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MULTIHULLS

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Cover Story:

America's Cup World Series

The Cup switches to cutting-edge AC45 multihulls, powered by towering wingsails



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Racing

34th A

Report and Photos by
Bruna Schidler



AMERICA'S CUP

World series

On a very crisp February 2010 morning, ice is building on the deck due to wind chill as we cruise to the racecourse. We were there in the first row on board our racing power cat *Water-Wizards*, doing exactly what she was conceived to do: hired to chase

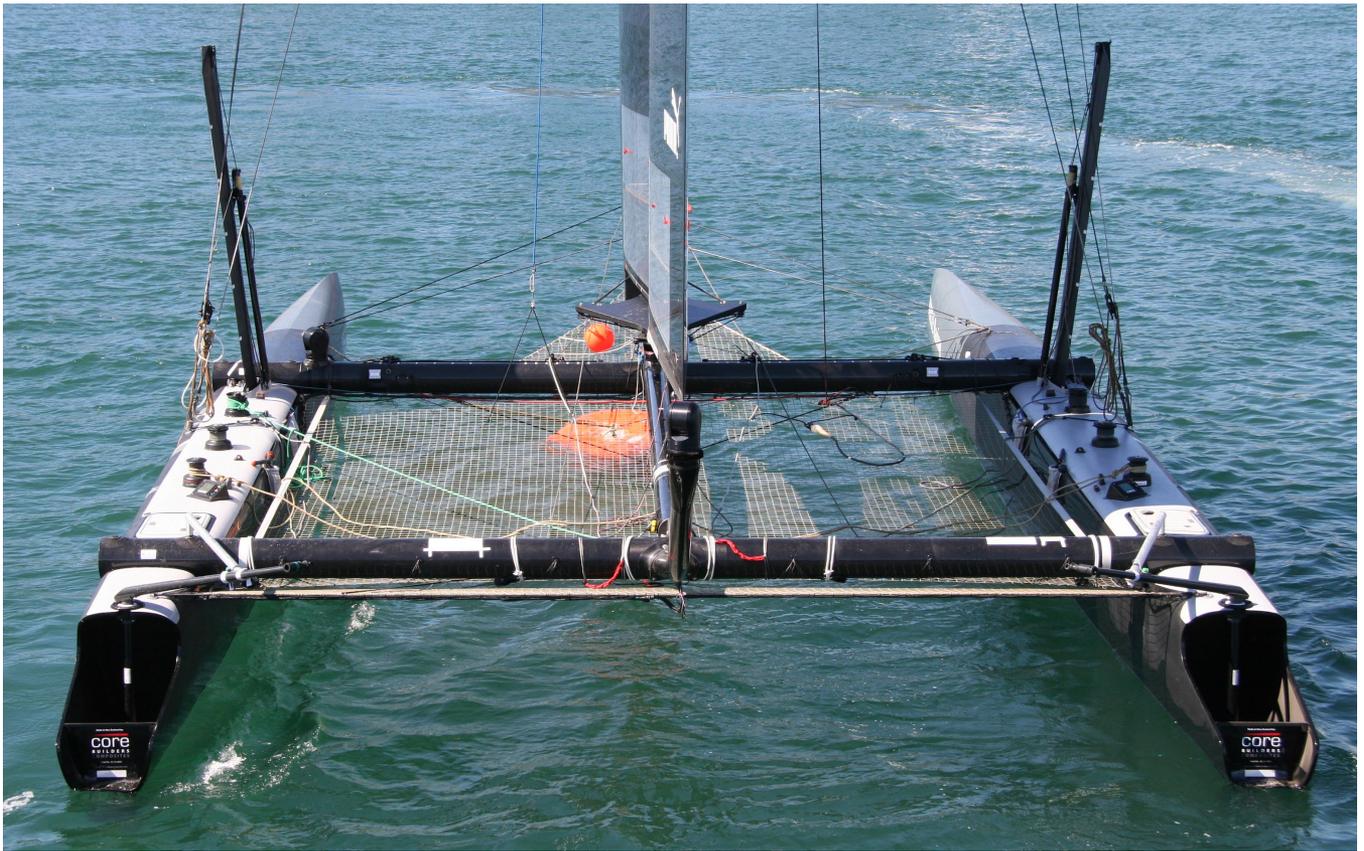
and shadow the 33rd America's Cup between the Defender, Ernesto Bertarelli's *Alinghi* team and the Challenger, Larry Ellison's *BMW Oracle* team. Much press, much speculation, much excitement after a lengthy lull around legal proceedings... and then... it was over.

James Spithill, the young maverick sailing champion hailing from Australia, at the helm of *BMW Oracle USA17*, the trimaran which to this day is the largest power to weight ratio boat ever built, overtook with no compromise the elegant yet overshadowed *Alinghi* catamaran, both 90 ft.

Our crew consisted of Gino Morrelli, whose expertise in multihull ocean racing and design is unequalled for the last 40 years, and Mark Featherstone of among others *PlayStation* fame. While squealing silently in delight as fierce multihull fans and confirmed sailors, we were all holding our breath.

What will come out of this benchmark? Could "they" go back? They had crossed the frontier to the Multihull world. They had gone too far. If speed was indeed their aim, multi was it!





For the competitive multihull community, it was hard to conceive that after tasting such exhilaration on board the fastest boat ever built within the Deed of Trust, the long standing ruling document governing America's Cup since 1851, how could decision makers Larry Ellison and Russell Coutts not seek further thrills. With such history steeped in monohulls, there would be backlash from disturbing the most traditional and most sought-after reward of this fine art and sport of sailing. Who better than an innovative trail blazer who built his fame and fortune by having gone beyond the status quo in the highly competitive software industry and sustained his edge over 30 years to make his mark worldwide, to explore through established boundaries. Russell Coutts voiced his appreciation of the ease of logistics in transporting a multihull, which provides the ability to be assembled and disassembled easily then can be shipped worldwide and keep the event gathering new enthusiasm in various countries prior to 2013.

A decision was made to develop the next America's Cup with two new catamaran classes to the wonderment of both the multihull and monohull communities, while in conformity with the legacy of the Cup for boats to be between 60 and 90 ft for the actual regatta.

Fast forward to Cascais, Portugal, this early August, the 34th America's Cup has started its first World Series on a new class AC45 catamarans specifically designed and built in New Zealand by Core Builders Composites as 'trainers' to the AC72 catamarans class to compete for the 2013 America's Cup to be disputed in the San Francisco Bay, and in the challenger selec-

tion series of the Louis Vuitton Cup regatta leading up to it. Both boats have and will apply the concept and design of *USA17's* wing mast at a much smaller scale.

Bertarelli had built his soft sail catamaran for light air condition and was pushing for venues that would allow such light steady wind. With that in mind, Ellison's team leaned on further researching the wing sail so as to generate more power to his heavier trimaran should a light air venue be the final selected racing grounds.

We will not ever understand why the former did not consider the wing sail in light of how, 22 years prior, the 61 ft catamaran *US1 Stars and Stripes-H3*



completely crushed any hope of New Zealand's 90 ft monohull *KZI* with his crew of 30 to 40 to defend the Cup.

What had been developed in the '30s in aeronautics, had been experimentally applied to sailing as early as 1949, and had been confirmed brilliantly in 1988, is now fully honored for the world to enjoy.

The AC45 is a clear evolution of the early tube cats, Formula 40s, C Class, and the Extreme 40s, while relying upon top technically advanced material combining fierce resistance with super light weight. Light weight for top speeds is needed to be able to race in 4 to 6 knots of wind. At 4 knots, you fly a hull. Such performance is possible as the AC45 can produce its own wind on average up to 3 times the actually wind speed. What comparable size monohull could generate their own wind to race at such low wind speed? To this day – none!

The average race speed for an 80 ft America's Cup monohull was 10.50 knots. While their ideal speed is 15 to 20 knots, the average race speed for an AC45 is double with peaks up to 26-30 knots. The AC72s are expected to flirt with the 35-40 knot range. The rules have changed... Period!

While the AC45 cats are all one design, therefore pushing teams in their strategic sailing to their maximum, the AC72 will be designed within box rules, allowing further creativity and collaboration between sailing and design team. Teams can either align with a design firm of their choice or have the option of purchasing the shared package selected from renown multihull specialists VPLP of France, the lead designer of trimaran *USA17*.

Team New Zealand has favored Morrelli & Melvin from Newport Beach, CA, who were also consultants to *USA17*. Team *Artemis* chose celebrated monohull designer Juan Kouyoumdjian who refers to this time as "an extraordinary moment in boat design."

The study of the perfect wing design is bound to be what the final design of the bulb was to the previous America's Cup editions such as Valencia's 32nd, all shrouded in great secrecy until the day before the first race where the sheet were dropped to reveal the bulb. Such revelation was the biggest draw prior to the official launch of the 32nd America's Cup competition, fueling much press, speculation and prediction – two thin hulls linked with tubes and taut nets, two rudders, two dagger boards, a ball and a wing sail, five sailors for the AC45 and 11 for the AC72.

Unlike on the Extreme 40, the AC45 crew has to hop over or straddle the center longitudinal beam, which can be as high as 2 feet above the net according to how taut that specific team has decided to keep it.

While it may be quite demanding and tiring to jump over while racing, it offers great leverage after pitch poling to help in the recovery of the boat. Such was the case in the impressive swift use by *Team Energy* team who pitch poled 1m 30s prior to the race start, and yet were able to flip back the boat with an amazingly well coordinated maneuver the crew, some standing on the beam now horizontal





and 12 ft above water, exerting all their might to aid in flipping back the boat without the help of their team support boat. All within 30 seconds flat and still with 1 minute to spare prior to the race start! A fit and a first which led their skipper, Loic Peyron, who is referred to as “Mr. Multihull” for his impeccable track record in all that is multihull racing to say: “We improved two things – the way to capsize and the way to waterstart, the windsurfer spirit.”

What has now been featured as the biggest draw to raise spectators’ curiosity to this new America’s Cup chapter,

highlights the mercilessness these boats have for their sailors, and the fierce pressure under which they compete.

Capsizing and Pitch Poling has given indeed the most spectacular visuals, sometimes distracting from all the finesse other boats may display on the same course.

As illustrated in Plymouth, the fleet was racing close to shore in 30 knots gusts of wind alternating with dead holes, frequently pleasing spectators with collisions, pitch poling, capsizing. Fortunately they already had a first week of AC45 World Series races.

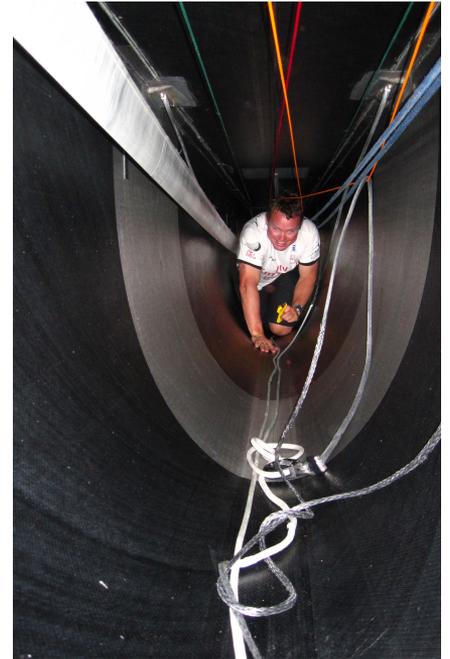
Team *Green Comm* did not want to be left behind in exposure by capsizing starboard to a stop then capsizing port as in a 180 rotation. Fortunately there no one harmed.

It seems that in order to rally more viewership and new sportsmen, the ‘pitch pole’ and capsizing are celebrated as the pinnacle of excitement, everything else seems a bit subdued, if not boring for some. As the event gathers steam over the next few events, we may not see as many.

The crews are diligently and acutely exploring their boat limits and thresholds to discover how far they can go to push their boat for sharp control when either flying a hull, or on a reach gathering greater apparent wind that they have ever experienced on any monohull, or racing downwind with their gennaker to keep the edge they gained upwind.

How far can they go without being overpowered? How far into the boat can you dive your bows without the boat popping up, risking pitch poling, and ultimately losing the race as one has very little time to recover from such when your competitors are barreling down the course.

Flirting with danger is a constant factor requiring all crew to be the most vigilant



they have ever been. The sailors have had to adjust to timing being snappier. Terry Hutchinson who led the spirited *Quantum TP52* to many a victory, accurately notes that instead of minutes to prepare a move, one now has seconds.

With the decision making time being drastically reduced, athletic prowess, physical conditioning, quick reaction time, seasoned with sharp intelligence are mandatory for performance and survival. Jimmy Spithill, 32, at the top of his game calls it “pulsating” and “incredibly physical.” On average, the heart rate steadies around 170 bpm through the 20-minute race.

One of the most challenging moments for the crew, upon pitch poling or capsizing, is to hold on tight to prevent falling into the wing sail which highly threatens your ranking in that race, as well as one’s participation to finish the race. Besides puncturing the wing sail on its two sides, the diving sailor could possibly sustain severe injuries by hitting the carbon fiber honeycomb ribs on the inner structure of the sail. Helmets, reinforced padding worn under their team colors are some of the safeties the athletes are taking.

These carbon fiber ribs bring structural integrity to the 915 ft² wing sail in both the main and aft vertical elements. The main forward section is the load bearing part. The aft elements are made of three flats, controlled by hinges. The structure is wrapped with a super taut ultra-light film, what one might refer to as reinforced shrink-wrap, allowing relatively easy replacement.

Such design allows the wing sail far less load bearing than a soft main sail has, and far less than a wing mast. It sits on a small high-grade stainless steel ball, placed on the crossbeam allowing easy rotation.

The bottom hinge controls the depth of sail or camber, while the upper three control the sail power by the angle of the twist.

The camber is set fuller from the top for the downwind leg and is set flatter in upwind legs or in high winds, as if luffing on a monohull when sailing in heavy winds, as you cannot reef a wing sail. As in a soft main sheet, the more you tighten the more flat the wing sail becomes. To give the AC45 cat the most acceleration upon coming out of a tack, it is eased, and then re-tightened when the ‘reasonable’ speed is attained.

Reading the wing sail is a lot trickier than any soft sail and much training and acute perception is key to trimming it according to conditions.

One may see either the trimmer or the tactician working the camber line (to control the wing sail shape) and the runner line (to keep the mast supported).

Unlike the monohull trimming, very little time is spent staring up at the sail for telltales, these are ahead on the water. Anticipating the puffs and gusts is where it is at, knowing that the on-going adjustment is centered around the main sail, while the twist adjustment has been set upon entering a new leg.

Beside the wing sail, the AC45 relies on a soft 515 ft² gennaker for their downwind leg. After a series of brilliant moves, *Team New Zealand’s* Dean Barker had a nightmarish run of three unforgiving attempts to fill up their gennaker while racing in Cascais as it would not open fully or would twist.

What is part of the thrill is not necessarily the boat speed in itself, but its acceleration power, especially after a tack, which often makes the boat to radically slow down.

Taking advantage of such acceleration, the start line is now a high-speed start, where boats thrive on acceleration before crossing the start line to set up their race, most often after a reach start. The first mark is reached within a short few minutes of the start. Vying for the most inside position at that first mark gives you priority. The strategy of the start has

gotten more complex as being too early compromises all chances to catch up with the competing boats.

Penalty rules have been adjusted to force the boat to slow down by two boat lengths rather than making a penalty turn, due again to time in relation to the speed of the fleet.

It therefore puts all the pressure on timing the acceleration vs. the distance before the start line and from the start line to that first mark. An exhilarating illustration was the start of the unexpected and thrilling match race between *Team New Zealand* and the underdog *Team Korea* led by British Chris Draper, competing on his turf.

While one often recognizes that this first mark determines the race, we have had many lead surprises in both Cascais and Plymouth due to gusts and puffs playing with the lightest of boats. By design, the monohulls are far less sensitive to such unsteady winds due to their keel, weight and low speed.

Cascais started with most teams having few days to uncover the secrets of their boats. Both Spain’s *Green Comm* and France’s *Team Energy* clocked barely a week. As team *Green Comm’s* skipper Vasilij Zbogor summarizes it: “strange wind, strange boat, strange sails.”

Terry Hutchinson, skipper of *Artemis Racing*, admits with much humor during the first Cascais series, “we are with our training wheels on.”

Aside from Oracle teams developing the class, all teams had limited time to train and get familiar with the boat, its fine-tuning and its tempestuous character prior to the first racing day. Clement weather may have been the best remedy for the nerves and great anticipation. While the first race had to be cancelled when underway due to shifting and reduced wind, the week evolved with some good racing with mild wind 6 to 16 knots wind. Plymouth further tested their skills in welcoming them with unsteady stron-



ger winds. Good thing they had a first week of racing under their belts!

The race organizers have created a great blend of monohulls and multihulls racing elements to put equally to test boats and sailors to the enjoyment of the spectators during a World Series week.

- First, four full fleet races of the nine participants: the first three being 20 minutes long, and the fourth 40 minutes. The winning boat is the winner of the AC Open thanks to the accumulation of the points won over these four races.

- Then, the thrilling multihull legacy of Speed Trial where each boat, on a straightline 500 m (547 yd) course, has three attempts for their best time.

- Next is the monohull proven concept of Match Racing where boats are paired up, based on their seeding position from the previous fleet races.

- In closing, to identify the winning team of the week, a 40-minute winner-takes-all race now referred to as “Super Sunday.”



The race format has included a new element with which the experienced sailors have to contend with: boundaries, a first in the America’s Cup history. They were set up to keep the race course visible from land so the spectators could stay involved in the race, as well as encourage battles between boats. America’s Cup has always been off shore, often far from coastal viewing, with the purpose of securing the best steady wind pattern. Also the race course was free to move according to where the wind would shift to. A LED light has been installed on the beam, which blinks to warn the helmsman when approaching the boundaries. If you go past the line, you are immediately disqualified for that race as Spithill sorely found out in Cascais. Boundaries are now forcing boats to tack when they may not have chosen, especially if riding a generous steady wind.

Another element the teams have to keep in mind is the balance of the 5-man crew weight and its distribution, which is critical during each maneuver. That maximum weight being 964.4 lbs (437.50 kg) is the greatest proportion of crew weight to boat weight when compared to any monohull racing. That rule makes it a bit challenging, as the boat is not that wide (22.6 ft / 6.9 m).

The French and Spanish teams are working toward using all the weight allotted to best counteract with the powerful wing sail. Carrie Howe of team *Green Comm*, the only woman competing so far, makes light of it however, with the wind conditions as they have been, she has not been able to be racing as much because of this one reason.

The race organization has added a most thrilling component: the guest program, where according to wind conditions, a 6th person is invited to join the crew in a non-participatory role. As a 5th man on a 4-crew Extreme 40s race on board Randy Smyth’s *Hilfiger* in the Hyeres 2008, I had to match the crew from hull to hull on the course. “Exilirating” does

not even cover the multi-layered sensations where every cell of my body was dancing in a zone between flighty silence when we were flying the hull and sheer madness when tacking. Here, the guest is most often positioned center stern on the camera 'scorpion tail'.

Amongst my sailing experience, recalling the non-compromising acceleration still manifest itself with lingering adrenaline!

Match racing was a rather controversial point in the decision on whether or not multihull would be the new class:

The level of comfort stemming from accumulated knowledge over the long legacy of the Cup was swaying the greatest majority toward monohulls. They would have needed to be equipped with a canting keel. However the fact that an engine would be needed for match racing was problematic. On the other hand, what was deterring the votes from multihulls was the pervasive thought that no multihull could be match raced.

The New York Yacht Club had the courage and conviction to run Little America's Cup starting in 1961 on 25 ft wing sail Class C catamarans.

Amongst his extensive sailing experience, Pete Melvin had raced them in the 1990s around San Diego. We can venture to think that many a spontaneous match races were disputed as well as earlier in his Tornado racing!

Besides that, there were practically no official match races on multihulls ever established. If two multihulls were racing on a set course, it was mostly by happenstance or between daring sailors.

Top confirmed sailors and designers such as Pete Melvin and Gino Morrelli knew, and we can give them partial credit for helping in swaying the daring decision toward this most thrilling display of high performance racing we are witnessing. As consultants hired to present options at the time of brainstorming between mono and multi, their expertise and track records certainly backed up the concept that indeed it would be possible to match race a multi, even a 72 footer.

With both Cascais and Plymouth, match racing on multihull has revealed itself to be most telegenic, and most stimulating for all teams. That sheer excitement led Jimmy Spithill, still riding on fierce adrenaline rush from his match racing in Cascais, to say, rather brazenly:

"Anyone questioning match racing in multihulls is obviously looking pretty stupid right now because that was some of the best match races I have ever done!" So early in the competition, his comment was met with a definite silence in the conference room. Spithill had informed knowledge indeed.

Part of the increasing enthusiasm stems from the many changes of leads possible in a race itself or on the leader board. One only has to refer to *Team New Zealand* vs. newly formed *Team Korea*, or to 10-time-world-multihull-champion Mike Booth, helming *Team China* to be often first at marks. What is there not to like when underdogs face race favorites one-on-one?

Countless times, well established sailors celebrated worldwide from the monohull circuits such as Russell Coutts, Jimmy Spithill, Terry Hutchinson, Chris Draper, Bertrand Pace, Vailij Zbogor refer to how much they have learned while racing their new 45 ft catamarans. Loic Peyron and Mike Booth, while having firmly established their superior skills on multihulls most of their lives, were alluding to feeling like kids in the candy store while discovering their new boat.



<http://www.youtube.com/watch?v=Jvk4D-GIUgE>

When being asked for the validation of this new concept he spearheaded, a defeated on the water that day, and a far from being defeated Russell Coutts replied: “What about the concept? The concept would look a lot better if I were in front right now, if that happens I think it will be a great concept!”

The AC45 World Series and the race organization have brought in a humanity that had vanished from the 32nd America’s Cup where the culture of stardom was fostered cultivating a certain “inapproachability.”

Dean Barker, voicing his challenges with elegant humility, is refreshing: “I learned a lot during the match races and fleet races. These boats have been challenging to sail well and if you make a mistake (crew or tactical) you get penalized pretty badly. We are trying to minimize mistakes and hopefully sail well around the track.”

That attitude of discovery of the sheer power of multihull can only be charismatic to most sailing fans, and especially validating to the racing multihull community. For years, such sailors were limited to their own “clique” due to the dismissive high brow reception they would often receive by many a monohull sailors, thus preventing any sincere dialog, let alone assertion, that indeed multihull sailing was a true challenging sailing sport of its own, giving it ‘ces lettres de noblesse’ (the pedigree). It’s been a long time coming!

The Formula 40s were bringing racing thrills as early as 1984. Hawaii, with her Polynesian heritage, had the first modern 40s off Waikiki Beach in the late 1950s. Their appeal expanded quite fast to the West Coast, then followed England and France. France, with her ties to the South Pacific, took on the excitement with much ‘ardeur’. While England’s interest somewhat fizzled, French sailors chose to emphasize the angle of the adventure of the man versus the elements exploring the world, soon specializing in single- or double-handed offshore multihull racing as it still does to this day, responsible for many records, feats and mind blowing boats.

In this AC45 world series, in having the majority of the sailors coming from a monohull racing background, the exchange is now open, the discovery is accepted, the sharing of the experience and thrill is welcomed. The multihull world had developed in parallel to the monohull and somewhat in the shadow. Both monohull and multihull worlds will expand and are both bound to benefit from this new approach.

Having a leveled playing field can only add excitement for both the racing teams and the spectators, may they follow on the web, television or along the race course.

As each skipper still has trials and errors, happy and gentlemanly bantering is going full force, especially if you take in consideration the fact that the top favorites (so far): James Spithill, Dean Barker, and Russell Coutts are from the sports arch rivals:

Australia and New Zealand respectively.

James Spithill to Dean Barker, on the eve of the final Cascais winner-takes-all race, being asked who is the favorite in his eyes: “I really think that it’s Dean Barker... it’s their regatta to lose, anything but a victory would be disappointed to lose. They are the clear favorite.” Dean Barker’s reply fresh from having won that Super Sunday winner-take-all race: “with Jimmy being the hot favorite to win today, it was his race to lose and fortunately for us he did!”

Mark your calendars for the next chapters of Next America’s Cup World Series:

San Diego, California, USA

November 12-20, 2011

Venice, Italy – May 12-20, 2012

Newport, Rhode Island, USA

June 23 - July 01, 2012 **MM**



**Cascais AC Fleet Race Championships
14 August 2011
RESULTS**

			Points
1	EMIRATES TEAM NEW ZEALAND	37m 41s	10
2	ARTEMIS RACING	+0m 21s	9
3	ORACLE RACING SPITHILL	+0m 34s	8
4	ORACLE RACING COUTTS	+0m 52s	7
5	GREEN COMM RACING	+2m 12s	6
6	ALEPH	+2m 26s	5
7	TEAM KOREA	+2m 33s	4
8	ENERGY TEAM	+2m 43s	3
9	CHINA TEAM	+2m 49s	3



**America's Cup World Series Championship
COMBINED OVERALL STANDINGS**

Place	Team	Match	Fleet	TOTAL
1	Emirates Team New Zealand	19	19	38
2	ORACLE Racing Spithill	16	18	34
3T	ORACLE Racing Coutts	13	15	28
3T	Artemis Racing	16	12	28
5	Team Korea	16	10	26
6T	Aleph	6	12	18
6T	Energy Team	10	8	18
8	Green Comm Racing	8	9	17
9	China Team	6	7	13