Correcting a Blister Problem on Windward Passage

- Work done by Rick's Marine Service
- Rock Hall, Maryland
- Work begun: December 18, 2004
- Work completed: April 22, 2005

Bottom had many coats of paint

Over 10 plate-sized blisters

Extensive cracks in the gel coat

Peeling the Bottom

- Mechanical peeler removes up to 1/8 inch per pass
- Objective is to remove paint, gel coat and two layers of fiberglass
- Excessive thickness of bottom paint (nearly 1/8”) required that the hull be peeled twice to get through the paint, the gel coat and two layers of fiberglass

Bottom After First Peel

Note some gel coat remaining and two layers of fiber glass not completely removed after first peel

Sandblast Hull

- After the second peel the hull is sandblasted to remove loose material
- This also cleans out blisters and voids
- This process takes the hull down to dry fiberglass

Sandblasting Operation

Sandblasting Results

Note the void where the blister had been. This will be filled with epoxy/glass mixture.

The color and surface texture differences indicate where the sandblasting has been done – the area to the right

Sandblasting Results – cont.

Left: Before sandblasting

Right: After Sandblasting

This part of the hull has been completely sandblasted

Hull Defect

- Sandblasting revealed a hole through to the inner hull
- This hole had been a major void that was patched when the hull was originally built but removal of the fiberglass and sandblasting removed the patch
- This was repaired with fiberglass and epoxy

Voids Show Up After Sandblasting

More than a dozen voids of this type were exposed by the sandblasting operation at least some were from the manufacturing operation. Others may be products of blisters

Keel Treatment

To prevent rust, the iron keel must be coated with a barrier coat immediately after sandblasting

After Sandblasting, a Tent is Built

An external heater mounted on a trailer will maintain the temperature in the tent above 60º F while the resin is curing

Inside Tent – Dry and Warm

Though the outside temperature dropped as low as 8º F the temperature in the tent was above 60º F

Drying and Coating

- Hull is dried for several days in the heated tent until the moisture meter shows no residual moisture
- Major voids are first filled with epoxy resin (black areas)
- Then two coats of thinned vinyl ester resin are applied with a roller over the entire hull

Resin and Catalyst are Mixed

Filling Minor Voids

Remaining minor voids are filled and the hull is faired by troweling on two coats of thickened vinyl ester resin over the entire hull

Three Layers of Glass are Added

- Hull is moistened by applying resin with a roller and then glass is applied to the moistened hull
- More resin is rolled on over the glass until the glass is saturated with resin
- The entire hull is covered with three layers of glass

Air Bubbles are Rolled Out

A rubber veneer roller is used before the resin impregnating the new fiberglass hardens to squeeze out air bubbles and smooth the surface

Through Hulls and Stand Placement Require Special Attention

Glass sections are offset so seams are not developed

Jack stands are moved as work progresses

More barrier coats applied

Over the entire hull thickened vinyl ester is applied over the glass with a trowel

Gel Coats are Applied

A trowel is used to apply the thickened gel coat

4 Layers of Gel Coat are Applied

The resin is pigmented different shades of grey for each coat to ensure that no areas are missed in the barrier coat applications

Sanding Smooth

The entire hull is now sanded smooth

Detail Sanding

All rough spots are removed and stands are moved to finish under them

Through hull fittings are uncovered and cleaned

Final Barrier Coats

After detailed sanding three vinyl ester barrier coats are rolled on

Bottom Paint

A black coat of bottom paint is applied

Final Bottom Paint

- A blue coat of bottom paint is applied over the black
- A second color is used so that one can tell when the final paint coat has been ablated off and the hull should be repainted
- However, to completely hide the black coat, two coats of blue were required

Hull Compounding and Waxing

- The entire hull above the water line was compounded to restore the gel coat
- Two layers of wax were then applied
- This work was done by the owner