This is the story of the restoration of Mistral KC118, a 1970 Børresen Dragon. Mistral has been a two-year project undertaken by the author to bring the boat back to like-original condition when she won the Dragon World Championships in 1983.
Dragon hull number 556 was built by Børresen Boats in Denmark in 1970, and is a carvel planked Classic Dragon built with mahogany, teak and oak hardwoods, with softwoods used for the deck beams, carling and shelf.

Mistral was built for Marty Godsil in Seattle, Washington and the original sail number was US250. Marty subsequently went on to build many fibreglass Dragons in collaboration with Earl Miller of Miller Marine on Bainbridge Island, WA. Some of the Miller/Goldsil Dragons are still racing in Vancouver today. The hull colour was originally yellow when Mistral was shipped over from Denmark, and remained that way until white was applied in the rebuild.

Mistral was purchased by Bob Burgess of Vancouver in 1972, and was given a new sail number, KC118 when she was moved to Canada. Bob had an illustrious racing career in Dragons. Bob, with David Miller and Robert Butt, came second in the 1975 World Championships in Rochester, New York, and then won the 1983 World Championships in Vancouver with crew Nigel Brown and Shane Koreman. When Bob was unable to sail in 1984, David Miller, with crew Shane Koreman and Robert Butt, won the North American Championships in Vancouver.
Timeline

1970 Built in Denmark by Børresen Boats for Marty Godsil in Seattle.
1972 Purchased by Bob Burgess in Vancouver.
1975 Second in World Championships in Rochester.
1983 First in World Championships in Vancouver.
1984 First in North American Championships in Vancouver.
1990-2013 Owned by Heinz Rautenberg and Doug Day in Vancouver.

The Børresen Builders Mark showing a US sail number, indicating it was built for export.
Communications with the International Dragon Association (IDA)

Before any work was undertaken, Anne Garrett, National Secretary of the American Dragon Association (ADA) put the author in touch with Patrick Gifford of the Classic Dragon Committee of the IDA. Patrick has restored a number of Classics, and was a great resource for undertaking this project. The guiding document prepared by Patrick and the IDA for restoring old wooden Dragons is “Dragon Class Rules for “Classic” Dragons” which applies to carvel-planked boats built before the mid-1970s. Other reference documents utilized:

- International Dragon Class Rules.
- Appendix for Carvel Planked Construction and Wooden Spars.
- A Summary of Relaxation of the IDA Rules in Respect of Older Boats.

Maintaining a valid Measurement Certificate

Repairs require that specific procedures be undertaken in order to maintain a valid Measurement Certificate. Fortunately, the original measurement forms, including the Measurement Work Sheet and the Measurement Form, along with American International Dragon Association and Canadian International Dragon Council certificates, were passed on through the various owners, and this facilitated the location of the Stations 2, 4, 8, 12 and 14, and the width of the boat at these stations, which were maintained during the repairs.

The objective of the work was to perform the repairs in such a way as to not change the shape of the hull in any way and so maintain a valid measurement certificate.
Deck and Beams

The deck was in poor condition, and it was decided to replace it. As luck would have it, the wood-work was being performed by Mike Pongracic of Northwest Delta Yacht Services in Vancouver, and he had very high quality Douglas Fir, Teak and Mahogany timbers in his shop. A plan was formulated for the deck replacement and was presented to, and approved by, the IDA, as follows:

- The timber was weighed using a calibrated scale and density determined.
- The proposed wood/epoxy laminated deck would have a unit weight of 8.15 kg/m$^2$, which exceeds the minimum weight in the rules of 7.6 kg/m$^2$ if constructed as follows:
  - Install 3 layers of 4 mm thick Douglas Fir planks set at 0, 60 and -60 degrees.
  - Install a final layer of 4 mm thick teak.
- The achieved thickness of 16 mm exceeds the minimum thickness in the Rules of 15 mm.
- Only every second deck beam was removed at a time, and clamps were used at the measurement stations to ensure the hull lines were not changed.
- A shear clamp was added where the deck and hull meet.
Hull and Frames

To mitigate seams opening up in the future, the hull was splined, where the connections between planks were opened up about 3 mm using a guided skill saw, epoxy was applied to both surfaces, and a 3 mm thick piece of mahogany, also wetted out with epoxy, was inserted into the space.

As the work on splines proceeded it was found that several planks adjacent to the bilge had some decay, and that the lower ends of the frames in this area were also compromised. The frames in this area were repaired by making up templates for each location, and laying up new ends of the frames such that only the lower ends of the frames were replaced. The work was performed one frame at a time and the keel did not have to be removed.

Epoxy was applied to the outside and inside of the hull in an effort to seal the mahogany shell to mitigate changing moisture levels and expansion/contraction of the wood.

The wood work was finished in June, 2015.
Equipment

The author visited Petticrows at Burnham-on-Crouch in 2013 and 2014 where information on the latest equipment was obtained, wood boat restorations were viewed, and equipment purchased including shroud connectors, furling gear, mast ram, and running backstay deck swivels.

The mast that came with the boat was a recent Petticrows mast with an in-mast swivel, and so was compatible with the latest furling gear.

A beautiful and modern equipped 1956 Peterson Thusen Dragon was in Petticrows' yard at the time of the 2013 visit, and that boat had a stainless steel space frame to take out the shroud loads. Lane Rud of Blue Water Systems built a similar space frame out of aluminum for Mistral.

Lane also fabricated aluminum brackets for the under-deck running backstay blocks, the stainless steel bracket that connects the Bartels furler to the hull, and the aluminum centre console.

Tim and Kay Tavino and Paul Neve at Petticrows were very helpful in providing information on positioning the rig relative to Station 4, the location of the shrouds, the design of the centre console, and the design of the basket and controls for launching the spinnaker out of the cockpit. The rig is now about 50 mm forward of where it was previously, which works well with the new North sails.

Weight

The boat was originally minimum weight, but is now is about 40 kg heavier, which is thought to be primarily due to the added epoxy, the installation of the shear clamp, and the weight of the deck being 7% over the minimum.
Performance

The boat is still fast, which is attributed to the excellent lines of this great boat, the care in preserving the lines throughout the project, and the modern equipment and sails.
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