AeroMarine Research
TBPNews - Performance Report

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TBPNews #104 – August 3, 2006

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>>>> **Tunnel Boat Performance News** >>>>>> (over 7000 members!)

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In this issue:

********** TBPNews **********

1) A Flip and a Win!: E-Lam earns unlikely Atomic Cup

July 30th, 2006 - Four hours previous, Dave Villwock's day looked bleak. The boat had flipped in a windy heat 2A, and the team was thrashing to get it back together. But Villwock prevailed in the U-1 Miss E-Lam Plus, outrunning JW Myers in the U-10 Solutions Plus for the win.

Jimmy King led the field for its final evening cruise in the U-3 Conover Insurance, but went dead at the end of the first lap. Villwock took over from there, with Myers close behind, but by the first turn, the E-Lam had established the lead for good. Canadian Jean Theoret in the U-37 Beacon Plumbing surrendered the third place to Steve David in the Oh Boy! after missing a buoy.

Check out more at: http://www.hydroracing.com

Check out the *U-21 on-board video camera* in hydroracing.com's video gallery at: http://www.hydroracing.com/hydros/video/
(You'll need the latest version of QuickTime to view)

********** TBPNews **********

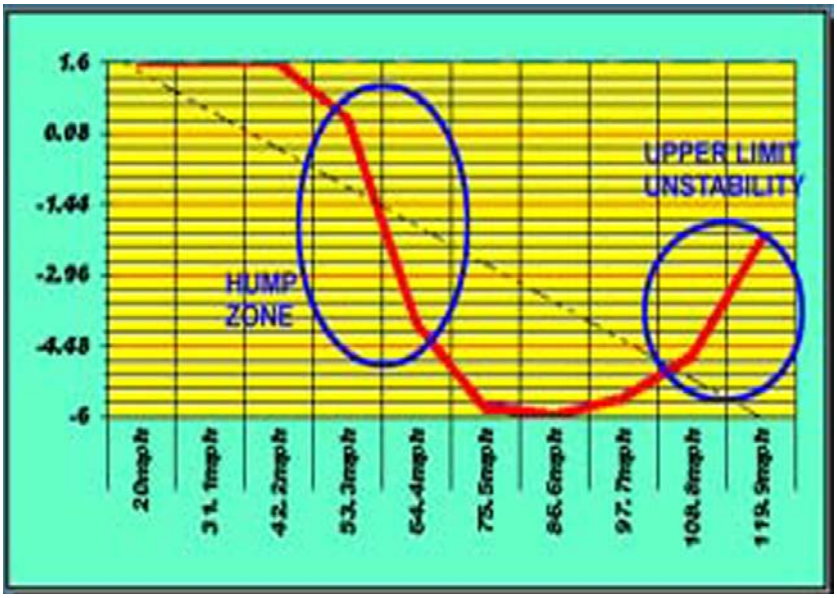
2) FEATURE ARTICLE: The "Hump Zone"

["*Why does my boat porpoise?"*]

Question from Member: "My ModVP style sport tunnel (with centerpod) has a real "hopping" motion at about 70 mph. It's like a porpoising, but it goes away at about 80mph. What is wrong with my setup?"

Answer: Well, this is a common trait of high-performance hulls, and tunnel boats in particular. I call this transition speed (between 75mph and 80mph on your boat setup the "hump zone". Seat time is the best way to learn how to drive thru....And caution is the word all the way! Learn slowly!

Often the reason a tunnel experiences a "porpoise" at a particular speed is quite simple. The tunnel hull gains it's performance from a unique balance between aerodynamic lift generated by the aerofoil/ tunnel configuration, and the hydrodynamic lift generated by the running pads (on the water). The "hump" or "transition zone" occurs at a different velocity with each tunnel boat and setup. The hump zone is unique to tunnel hulls, and represents the speed at which the amount of lift becomes predominantly aerodynamic (air lift from tunnel and aerofoil) compared to hydrodynamic (water lift from sponsons).



At the speed that the transition occurs, the hull will always experience some longitudinal instability - like porpoising (but not always in that form). The hull experiences a dynamic CofG shift through the "hump" zone. The transition velocity can be accurately determined for any given hull design and setup, and can even be altered by hull design, weight distribution, propeller selection and engine/hull setup. Engine height adjustment can help find the best setup to "smooth out" the transition. Sometimes unplanned 'hook' or 'rocker' in the running pad surfaces can exaggerate the performance effects thru the "hump zone". Weight movement will also change the speed at which the "hump zone" occurs.

The best tunnel designs actually minimize the "hump zone" to one that is very mild and through a narrow velocity range. This balance is usually done at the initial design stage. Once boat is designed/ built, the best solution is to design the setup so that the hump zone occurs at a velocity that the driver does not need/intend to spend time in...in other words, you are just "passing through". Setup, trim and weight balance can help this allot.

The boat's reaction as it goes thru the hump zone (for a given design/setup) will always be the same, too. So driving/handling experience helps. The "effects" of the hump zone can be "softened" through design and setup changes, but will always be there. First the power to attain top performance of the hull needs to be available, then the boat has to be setup to be able to use the full power through to top

performance.

That's why there is no substitute for 'seat-time' in any performance powerboat. There are design and setup optimizations that can be made to make the "hump zone" as smooth as possible - even comfortable - but you will always have to "drive-through" the hump zone, in one way or another. The more 'seat-time' in the boat - the more experience there is in knowing how your setup behaves as it passes through the transition.

See more Performance Articles at: http://www.aeromarineresearch.com/articles.html

Read more about Tunnel Boat design and setup in the world acclaimed "Secrets of Tunnel Boat Design" book

********** TBPNews **********

3) Lake Como, Italy - Birthplace of 1st UIM RACE

(*GP of ITALY Marks 25th Anniversary of F1 Racing*)

COMO, Italy – The shoreline of Lake Como in Northern Italy hides its history dating back to pre-Roman times. The strategic location has always marked this spot as the gateway to the Southern Alps. However, UIM. F1 power boat racing dates its origins back to 1981 with the first ever F1 race staged.

Hometown hero Renato Molinari (see photo) was the hero that day on Lago di Como when he defeated Dutch driver Cees Van der Velden and French pilot Francois Salabert in his V-8 OMC powered Molinari boat that he built. The following year, Molinari won again becoming the first of three multi-time winners of this event, followed by Roger Jenkins of Great Britain and Cees Van der Velden again on the podium. Van der Velden finally made it to the top step in Como in 1983 with Molinari 2nd and USA's Jimbo McConnell the first of only a few Americans to have success on Lake Como.

Eight years would go by without F1 racing at Como. Jonathan Jones would win twice (1991 & 1993) and Steve Kerton would win in 1992. The next native son, Guido Cappellini of Como would be the hero for the 21st century as he carries his three straight win streak into 2006 with wins in 2000, 2004 and 2005.

The 2006 event marks the 185th UIM F1 start, with American Scott Gillman of the Emirates Team leading the championship.

Check out more at: http://www.f1boat.com

Read more about Renato, other Tunnel Boat greats and Tunnel Boat history in "History of Tunnel Boat

Design" at: http://www.aeromarineresearch.com/history.html
********** TBPNews **********

4) Italian F1 GranPrix - Spectacular 1st Lap Crash! Cappellini Wins

Although Guido Cappellini won the 50 lap Italian GP on Lake Como, all the talk of the race was about a monumental crash. A wild first lap took out two talented rookies with Ivan Brigada of the Tamoil crashed out of 6th on the run down into the first pin as did Jonas Andersson of Sweden who blew over in the spray of three boats getting together after starting 7th. It was Cappellini, followed by Emirate duo Al Qamzy and Scott Gillman before the American dropped out on lap 40. Sami Selio moved into 3rd place before he too retired elevating hard charging Qatar pilot Jay price into 3rd place ahead of Comparato. With two laps to go, Price's engine started to splutter as it ran out of fuel but Price's Qatar partner Massimo Roggiero grabbed the opportunity and filled 3rd place.

Check out more at: http://www.f1boat.com
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5) Gillman Drives OMC in USA

Scott Gillman, Emirates number one driver will be behind the wheel when the OMC 3-Litre engine makes its long awaited return to the race circuit in the St Louis Champboat GP in August. The engine, under Cees van der Veldon's control raced in the UIM World F1 Series in the early 2000's and Philippe Dessertenne, Jon Jones and Sami Selio all competed with the V6 unit but although it had power it also suffered serious reliability problems. Veldon sold the production rights to an American company who have spent the last few months ironing out its faults under the watchful eye of Ron Anderson, Gillman's engineer. It is understand that the engine is now pumping out its full power and is reliable, enabling Gillman to put the DAC/OMC outfit though its paces against the likes of Terry Rinker and Tim Seebold.

check out more at: http://www.worldofpowerboats.com
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6) Mercury Launches OptiMax 250 ProXS; 250 XS Remains in Racing Lineup

Mercury Marine has introduced the OptiMax 250 Pro XS, a powerful, fuel-efficient and durable Direct Injection marine engine scheduled to begin production in October.

The 250 Pro XS is based on its predecessor, Mercury Racing's popular 250 XS, which will remain in Mercury Racing's lineup in select configurations. The 250 Pro XS will be available in 20- and 25-inch

models, and outfitted with the Torque Master gear case in right-hand rotation. The 250 XS is available from Mercury Racing in right- and left- hand rotations in a 20-inch, Sport Master-equipped model, or in 25- and 30- inch configurations with the Fleet Master gear case.

The target market for the 250 Pro XS is bass boats, with the deep-v walleye and saltwater bay boats secondary. Bass boaters typically prefer the excellent power-to-weight ratios of direct-injected engines. Hole shot is always a major concern, and OptiMax DI engines provide unmatched hole- shot power. Mercury Racing's engineering team is overseeing engine testing and development of the 250 Pro XS, which is outfitted with many unique racing-designed components, including carbon fiber reeds, solid billet aluminum mounts and special dome-shaped, coated pistons.

Check out more at: http://www.mercurymarine.com
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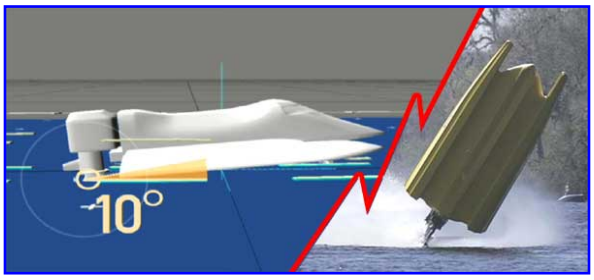
7) Powerboat Racing on TV

*** "*Thrill Zone: Extreme Powerboats*" - National Geographic powerboat show.



Author Jim Russell (Jimboat) is powerboat design technical consultant on a new National Geographic special for "Thrill Zone" series...Wednesday, August 30, 2006, at 07pm, Thursday, August 31, 2am, and Tuesday, September 5, 12pm.

Details at: (http://channel.nationalgeographic.com/channel/ET/daily/20060830.html)

Watch for other show dates on AR's website! http://www.aeromarineresearch.com/NatGeo_thrill-zone.html

*** *NBC's "Sport Jeep World of Adventure Sports"* - Next Episode features the APBA Gold Cup, the prestigious Unlimited Hydroplane race held on the Detroit River. Officially known as the “American Power Boat Association Challenge Cup,” the Gold Cup is the ultimate racing prize. The famous gold trophy has enticed racers since 1904, making it the oldest active trophy in motor sports. Saturday, August 5, 2006; 2:30 PM (EST)
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8) Jimboat's Feature articles

Jimboat writes Feature articles in HotBoat, Family&Performance Boating, World of Powerboats, Extreme Boats magazines.

- 'The Bottom Line'-"Why does a Pad make a vee Hull faster?" - F&PB-Sept 2005
- "10 Smokin' Speed Secrets Revealed..." - HB-Feb2005
- "Winterizing your Performance Outboard" - F&PB-Jan2005
- "What a Drag" - 'Trim Angle & Engine Height Can Reduce Drag and Increase Speed' - HB-Sept2004
- "10 Safety Tips" - 'Ten Safety Ideas for High Performance Go-Fast Boats' - HB-Aug2004

- "Flight Path" - 'Where does Lift Come From?' - HB-April2004
- "Rocket Science" - 'How To Increase Your Hull's Design Speed With Aerodynamics' - World of Powerboats-Winter2004
- "Tunnel Vision" - 'What Factors Influence Tunnel Hull Performance' - Extreme Boats-April2003

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See you next time!
/Jimboat
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[Advertisement...]

MINIMOST & MINIMAX "Sea Fleas" - In the late 50's and early 60's William D. Jackson introduced the two famous seafleas known today as the Minimost and Minimax. Plans & Full Size Patterns Now Available! Brian Cranfield at BC Seafleas now offers full size patterns for replicas of these boats. Included in the package is a complete set of full-sized patterns, building plans and a booklet to help guide you through the building process. Contact Brian at: cranfieldbrian@hotmail.com or 905-986-4868. More details at: BC Seafleas web page
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