Tunnel Boat Performance News - #176 - June 15, 2016

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Tim Seebold Wins Opening Round of US F1 Series

LA PORTE, Indiana – Defending series and race champion Tim Seebold of the NGK Spark Plugs / Seebold Race Team fought off Indiana native and two-time race winner Terry Rinker to capture his first win of the season and record breaking 37 race wins of his career to take the opening round of the 2016 USF1 Championship Tour at the Fourth Annual Maple City Grand Prix on Stone Lake in LaPorte, Indiana.

The Osage Beach, Missouri resident started the 25-lap feature off pole position after setting the fastest qualifying time of the weekend and never looked back, holding off Terry Rinker of the Amsoil / Rinker Racing Team coming home 1.34 seconds ahead of the 2013 and 2014 race winner.

“We had a real fight with Terry this weekend, he never gave us a chance to relax anytime during the final,” said Tim. “It’s a great way to start off the anniversary of my sponsor with a victory and now look forward to trying to take a double at Bay City in three weeks time as well.”

For Terry, he can walk away knowing he had the race fastest lap, recording a 42.42 on the eighth tour in hi chase with Seebold and came close to challenging for the lead until back markers and slower traffic ended his chance of winning for the third time in four years in his home state. “We did everything we could to catch up to Seebold, but we were just a little short on horsepower in the end,” said Terry. “We’ll go back to Florida and see what we can do to catch up for Bay City. I guarantee, we’ll be ready.”

Reaching the podium with his third place finish for the third straight year was Illinois driver Chris Fairchild who started second and held off a determined returning champion Greg Foster driving the Dillard Financial Solutions DAC Italian built boat. Chris was 6.43 seconds ahead of Greg at races end with Foster ending up ahead of Rob Rinker who was fifth in the second Rinker Racing boat racing in his eighth career Grand Prix.

The second round of the 2016 USF1 Championship Tour takes place on the weekend of the 25th and 26th of June at the annual Bay City River Roar on the Saginaw River on downtown Bay City, Michigan.

Read more at raceboatinternational.com

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Solar Splash 2016

The Intercollegiate Solar/Electric Boat Championship

The 23th annual Solar Splash, the intercollegiate solar/electric boat regatta, is planned for June 15-19, 201 in Dayton, Ohio hosted by Cedarville University.
The Solar Splash objective is for collegiate student teams to design and construct a manned PV solar-powered boat within a school year at a reasonable cost, then compete against other college teams in a 5-day series of events. The competition is designed to provide practical engineering experiences, encourage teamwork, and be fun.
The Solar Splash helps students develop project and program management skills, exposes them to a multitude of technical disciplines, and teaches them the efficient use of energy and systems to create both a successful craft and competitive team. This 'hands-on' project experience has made a significant contribution to many of the students' careers. Over the past 23 years, more than 2,500 students have participated from over 90 universities.

The 5-days of events include Sprints, Maneuverability, Slalom, and Endurance competitions. Additionally, points are awarded for a Technical Report submitted before the competition and for a Visual Display exhibited by each team at the competition.

To learn more about and follow the 2016 competition on-line daily and/or see some of the boats, videos, rules, history and events, see solarsplash.com.

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FEATURE: "6 Steps for Performance Propeller Testing"

The most practical way to determine the best prop for your boat is through testing. A good testing process will often generate dramatic results in performance. Also, testing propellers can be time-consuming and sometimes frustrating, so you should be prepare yourself for the details of prop testing. In order to maximize the performance of your boat, propeller testing is an essential process.

Here are a few recommendations to make your prop-testing beneficial.
1. Keep lots of records – Record ALL your data while you're testing. Ideally, it would be best for you to be able to evaluate all your test props under exactly the same conditions - same fuel load, same air temperature, same water conditions and same weather circumstances - however this is not always possible. So, keeping a good test record log of

the details of each test will be very helpful when you evaluate your testing.

2. Do your homework – get together all of your knowledge about your boat, engine & setup (such as the engine manufacturer's recommended maximum rpm).
-Be clear on your goal – You can't select the 'best' propeller for your boat until you're clear on what you are wanting to achieve. For example – "I want to get on plane fast" OR "I need great mid-range" OR "I want a faster top end".
-If fuel economy is a goal, then a fuel measurement gauge on your boat will be really helpful.

3. Test log - for each test, take the time to accurately record the date; time of day and each of these details:
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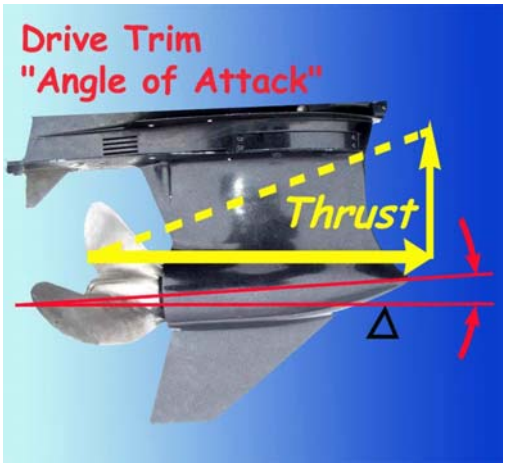
- engine RPM
- propeller specifications (manufacturer, model, pitch, diameter, finish, condition)
- engine temperature & engine cooling water pressure
- weather conditions (temperature, pressure, humidity)
- boat payload weights - fuel load, passenger position and weight in boat
- water conditions (smooth, choppy, direction of waves, etc.)
- engine trim setting & engine height setting (or X-dimension)
- acceleration (seconds to get from one speed to the next test speed)
- fuel economy/rate (gallon per minute)
- observed "rooster-tail" (height, length, 'weight of rooster spray")
- visual & audio observations

Record all of these measurements at several velocities. You'll be glad to have the data at intermediate speeds in addition to your maximum speed to help with your evaluation later.

– Recording velocity measurements accurately is vital, so using a radar gun, portable GPS or a GPS-speedometer for speed readings is often helpful. -Be aware that data feedback to your GPS speedometer can be delayed and the reading may lag by several seconds after you reach your measurement speed. To reduce this effect, hold each test velocity for a few seconds when using a GPS. A high-accuracy pressure speedometer (with a pitot tube pickup) is also a good way of recording speed. This system is usually very accurate but often does not keep it's own record of the test speed.
-Be sure that your motor's tachometer is accurate. You can have your dealer check that your readings are accurate to a calibrated gauge. You can also check yourself by using a hand-held "clamp-on" induction tach to compare your engine tach readings at different settings.
-Most important for all of your gauges, is that they read consistently. Even if the readings are not absolutely accurate, if they remain consistent under all conditions, you will be able to compare your results of each different propeller and each test.
-For example, if you change the height of your engine slightly and your RPM reading is a few hundred different than the last run, you want confidence that the change in RPMs is due to your setup change and NOT because of an inconsistency in your gauges.

5. Propeller Test Method: - Measure your results to your engine manufacturer's specified maximum operating RPM. Monitor the water pressure gauge closely - if you run out of water pressure, your engine can overheat quickly.
-Do a test for each propeller and setup using two (2) runs to full throttle (WOT), trimming the motor angle to achieve maximum speed. When RPM continues to climb without a corresponding increase in speed, the highest trim point for that particular setup has been exceeded.
-It is important to select your propeller to achieve the proper engine RPM. That means not too low RPM and not too high RPM at maximum attainable RPM. This will achieve the best performance from your rig and also protect your engine from overloading. For example, over -propping (pitch is too high) a boat/engine setup can cause "lugging" of the engine (too

much load).



A thorough test process could actually change ALL of the setup measurements that you are recording in your log. For example, different engine heights, different payload weight, etc for each propeller run. It can be time consuming but your recorded data will allow you to make the best prop selection for your setup and operating expectations.

During the testing process, you may experience these observations:
• RPM too high (and not over-trimmed) - a higher pitch propeller could be used; or engine height (x-dimension) is set too high.
• RPM too low (and not under-trimmed) – a higher engine height (x-dimension) could be used and/or lower propeller pitch.
• Rooster tail appears too high (and not over-trimmed) - engine too high or excessive propeller slippage (test a different propeller)

[IMPORTANT NOTE: There are really no "rules of thumb" for propeller selection. These observations and corrective actions are frequently experienced. But not always!...Sometimes a higher pitch propeller can carry the hulls weight better, resulting in a gain in both RPM and maximum speed. Only experimentation will reveal how your particular propeller/hull/engine responds to these changes.]

6. Test a "Clean" Propeller - Be sure that the propeller you're testing is free from dents, nicks or other imperfections. All of your testing efforts will be futile if your props are not in perfect condition. If your prop has any small nicks and burrs, you should clean them up before you test.

Read more on Propeller design in this article on "Anatomy of Propellers".

Also see Jimboat's book "Secrets of Propeller Design" (ISBN# 0-9780586-0-7)

See more Performance Articles at: www.aeromarineresearch.com

[Note: Do you have any of your own questions on performance hull design? Send your question or story to mailto:jimboat@aeromarineresearch.com?subject=TBPNews]

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Video - World Outboard Championship - Lake Havasu 1979

Lake Havasu High School students video taped and produced a 30 min production as a class project in 1979. [click for video]

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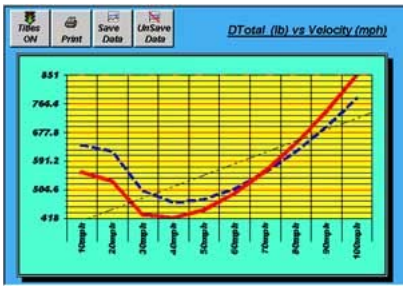
NEW TBDP/VBDP Ver 8.6 software release!

See the newest Version 8.6 "Tunnel Boat Design Program" and "Vee Boat Design Program" software.



"The best TBDP/VBDP release ever!" - Dozens of new features, enhanced results. Performance optimization, speed prediction, stability analysis, porpoising analysis, acceleration, elapsed time, and allot more!

See your hull's performance results throughout the full operating velocity range. Easy Auto 1-2-3 Performance Wizard. Now Vee hull and Tunnel hull design in same software package.

Version 8.6 has NEW screen layouts, NEW input variables, more performance analysis, output data/graphics, more reporting. Also includes the NEW 2016 Motor Wizard update with over 2050 OEM engine choices. NEW input variables and NEW 5-screen input format. Performance results with 500+ performance data points and 50+ trending graphs showing full velocity range. Animated 3D Chart display for Lift/Drag component contributions through Velocity range. And lot's more!!

See some of the new update features here, and all the high performance TBDP/VBDP features here.

See more at AeroMarine Research

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See 13th Edition "Secrets of Tunnel Boat Design" book (ISBN# 1-894933-30-3)
See ALL the TBDP/VBDP features, screen samples, and 'how-it-works'!

Review: TBDP V8 at Scream & Fly magazine. *["Tunnel Boat/Vee Boat Design Software is the very best and most comprehensive performance evaluation tool available. It has been evaluated by Scream And Fly, and has proven to be extremely accurate and easy to use. Version 8.4 is the most robust yet" - Scream and Fly mag, March 2015]*

Get the new TBDP/VBDP software! Buy Now

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Jimboat's Latest FREE Articles

'Anatomy of a Blow-Over!'
'Is Bigger Always Better?'
'Optimize your boat's running trim
'Spray Rails & Lifting Strakes'

'Big Foot Investigation'
'Is Salt Water OR Fresh Water Faster'
'Vee pad design'
'Gearcase & Propeller "Blowout'
'Outboard Jack Plates'

'Tunnel Boat Design'
'Successful Propeller Testing'
'Ten Low-Cost Go-Fast Tips'
'How Weight & Weight Distribution are Important to Performance'
'Chine Walking'

Jimboat interviews F1 H20 star, Shaun Torrente
"How Trim Angle & engine height affect performance"
"Outboard Jack Plates'

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See you next time!

/Jimboat