

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

Golden Gate Yacht Club,

Plaintiff,

v.

Societe Nautique de Geneve,

Defendant,

Club Nautico Espanol de Vela,

Intervenor-defendant.

Index No. 602446/07

**AFFIDAVIT OF
MICHAEL DRUMMOND**

MICHAEL DRUMMOND hereby deposes and says:

1. I am over 18 years old and am a citizen of New Zealand. I am the Design Director of BMW ORACLE Racing ("BOR"), which represents Golden Gate Yacht Club ("GGYC") in the upcoming 33rd America's Cup. I have over 20 years of America's Cup experience as a design engineer, principal designer and navigator.

2. My role as Design Director is to consider all elements of the design of the yacht and coordinate the various departments ensuring that the project progresses on time and to the highest level.

3. For the design of the yacht *USA*, we integrated the knowledge and expertise of our inhouse design team with the French firm VPLP, and therefore the design was a collaborative effort.

4. Our inhouse design team includes several dozen designers from many different nations, and the yacht *USA* was designed in various offices all over the world,



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A handwritten signature in blue ink, appearing to be "MD".

including Anacortes, Washington, San Diego, California, Paris, France, Valencia, Spain, and Munich, Germany.

5. In the 32nd America's Cup, I was a member of Alinghi's sailing team. In that Cup, Alinghi developed the capability to build its own laminated sails in Switzerland. Indeed it did build a number of sails known as 3Di and finished them at their sail loft in Valencia, Spain. (Refer to attached Seahorse article based on information from Grant Simmer, Exhibit A)

6. GGYC's hard sail (also called a wing sail) utilizes the same aerodynamic concepts as a soft sail with rotating mast; it is a more controlled shape but uses all the same principles.

7. GGYC's hard sail is mostly covered with cloth made from polyester, partly with Mylar, which is a polyester film, and partly with carbon and Kevlar laminate like a soft sail mast. The outer coating of 3DL sails are made of Mylar.

8. The compressive loads of the hard sail rig are carried primarily by a spar, like a soft sail mast.

9. Carbon fibre stiffeners help give the hard sail shape, like a soft sail.

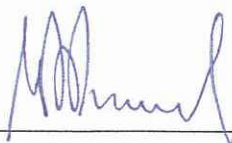
10. The weight and height of GGYC's hard sail is similar to that of a soft sail and mast. The hard sail area is smaller than the soft sail.



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11. I declare under penalty of perjury under the laws of the State of New York that the foregoing is true and correct.



Michael Drummond

Dated: January 27, 2010



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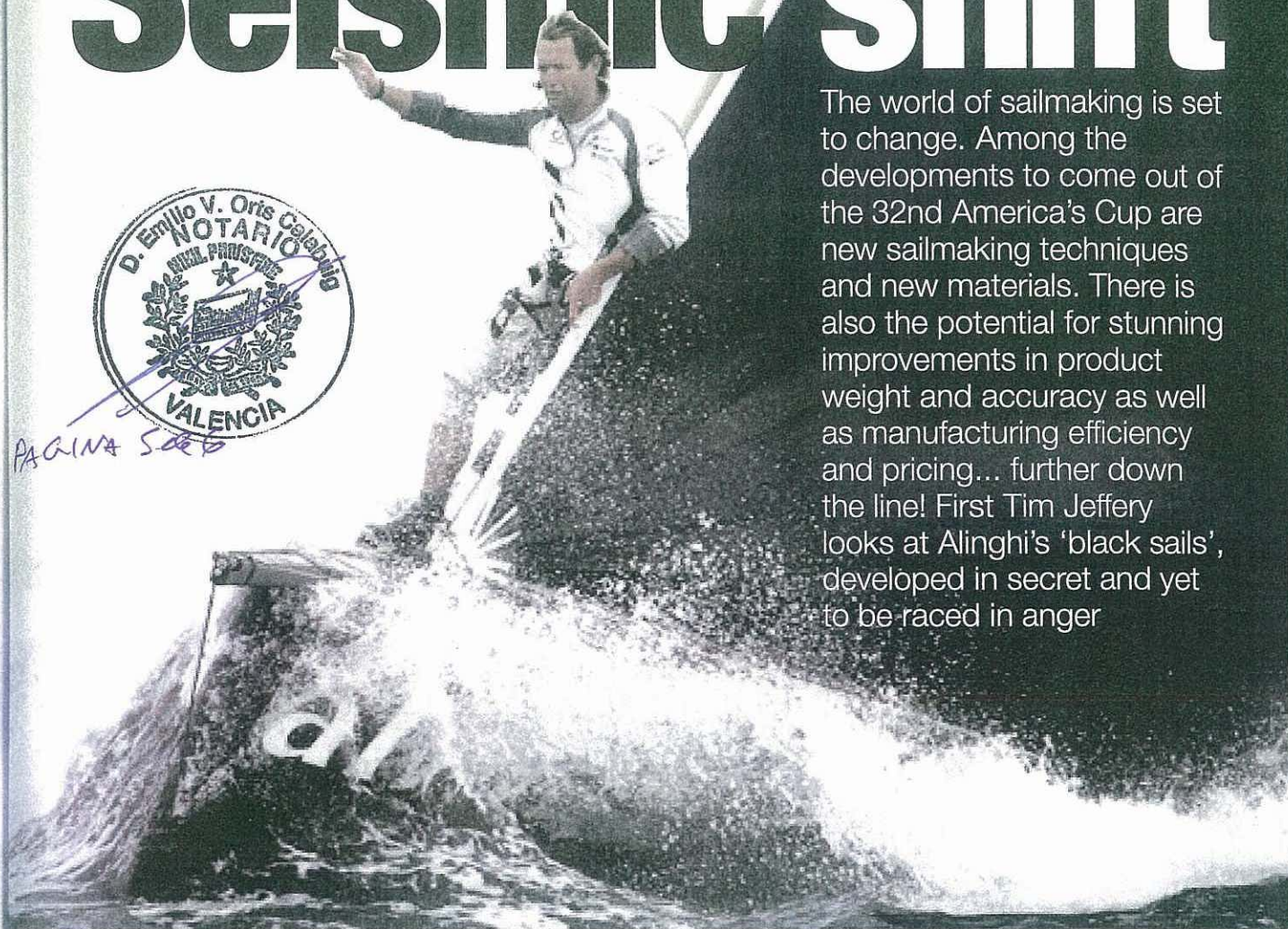
EXHIBIT A



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MD

Seismic shift



The world of sailmaking is set to change. Among the developments to come out of the 32nd America's Cup are new sailmaking techniques and new materials. There is also the potential for stunning improvements in product weight and accuracy as well as manufacturing efficiency and pricing... further down the line! First Tim Jeffery looks at Alinghi's 'black sails', developed in secret and yet to be raced in anger

We just call them the 'Black Sails,' says Murray Jones, the four-time Cup winner and Alinghi strategist, of the secret weapon that never was, the game-changing technology that could have dazzled the Swiss team's America's Cup challengers.

The proper name for the new cloth production process is NSA. As it was, Alinghi didn't use the Black Sails. *SUI 100* was fast enough and Brad Butterworth's crew smart enough to win anyway. But the Black Sails are the next big thing in sailmaking, the advance every bit as profound as that signalled by Dennis Conner first hoisting an experimental 3DL jib on *USA 11* in the 1992 Defender trials in San Diego.

This all-Swiss technology has now been snapped up from its inventors, Edouard Kessi and Gerard Gautier, by Tom Whidden and Jay Hansen for North Sails. NSA promises lighter sails because of the way that the load-bearing fibres do their work and because the film that's fundamental to a 3DL sail can be dispensed with. The Alinghi trials conducted primarily out in Dubai showed encouraging

shape retention and adjustability for what is still new technology. And, importantly, because of the industrial process used there is the potential for extremely worthwhile production gains.

'We just weren't quite ready. We simply ran out of time in the end,' says Grant Simmer, Alinghi's managing director, of the decision to shelve the project in January 2007. 'But if we had another year I think we would have ended up racing the Cup with Black Sails.'

First, let's clear up what the Black Sails aren't. First, they are not necessarily black; they can be any colour provided there is a good UV inhibitor. Black suited Alinghi's purposes when they tested the technology in Dubai because it made the sails' secret pretty much impenetrable. Second, the sails are not moulded in the sense that all the elements are laid up over a 3DL-style mould in the shape of the finished sail.

There is no film to which the load-bearing fibres are bonded as happens with the current moulded sailmaking process. Dismiss the idea of 3DL with its great big bundles of yarns glued into a scrim and film sandwich. Think instead of a cloth built up of delicate, tissue paper-thick layers. Each tow of fibres

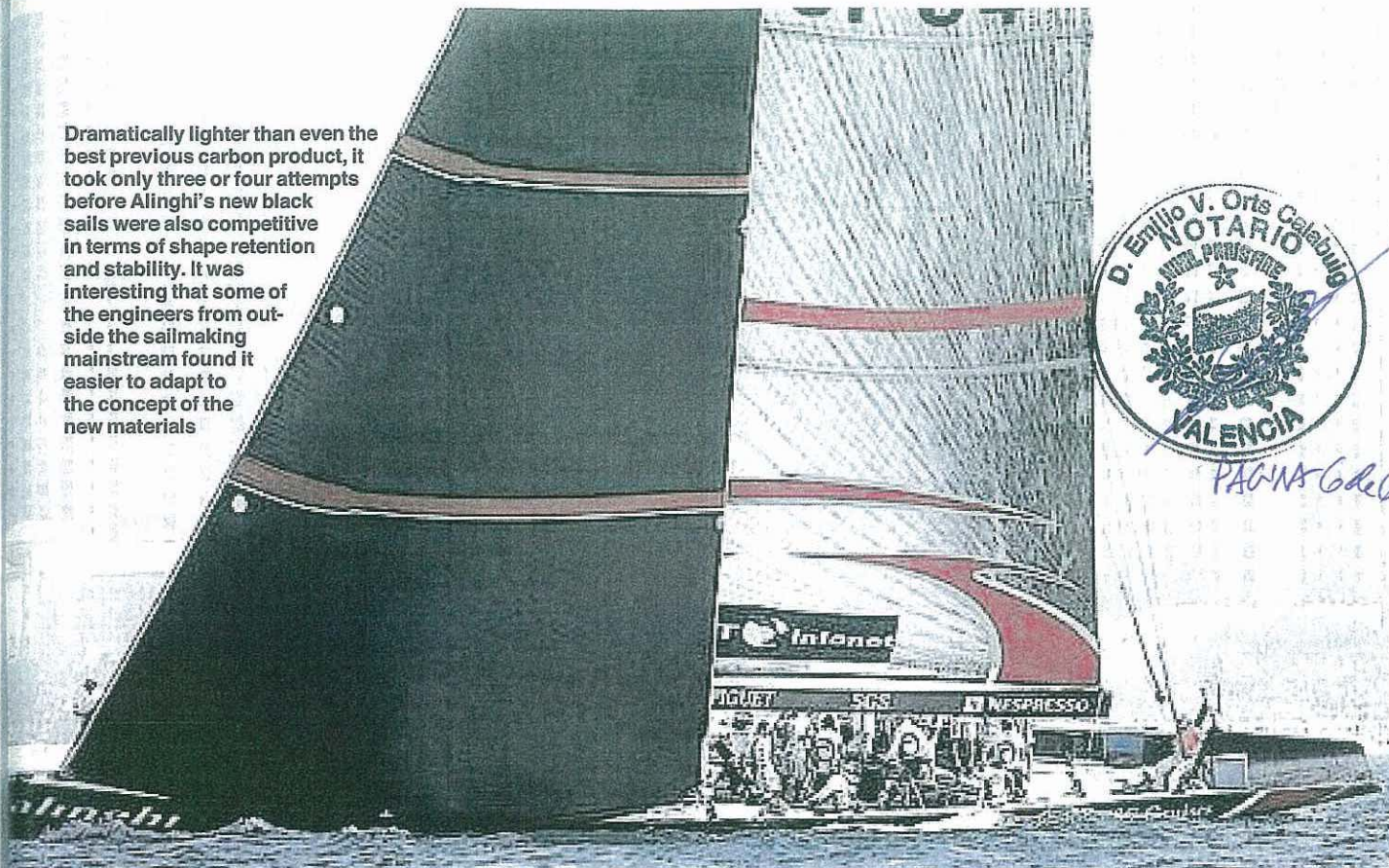
is spread out in a gossamer-thin strap, rather than running vein-like as the bundled strands do in a 3DL sails. It is a true composite fibre compared to the 'frame and stringer' system that is 3DL.

What the Swiss invention does is create a reinforced, formed fabric. In other words both 3D shape and 2D load-bearing are generated in a multi-ply laminate. The reinforcing fibres can be used smaller than ever and oriented with greater precision and variety than ever before. The result is a continuous fabric alternating with a membrane, but even this has embedded reinforcing elements. So no redundant or extraneous matter.

The fabric is prepared on a conveyor belt in which the various sections overlap. The belt takes the raw material underneath a press in which air and water combine to form the three-dimensional shape. The press's top half is an air chamber while the bottom is water-filled, water being incompressible. Effecting the bond is an infinitely adjustable shape-forming bar in the air chamber which hot presses the material together as it makes its pass.

Kessi and Gautier patented their process quite early on; Ernesto Bertarelli knew them

Dramatically lighter than even the best previous carbon product, it took only three or four attempts before Alinghi's new black sails were also competitive in terms of shape retention and stability. It was interesting that some of the engineers from outside the sailmaking mainstream found it easier to adapt to the concept of the new materials



from way back because of his own racing on Lake Geneva and bought sole licensing rights for the 32nd America's Cup. Alinghi then effectively bankrolled the development of the technology to the stage where it was producing racing sails.

'He was really keen on it,' says Simmer of a project that the Alinghi boss had held dear but which has now passed on to North Sails.

Simmer and the Alinghi think-tank had to make the call whether to carry on with the Black Sails for their own purposes after a major evaluation in Dubai last winter. 'I just thought it was too big a project and would take forever,' admits Simmer.

Yet at this stage the new headsails were already coming out 10kg lighter than the equivalent carbon 3DL sails; not much perhaps, but the new technology was already bettering a matured one. So it was a big call to drop the idea. Why?

'You have to rationalise the projects you have on and in the end we didn't think it would make a difference in the Cup match,' explains Simmer. 'We found we could match the 3DL sails but we didn't think we could better them in the time we had left. But given we'd been working on it for only a couple of years this was a hell of an achievement.'

In the original deal with Alinghi, Kessi and Gautier were not given a blank cheque. Funding was related to targets. 'We instigated a system of milestones to which the funding was linked. Each milestone achieved released more funding,' remembers Simmer. 'And they met all our milestones! The laminates improved and the construction progressed. They had a lot of really good ideas.'

The European Patent (EP1531979) makes for dry reading; better to think of NSA in terms of a stack of tissue paper.

Provided there are more than three layers, the new sails require no film. 'It's like making a sheet of plywood and you can orientate the fibres any way you want in each of the veneers,' explains Simmer.

'We used a lot of their sails in Dubai. It was not an easy decision to stop development,' he continues. 'The fact we tested it so much means the technology passed the first test. It achieved credibility. 'We just didn't have enough time and there was so much more to test; hull shapes and fins and a lot of stuff we still hadn't crossed off the list. The other projects had possibilities of bigger gains on the racecourse.'

Much of the Black Sail programme was focused primarily on headsails but one mainsail was built as well. By the end the jibs were coming out 10kg lighter than their 3DL equivalents and had slightly different characteristics. 'We put a lot of work into them so we know a lot about them,' says Alinghi's chief sail designer Mike Schreiber, also one of North's most senior men. 'Most of the stuff from the Cup trickles down and certainly there's no reason why you couldn't apply this technology to other boats.'

Danish engineer Michael Richelsen has written some of North's most important computer programs, and he was an important addition to the Alinghi design team in the last Cup. Richelsen has a disarming way of making complex subjects sound simple. 'The software is not so different from a 3DL or panel sail,' he says of the work done on the Black Sails. 'You model the fibre characteristics and arrange the orientation accordingly, so that the sails give you the shape that you are after.'

English engineer Peter Heppel was also brought in and given the vital task of writing the original software and then further developing it. 'He contributed a

lot,' acknowledges Simmer. Heppel's engineering office also took care of most of the final structural design.

But to get a real grip on the new technology Alinghi needed to be able to design Black Sails to codes with which they were already familiar. In regular panel or 3DL sails, different construction produces different responses, and this was going to be even more marked with a wholly new technology. But Alinghi got to the point where their trimmers knew instantly the subtle variations between 3DL and NSA.

And at a time when he is perhaps not every America's Cup sailors' personal flavour of the month, it is important to acknowledge that the motivation for driving ahead with the Black Sails project was largely provided by technology enthusiast Ernesto Bertarelli himself. While some of the Alinghi CEO's celebrity sailmaking experts tended to blow hot and cold, Bertarelli himself was relentless in pushing this project forward.

Switzerland is a deceptive country. Even much of its industry tries to remain discrete. Bertarelli owned the NSA plant in the tiny town of Cossonay, some 15km north east of Lausanne, where Kessi and Gautier worked their magic. Cossonay's population struggles to pass 3,000. Green and rural is the shorthand description. Outside the plant the cows munch away, doing their bit for the chocolate industry.

But inside there is some very innovative Programmable Logic Controls (PLC) machinery. 'The Swiss are great with this sort of industrial product,' admits Simmer.

'I remember when I looked at the first 3DL plant. It was pretty basic, using electric drills to power some of the machines. It has come a long way since then and this will be a similar story...' □

IVO ROVIRAL/ALINGHI

LEGITIMACION anotada al numero 48 de mi Libro Indicador:

Yo, Emilio Vicente Orts Calabuig, Notario de Ilustre Colegio de Valencia, con residencia en la Capital,

DOY FE:

Que ante me ha comparecido **DON MICHAEL DAVID DRUMMOND**, mayor de edad, a quien identifico por su Pasaporte neocelandes numero AB295218, vigente.

Que dicho Sr. Libre y voluntariamente ha estampado a mi presencia la firma que precede y manifiesta que conoce el contenido de este documento extendido en seis folios de papel comun escritos a una cara, y quiere que surtan los efectos que le son propios en USA.

En su virtud LEGITIMO la firma que antecede conforme el articulo 207. 2 del Reglamento Notarial y hago constar que todo lo anterior esta conforme con el Acta numero 392 de mi protocolo de esta misma fecha y que signo, rubrico y sello es diligencia, que anoto en el Libro Indicador, en Valencia a 27 de Enero de 2.010.

SELO DE
LEGITIMACIONES Y
LEGALIZACIONES



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