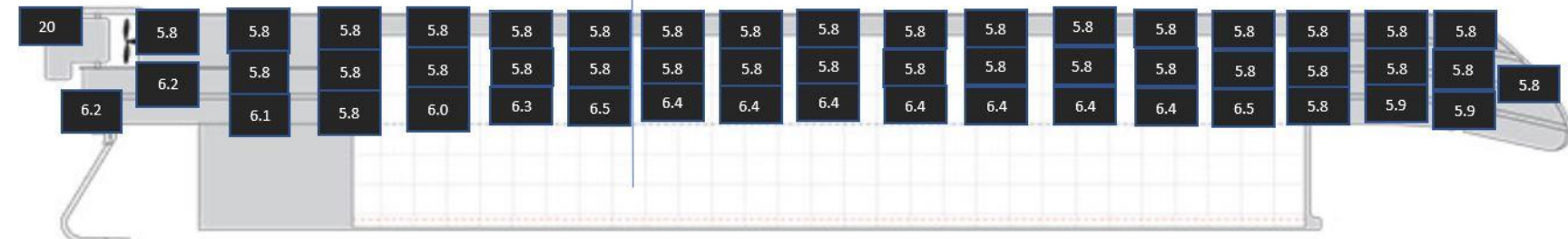
Starb'd



Port

Stbd

Plan



Port

Fig. 1 - Diagram showing ultrasound thickness readings on the flat-bottomed hull, tuck/swim and port and starboard sides of SXXXXXX. Plan and side views. All readings were mapped in millimetres.



Fig 2 – Trailer supports and added mild steel side plating: 6mm

Any probable cause for loss of plate thickness reduction over time would be residual, stray electric current from on board equipment in those adjacent locations (i.e., battery bank, other nearby vessel's using SXXXXXX's anodes, etc) and other galvanic action areas that would contribute to any surface pitting. SXXXXXX's new over-plated sides were smooth and in good condition due to the 2 pack epoxy Jotun paint treatment.

This confirmed the importance of the process of an annual or every 2 years lay-up, with hull maintenance tailored to preserve SXXXXXX's longevity.

The trailer supports were located at many areas that made some keel plate readings difficult. Access was difficult to take readings at the central keel in these positions due to design of trailer layout. Fig 1 has blue lines on it that show where it was difficult to obtain keel plate readings on the day.

Supports located from bow towards aft at 1 metre; then 8.0 metres and 11 metres spacings. Fig 2

Cygnus 4 ultrasonic thickness meter was calibrated and checked against a mild steel test block which was a 15mm thick steel block. Found accurate.

All the weld runs were generally acceptable for a craft this age when examined and randomly hammer tested. No signs of porosity or poor penetration were found from visible inspection and hammer sounding of both sides included stern areas and port and starboard outer plating.



Fig 3 Forward bow section keel plate at 13m area.

Recent applications of 2 pack epoxy treatment had contributed to the good state of keel plate. Very little pitting was noted that would cause the Owner's concern due to craft's age and previous remedial work. Usually, when paint coatings are in poor condition, especially around high abrasion areas above the waterline; renewal of paint surfaces must occur. The cheapest way of doing this is to pressure wash the hull, wire brush any loose material and re-coat with more blacking.

However, given the good condition of the hull overplating for the age of the boat (1975 build), I would recommend (B) a long-term finish was applied by taking the hull back to bare metal using hydro, grit, shot, or slurry blasting and then coating it with a two-part epoxy coating. Now would be good time to do that. It would provide much better long-term protection of keel plating, swim, tuck, and side "under water" plating to maintain necessary plate thicknesses.

However, the cost is more than blacking. However, it lasts much longer in protecting the hull.

There are several brands on the market – those made by **International Paints**, **Jotun** and **Hempel** being of good quality. The black paint can be taken up to the deck level from the top strake. On the day of survey Paul Barber had nearly completed the 2 pack epoxy painting on the craft. The bow stem and stern wells were in decent condition.

Also, maintain the existing colour scheme.

Strake welds were clean and continuous. Half Convex bar shape. Several small, rusted areas of paint were noted due to past mooring mishaps, dropped metallic equipment, etc.

Forward strake layout (see Fig 4) was:

- Top strake on coaming was continuous forward to aft port and starboard;
- Middle strake ran to 4.2 metre point on both port and starboard sides. Located 18cm below top strake.
- Lower strake ran to 3.2 metres point on both port and starboard. Located 18 cm below middle strake.
- A triangle shaped over plate was fitted port and starboard above sacrificial chine. Terminated at 2.5m position.
- Below them was the sacrificial chine with on average 20mm overlap.

Overall, no porosity was noted in the welds. The thinnest plate thicknesses can be seen in Fig 1.

Advisory Note: Monitor these locations in the coming years. It is an imperative to keep magnesium anodes in top condition and provide enough of them to protect the craft.