AeroMarine Research
TBDP Performance Boat Report

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TBPNews #96 - March 1, 2006
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>>>>>> Tunnel Boat Performance News >>>>>>>>>>>>>> (now over 6600 members!)
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In this issue:

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

1) Feature Article - "What a Blowout!"

We receive many questions about the cause and effects of "blow-out". Here is an explanation of Blowout and causes...

Blowout occurs when the ratio of air to water around the propeller gets so high that the propeller is no longer grabbing water, but is trying to propel itself through air (or a relative vacuum). This causes the propeller to lose "bite", and then a chain of events occurs that can range from merely a "loose" steering feeling, to a vicious turn to the right (typically). The speed at which this occurs varies with boat design, gear case design, and propeller design.

The four main contributors to blowout are:

· Gear case inconsistencies:
If the gear case has been damaged (run up on the rocks a few too many times?); or has an improperly installed nosecone; or a damaged skeg; the gear case cannot provide the proper aerodynamic direction (steering) effect. The impact can be the need for the gear case to "crab" or slide sideways through the water, creating an area void of pure water, like a vacuum or air pocket in which the propeller tries to operate. This is bad for the propeller - it needs water to work properly. Cleaning up all nicks and gouges in the gear case so that it is very smooth will help.

· Motor is too high:
If the motor is too high, the propeller will not be able to provide lift for the boat, causing the driver to apply excessive trim. This causes the propeller angle of attack to be angled downward (more than it needs to be) thus trying to force itself to go sideways through the water. This is bad for the propeller, and inefficient for the boat performance. Designing the hull with the engine at the optimum height will help overall performance.

· Hull Design:


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Some designs of boats are more susceptible to "blowout" than others are. Why do we think that is? Well, it's difficult to know whether you have a good one or a bad one, but the well-designed hull will have a dynamically balanced performance through all phases of performance (all operating speeds). The poorly designed or poorly dynamically balanced hull will need much more time and effort in "on the water" set-up. It is, of course, better to design the stability and performance characteristics into your hull ahead of time. This makes the set-up much easier, and the hull performance more predictable in all operating conditions.

· Velocity:
When you go faster than a stock gear case is designed to perform, the water separates from the leading edge (front) of the blunt bullet and sort of "bounces" around the propeller. In engineering terms, we have a disturbed flow, and when this occurs near the propeller, it really impacts the propeller's performance. Smaller gear cases with smaller, aerodynamic bullets will always improve this situation, delaying "blowout" tendencies to a higher velocity. Adding a nosecone will also increase the velocity that a standard gear case can operate effectively.

The cause of blowout is typically a combination of all of these. Gear case modifications and propeller changes can reduce your chance of blowout. So can a properly designed and dynamically balanced hull. However, when you go fast, blowout becomes part of the business, so you will experience it eventually.

Typically, a blowout is immediately preceded by a "loose" steering feeling, an increase in RPM with no speed increase, a loss of lift, and a resulting drop of the nose of the boat. Hold on!

Note: See more details on prop design, propeller performance in Jimboat's new book - "Secrets of Propeller Design" at:
http://www.aeromarineresearch.com/historyofpropellers.html
********** TBPNews **********

2) Jim Thomson, Miss SuperTest Inducted to Hall of Fame

Nearly half a century ago, Miss Supertest was a household name in Canada. The brainchild of Jim Thompson, president of the Supertest Petroleum Co., Miss Supertest was the first and most successful use of motorsport as a marketing tool to sell a Canadian product.

Miss Supertest III, with Bob Hayward driving, won the Harmsworth Trophy – emblematic of worldwide supremacy in unlimited hydroplane racing – in 1959, 1960 and 1961. She was retired from competition, undefeated, after Hayward was killed later in 1961 during a race on the Detroit River while at the wheel of her predecessor, Miss Supertest II.

Now, Thompson, who designed her and did most of the test driving himself, will be one of seven merchants of speed is inducted into the Canadian Motorsport Hall of Fame. They join more than 100 other Canadian speed pioneers in the Hall of Fame, including Formula One drivers George Eaton and Gilles Villeneuve, and powerboat racer Art Asbury.

Harold Wilson, the first Canadian to win a world championship in any form of motorsport, won his first speedboat race in the 1926 Muskoka Lakes Regatta when he was 15yo. In 1933, Wilson won his first world championship event, driving the Muskoka-built Little Miss Canada III in the 225 c.i. class race.

He also won championships in Gold Cup and unlimited hydroplane racing. He retired from boat racing in 1950 and died in 1995.
********** TBPNews **********

3) 2006 calendar for U.I.M. Powerboat P1 World Championship

The eagerly awaited 2006 calendar for the U.I.M. Powerboat P1 World Championship has now been announced!

PROVISIONAL RACE CALENDAR 2006:

13th/14th May, Valletta, Malta
3rd/4th June, Anzio, Italy
1st/2nd July, Travemünde, Germany
29th/30th July, RESERVE DATE
26th/27th August, Cowes, UK
16th/17th September, Gallipoli, Italy
30th Oct/1st Nov, TBA, Iberian Peninsula

check full venue at: http://www.powerboatp1.com
********** TBPNews **********

4) New 'SECRETS OF PROPELLER DESIGN' book

NEW RELEASE! The NEW (2006) publication "Secrets of Propeller Design", by performance powerboat designer, Jim Russell (Jimboat) includes sections on Propeller design, Pitch, Rake, Skew, Venting, Cupping, Propeller Types, Fundamentals of Cavitation, Ventilation, Blowout, Slip, Nosecones, Labbing, Gearcase design, Surface Drives, and Speed Calculation formula. Fundamentals of cavitation, ventilation, "BlowOut" - and how to avoid problems.

Advantages of all types of props - including cleaver, chopper, round-ear, weedless, racing cleaver. 3, 4, 5 & 6 blade propeller design & peformance discussed. Propeller cup, rake, pitch, skew, venting, and effects on performance.

The "History & Design of Propellers" book presents a detailed accounting of how the first "screw" applications were invented, and how they led to early ship propulsion. Outlining "How a Propeller Works", parts and functions of a properly designed propeller, including material selection and "advanced propping" techniques, gearcase design and nosecone application is outlined.

Speed prediction formulae and propeller selection methods. This is a "must have" book for serious boaters, designers and enthusiasts that have "a need to know".

See details of the NEW publication at:
http://www.aeromarineresearch.com/historyofpropellers.html
********** TBPNews **********

5) Powerboat Racing on TV

*** "Thrill Zone: Extreme Powerboats" - National Geographic powerboat show Author Jim Russell (Jimboat) is the powerboat design technical consultant on a new National Geographic special for "Thrill Zone" series...Sunday, March 5, 2006 at 6:00P - details at:
http://channel.nationalgeographic.com/channel/ET/daily/20060305.html)

"Professional powerboat racing is one of the most death-defying sports in the world. Competing at speeds that often reach 200 mph, their boats are marvels of engineering but even the most technologically advanced can crash. From Formula One Racers to Offshore Powerboats to Unlimited Hydroplanes, Extreme Powerboats takes viewers up close with the world's fastest boats, the sport's best drivers, and the most advanced technologies".

Also airs: Wednesday, March 29, 8:00P, Saturday, April 1, 2006, at 10P; Sunday, April 2, 2006 at 1:00A; and Sunday, April 2, at 1:00P
Check out details at:
http://channel.nationalgeographic.com/channel/ET/daily/20060401.html

Watch for other show dates on the AeroMarine Research website!
http://www.aeromarineresearch.com/NatGeo_thrill-zone.html
********** TBPNews **********

6) Try your hand at powerboat racing

Visitors to the Lowestoft Boat Show can try their hand at powerboat racing, as passenger in a Honda Formula 4-stroke championship boat.

One of the boats from the high-octane series will be at the show, on Saturday and Sunday, 13 and 14 May, in Waveney Dock. Part of the proceeds from the trips will be donated to Waveney Sailability. Book at the show.

check out at: http://www.lowestoftboatshow.co.uk/
********** TBPNews **********

7) New Mercury Racing web site goes live

Monday, 20 February 2006 - Mercury Racing launched an all-new Web site. The site features Mercury Racing's complete line of products and services.

The 'What's New' page features the latest in Mercury Racing's high-performance marine propulsion offerings, including brand-new models unveiled in Miami this month: the OptiMax 300XS outboard, the HP700 SCi sterndrive engine package featuring the dry-sump ACE drive, the Computer Numeric Controlled (CNC) Machined 5-blade sterndrive cleaver propellers, the 4-blade Pro E.T. outboard propellers and the 4-blade outboard tunnel boat racing propeller.

A photo gallery captures Mercury Racing's long-time racing history. Offshore racing and other special event photos will be added in the near future. The 'About Us' page features a timeline of Mercury Racing's colourful 33-year history, a detailed overview of Mercury Marine's X-Site test facility in Panama City, Fla., and information about Mercury Racing's Total Engine Application Management (T.E.A.M.) initiative - a factory-approved integration process for new Mercury Racing marine propulsion systems. Unique to the new Mercury Racing Web site is the 'Which Engine is Right for You?' page. Users can go to the 'Tech Corner' to get complete information about Mercury Racing Service and Warranty programs. Finally, an interactive dealer locator enables users to find their nearest Mercury Racing dealer.

Check out the new site at: http://www.mercuryracing.com
********** TBPNews **********

8) Jimboat writes NEW Feature articles

*** NEW ***

Jimboat writes Feature article in Family & Performance Boating magazine. 'The Bottom Line'-"Why does a Pad make a vee Hull faster?" is the FEATURE in the F&PB September 2005 issue.

Get your copy of the full article at:
http://www.aeromarineresearch.com/adverts/Vee%20Pad%20Design.html
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and Recently published...

Jimboat writes Feature articles in HOTBOAT & F&PB magazine
"10 Smokin' Speed Secrets Revealed..." - Jimboat has new article in February 2005 HOT BOAT magazine. "If you don't want to make expensive modifications to your hull or engine setup, then here are some tips for getting the most performance from your current setup. By Jim Russell, author of "Secrets of tunnel Boat Design" [editor-HB]
Check it out at: http://www.aeromarineresearch.com/adverts/HB_Feb2005.html

and Recently published...

"Winterizing your Performance Outboard" - Jimboat has new article in Jan2005 issue of Family & Performance Boating. Check it out at:
http://www.aeromarineresearch.com/adverts/F&PB_Jan05.html

"What a Drag" - Trim Angle & Engine Height Can Reduce Drag and Increase Speed", by Jim Russell, author of "Secrets of Tunnel Boat Design book [editor-HB]. See September 2004 issue of HOT BOAT Magazine. Or get your own copy of the feature article at:
http://www.aeromarineresearch.com/adverts/HotBoat_Sept2004.html

"10 Safety Tips" - The author of "Secrets of Tunnel Boat Design" offers ten safety ideas for high performance go-fast boats [editor-HB]. See August 2004 issue of HOT BOAT Magazine. Or get your own copy of the feature article at:
http://www.aeromarineresearch.com/adverts/HotBoat_August2004.html
********** TBPNews **********

See you next time!

/Jimboat

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Note: Some of the articles presented in TBPNews are edited excerpts from the "Secrets of Tunnel Boat Design" book, "Secrets of Propeller Design" book, "History of Tunnel Boat Design" book, by Jim Russell, published by AeroMarine Research. The STBD book explains the theory in full, and outlines example design calculations, step-by-step. The "Tunnel Boat Design Program", software, does all the force calculations, dynamic force balances at all speeds, and reports the analysis automatically, including complete graphical performance results for any tunnel or modified vee-hull design.

>>>>>> Tunnel Boat Performance News >>>>>>

Let us know any ideas you have, requests for articles, questions or comments on our TBPNews. Send your comments to TBPNews@aeromarineresearch.com

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Get your full, illustrated, NEW 12th edition copy of the world known "Secrets of Tunnel Boat Design" book. GO TO: http://www.aeromarineresearch.com/stbd.html

Also, the publications "History of Tunnel Boat Design" book, "Secrets of Propeller Design" book, the "Tunnel Boat Design Program" software, and the "PropWorks2" software for speed prediction and propeller selection at the AeroMarine Research web site. GO TO: http://www.aeromarineresearch.com

"Secrets of Tunnel Boat Design" book
"History of Tunnel Boat Design" book
"Secrets of Propeller Design" book
"Tunnel Boat Design Program" software for tunnel hull and vee-hull design
"PropWorks2" software for propeller selection and powerboat speed prediction

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AEROMARINE RESEARCH - Tunnel and High Performance powerboat specialists

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