

# Case Studies in Redesign

SOLVING PERFORMANCE PROBLEMS CAUSED BY  
MODIFICATIONS TO A PRODUCTION MODEL MAY CALL  
FOR ALTERATIONS TO THE ARCHITECTURE OF THE HULL

TEXT, PHOTOS, AND ILLUSTRATIONS BY ERIC W. SPONBERG

**B**y the time a new boat model is ready for production, its designers and builders often regard the hull design as sacred. After all, a lot of thought, money, design effort, more money, engineering, tooling, and even more money has gone into ensuring that any model built to those specifications would perform well. If a problem *does* arise with the boat's performance, hull design is not the first thing the designers and builders will consider investigating or changing. The most likely culprit will be the boat's equipment or the owner's operating routine, and the troubleshooters will focus their attention on altering those components—rather than the hull details—to restore the boat's original performance. Every once in a while, though, making hull changes may be the best solution. In 1996, my office handled two such cases: a Wilbur 34 powerboat and a Freedom 36/38 sailboat.

## NEW LIFTING STRAKES FOR THE WILBUR

Richard Oster of Providence, Rhode Island, bought *Blue Bill*, a new Wilbur, in 1986. A few years later, Oster replaced the naturally aspirated Caterpillar 3208 diesel engine with the turbocharged version, gaining 80 hp. His objective was to increase his top-end speed—which indeed went from about 15 knots to 21. Along with that, however, he acquired a serious spray problem: spray and mist completely engulfed the sides and stern of the boat, soaking everyone in the cockpit.

The question Oster put to me was this: "Would new spray rails or lifting strakes cure the problem? And if so, how would they be designed and built?" Oster knew that other boat owners in his marina had modified similarly sized boats, but with spotty success. One example seemed well done, and the owner said it worked fine; but another boat had strakes that

looked chunky, even agricultural, and thus out of place on its hull. Yet another boat had strakes so poorly built that one had literally broken off. Oster takes great pride in *Blue Bill*—the boat is beautifully maintained and generously accented with varnished teak trim—so he did not want ugliness and fractured fiberglass to

be included in the cost of improved performance. On the other hand, the boat was unusable as is, and required a major cure.

I felt that full-length lifting strakes would solve the problem. *Lifting strakes* are long, narrow shapes on boat bottoms that provide dynamic lift as well as deflect



