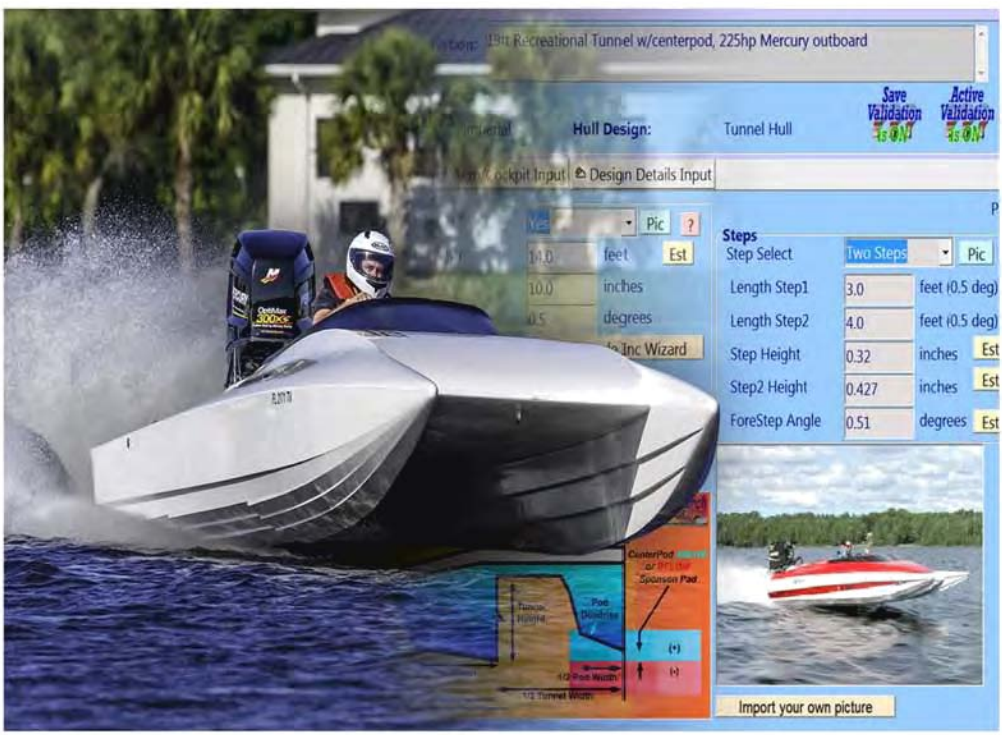
SCREAM AND FLY
High Performance Powerboating Online



A Major Release That Introduces A Vast Array Of Analytical Tools

AeroMarine Research has released **Version 9 of its Tunnel Boat Design Program/Vee Bottom Design Program (TBDP/VBDP)**, delivering one of the most significant upgrades in the software's long history. Known for its analytically-driven approach to performance prediction, TBDP Version 9 expands its vast capability while maintaining its accuracy and efficiency relied on by designers, builders, and racers.



Readers of this site will be aware that I have long been a strong advocate of the Tunnel Boat Design Program/Vee Bottom Design Program due to its exceptional analytical capabilities, which extend well beyond the needs of professional racers or boat builders. In my view, it is a tool that offers substantial value to any performance-minded boater. Despite its depth and sophistication, the software remains remarkably accessible to non-experts and is genuinely engaging to use.

All of your "what if" questions answered, and much more

The Tunnel Boat Design Program stands alone as the only tool of its kind in the world capable of answering virtually any performance question about your boat. Curious how your setup would change with a different propeller type or pitch? Wondering what gains—or compromises—you might see by adding significantly more power? What about the real performance impact of adding or subtracting weight, altering balance, or changing any of the countless variables that influence speed, stability, and efficiency?

The TBDP/VBDP was created to answer exactly those questions—quickly, comprehensively, and with remarkable accuracy. By allowing designers, builders, and owners to explore endless "what-if" scenarios before making real-world changes, the software removes guesswork from high-performance boat design and setup. It is the ultimate performance analysis and optimization tool, and Version 9 represents the largest, most capable update in the program's three-decade history.

We have employed the Tunnel Boat Design Program extensively throughout the numerous test phases conducted with our STV Euroski, and the correlation between the software's predictions and real-world results proved to be consistently impressive. The level of accuracy alone was noteworthy; however, its true value extended well beyond raw performance prediction.

Equally important was the additional margin of safety the TBDP/VBDP introduced into the testing process. The program's analytical depth provided critical insight during setup changes, allowing us to understand the potential consequences of each adjustment before ever taking the boat on the water. This foresight not only streamlined our testing methodology but also played a key role in identifying configurations that could have introduced unnecessary risk.

When operating a high-performance tunnel hull near its limits, the ability to anticipate both performance gains and stability concerns is invaluable. In this respect, the Tunnel Boat Design Program proved itself not merely as a performance tool, but as an essential companion to responsible, data-driven testing.

The TBDP/VBDP's comprehensive analytical depth delivered invaluable insights during setup and configuration changes, allowing us to better understand the implications of each adjustment before committing to on-water testing. This capability not only improved the efficiency of our test program but also helped identify potentially unsafe conditions in advance—an advantage that cannot be overstated when operating at the performance limits of the boat.

Version 9 of the TBDP/VBDP is the largest in the software's history

The TDBP/VBDP is perhaps best described as a virtual representation of your boat, allowing nearly every aspect of its design and setup to be modified instantly. Each change is accompanied by detailed performance reports that span the entire speed range, providing insights that are both comprehensive and intuitive. These analyses frequently reveal performance potential that would otherwise remain hidden and, just as importantly, help identify configurations that may compromise safety before they are ever tested on the water.

The Version 9 update introduces Variable Deadrise Analysis, allowing designers to model both longitudinal (warped-plane) and lateral (progressive) variable deadrise hulls directly. This enhancement improves accuracy for modern tunnel boats, offshore cats, and advanced vee-based designs without requiring geometric simplification.

This major release also adds Lateral Dynamic Stability Analysis, including a new Dynamic Stability Index. This feature evaluates dynamic roll damping and stiffness across the speed range, helping predict lateral instability behaviors such as chine walk and oscillatory roll. Lateral stability results are now integrated into performance outputs and graphs.

To support increasingly complex hull forms, the software introduces a new Average Effective Deadrise performance metric. This calculation accounts for dynamically changing wetted surfaces, including stepped hulls and variable-geometry designs, and is displayed throughout the performance analysis.

Additional improvements include a redesigned performance optimization engine, expanded analysis modes, and an updated OEM engine database now exceeding 4,295 engines, including electric outboards. User interface and reporting enhancements further improve clarity without altering established workflows.

Is the TBDP/VBDP suitable only for industry professionals? What about everyday boaters?

As powerful as the Tunnel Boat Design Program/Vee Boat Design Program is, it is a tool that is approachable to everybody, regardless of whether you are a boat designer, racer, or you simply want to have some fun with it.

Overall, TBDP/VBDP Version 9 represents a research-driven evolution of the software, strengthening its ability to analyze modern high-performance hulls while reinforcing its reputation as the premiere design and analysis tool for performance boat drivers, designers, and builders. It is a tool without equal. Full details below:

For a full list of all of the features in the Tunnel Boat Design Program/Vee Boat Design Program, **click here**.

Full list of features in Version 9 of the Tunnel Boat Design Program:

NEW ANALYSIS FEATURE -VARIABLE DEADRISE- options for both Variable Longitudinal (warped plane) deadrise and Variable Lateral (progressive) deadrise, discrete lengthwise lift/drag contributions (not estimated).

NEW ANALYSIS FEATURE - LATERAL DYNAMIC STABILITY Analysis - Predicts onset of chine-walk, track-rolling, hook, roll-over; 'Dynamic Stability Index' (DSI) evaluates combined effects of 'dynamic roll damping' and 'roll stiffness'; Examined through full velocity range. 'Lateral Stability' shown in Perf Results and Perf Graphs.

NEW ANALYSIS FEATURE - LONGITUDINAL DYNAMIC STABILITY Analysis; - Predicts onset of nose-dive (stuffing), bow-steer, bow-trip, bow-raise, high bow lift or blow-over. New 'Nondimensional Longitudinal Balance' indicator; examined through full velocity range

NEW ANALYSIS FEATURE - FUEL CONSUMPTION Monitor; derived from 'Brake Specific Fuel Consumption' (BFSC), 'Engine Fuel Consumption Map', %Power, Engine Load.

NEW PERFORMANCE FEATURE - AVERAGE DEADRISE: TBDP/VBDP now calculates 'average effective deadrise' of wetted planing surfaces when dynamically changing complex variable deadrise contributing.

NEW ENHANCED STABILITY ANALYSIS ENGINES for Porpoising, Lateral Stability, Longitudinal Stability; analyzes raw instability data through full velocity, 'EASY STABILITY RESULTS WIZARD' gives trend, break-out, onset of instability assessments; presents Detailed Results, 1-line stability assessment statement and Traffic Light icon indicator

NEW OEM Motor Wizard UPDATE - Added NEW 2025 electric motors, including NEW Electric Outboards, ePropulsion, ACEL, Mercury, Torqeedo, Evoy, Elco, PureWatercraft, Vision Marine,Flux marine. Also ADDED 2025 Mercury Verado 350 and Verado 425 OB engine specs. Now 4295 total OEM motors in database.

For more information and to purchase a copy of this incomparable performance boater's tool, visit the **Aeromarine Research website**.

Get your fully illustrated, 13th edition copy of the "***Secrets of Tunnel Boat Design***" book, with over 200 pages of design practices and formulae and over 160 photographs.

The publications "Secrets of Tunnel Boat Design" book (ISBN# 1-894933-30-3), "Secrets of Propeller Design " book (ISBN# 0-9780586-0-7), the "Tunnel Boat Design Program©" software, "Vee Boat Design Program©" software and the "PropWorks2" software for speed prediction and propeller selection are available at the AeroMarine Research web site. https://aeromarineresearch.com

"Secrets of Tunnel Boat Design©" book – https://aeromarineresearch.com/stbd2.html

"Secrets of Propeller Design©" book - https://aeromarineresearch.com/secretsofpropellerdesign.html

"Tunnel Boat Design Program© " software - https://aeromarineresearch.com/tbdp6.html

"Vee Boat Design Program© " software - https://aeromarineresearch.com/vbdp.html

"PropWorks2©" software for propeller selection and powerboat speed prediction - https://aeromarineresearch.com/prop2.html

Copyright© AeroMarine Research®. All rights reserved.

Material from this report may not may be reproduced, transmitted, transcribed or translated into any language, in any form, in whole or in part, by any means without the prior written permission of AeroMarine Research® or Jim Russell. Information in this report is subject to change without notice and does not represent a commitment on the part of AeroMarine Research®. AeroMarine Research® may make improvements and/or changes to this manual and/or in the software used to prepare this Report at any time. This Report, The Secrets of Tunnel Boat Design book©, Vee Boat Design Program© software, and the Tunnel Boat Design Program©, are copyrighted by Jim Russell and AeroMarine Research®.

About AeroMarine Research:



Jim Russell is a professional engineer with a mechanical and aeronautics background. Currently living in Canada, he has done extensive aerodynamic research at University of Michigan, OH and University of Toronto, Canada and marine research at the NRC water channel laboratory in Ottawa, Canada. His published works and papers are highly acclaimed, and are specifically related to the aerodynamics and hydrodynamics of high performance catamarans and tunnel boats, vee and vee-pad hulls. Russell has designed and built many tunnel and performance boats. As a professional race driver, he piloted tunnel boats to Canadian and North American championships. He has written power boating articles for many worldwide performance magazines and has covered UIM and APBA powerboat races. He has appeared on SpeedVision's 'Powerboat Television' as a guest expert on 'Tunnel Hulls', was performance/design technical consultant on National Geographic's 'Thrill Zone' TV show, and editorial consultant on Discovery Channel's 'What Happened Next' TV show. His books and software design techniques were used as the basis for an engineering program at Western Washington University (USA). Russell is the author of the "Secrets of Tunnel Boat Design©" book, and the "Secrets of Propeller Design©" book. His company, AeroMarine Research, has designed and published the well-known powerboat design software, "Tunnel Boat Design Program©" and "Vee Boat Design Program©" software, specifically for the design and performance analysis of tunnel boats, powered catamarans, performance Vee and Vee-Pad hulls.

