

**ENGAGEMENT: FROM
CLASSROOM TO HANDS
ON DESIGN, FABRICATION
AND TESTING.**

From “Fluid Mechanics” by Robert Granger

- “Modeling is a human instinct, utterly necessary to understanding and manipulating the environment. As Children, we continually create models of the world around us, models that we can control and experiment with. We build sand castles and block towers- and learn about erosion and unstable structures. We play with dolls, toy soldiers, and stuffed animals- and fashion models of the social world we must grow into. Modeling is critical to a child’s development and allows the creative imagination to discover and expand. As adults, engineers of all persuasions still use models as professional tools to understand how and why something may or may not work. No longer a game when an engineer says, “let’s build a model”, or “Let’s play with that idea”, modelling is an activity that is at once serious and still tinged with magic and wonder. The ideal model is the essence of a theory or a problem, from which all trivia has been stripped. The great trick, of course, is knowing what is trivia.”

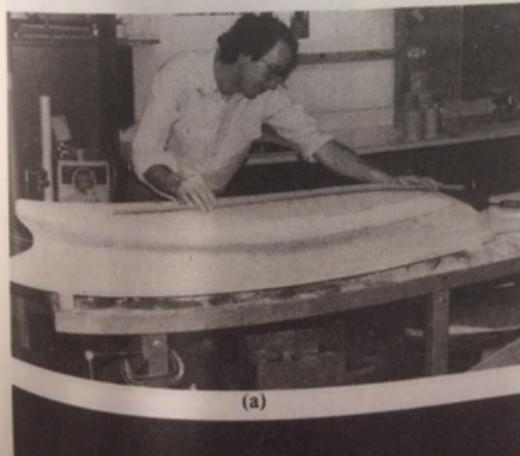
Early days....

7.9 Modeling

7.9 Modeling | 33

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Figure 7.4a shows a wooden model of an ice-breaker's hull. The bow is a radical departure from conventional designs and must be tested in a tow tank before it can be approved for construction. A naval architect designed the ship's hull theoretically using a hydrodynamic analysis. Satisfied with his theoretical predictions of the ship's

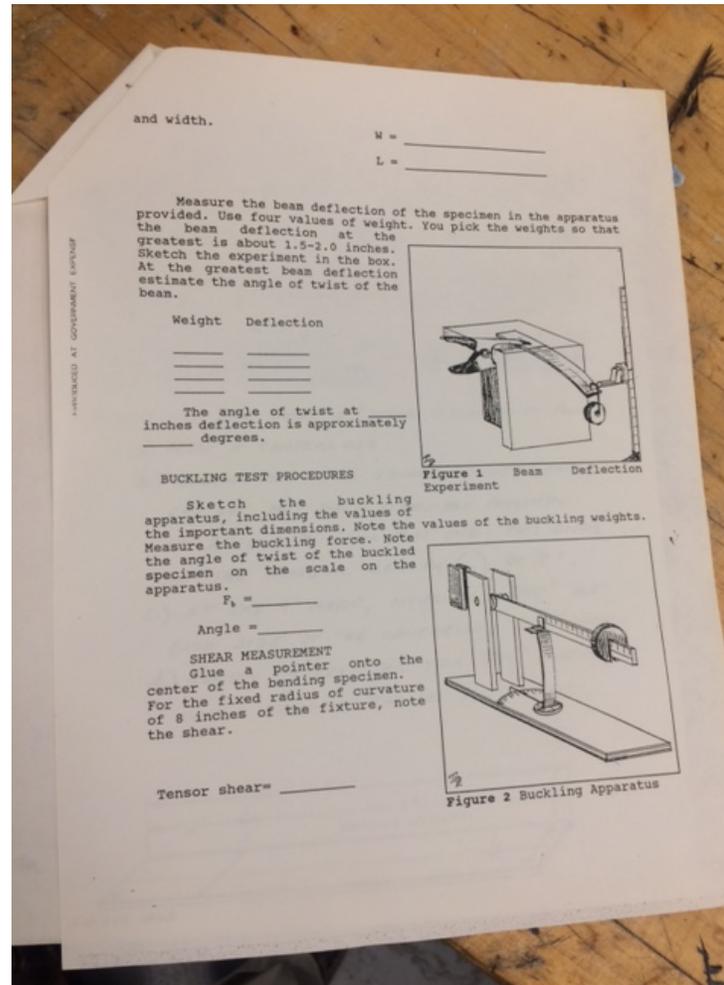


(a)

How we were....



Typical Composites Lab write up, testing specimens





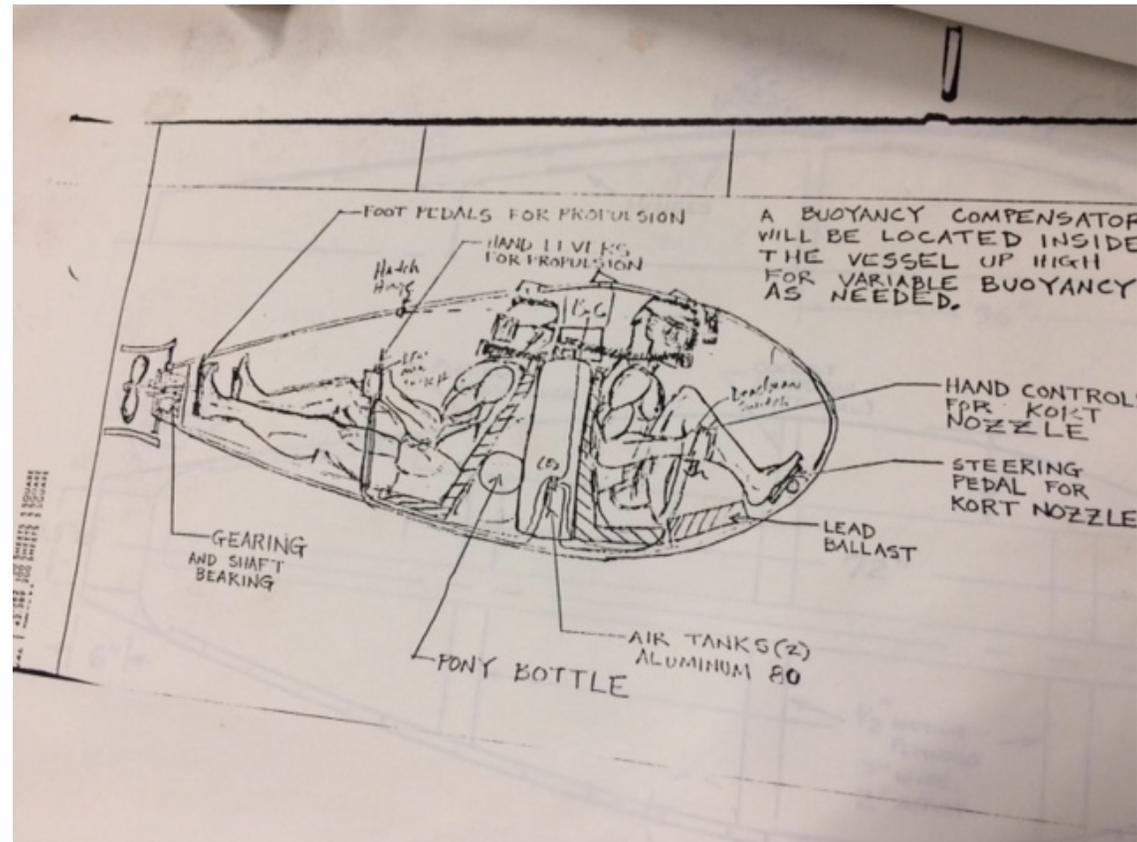
“battle bots”



FIRST Robotics



Original concept of "Squid"



USNA Squid team



Yellow submarine

Ensign Joseph Mandichak (left) of Colton, Calif., and Ensign Rick Miller (far right) of Euless, Texas built a two-man submarine that won a contest, sponsored by E.I. Du Pont de Nemours & Co., last month in Florida. Technician Dale Boyer helped on the project. The ensigns said they spent around 600 hours of design time, 1,300 hours to build the craft, 500 hours to test it and \$2,700 to build it. See article, Page 2.

News

Trooper shows seat belts

Business

Restaurant celebrates
of fried crabs

Sports

South River
stick to defe

Static testing



“Mighty Mid”



Testing in USNA towing tank



Baja vehicle



Early SAE Formula car



Formula Team



SAE race car, composite monocoque body



Why won't it start???



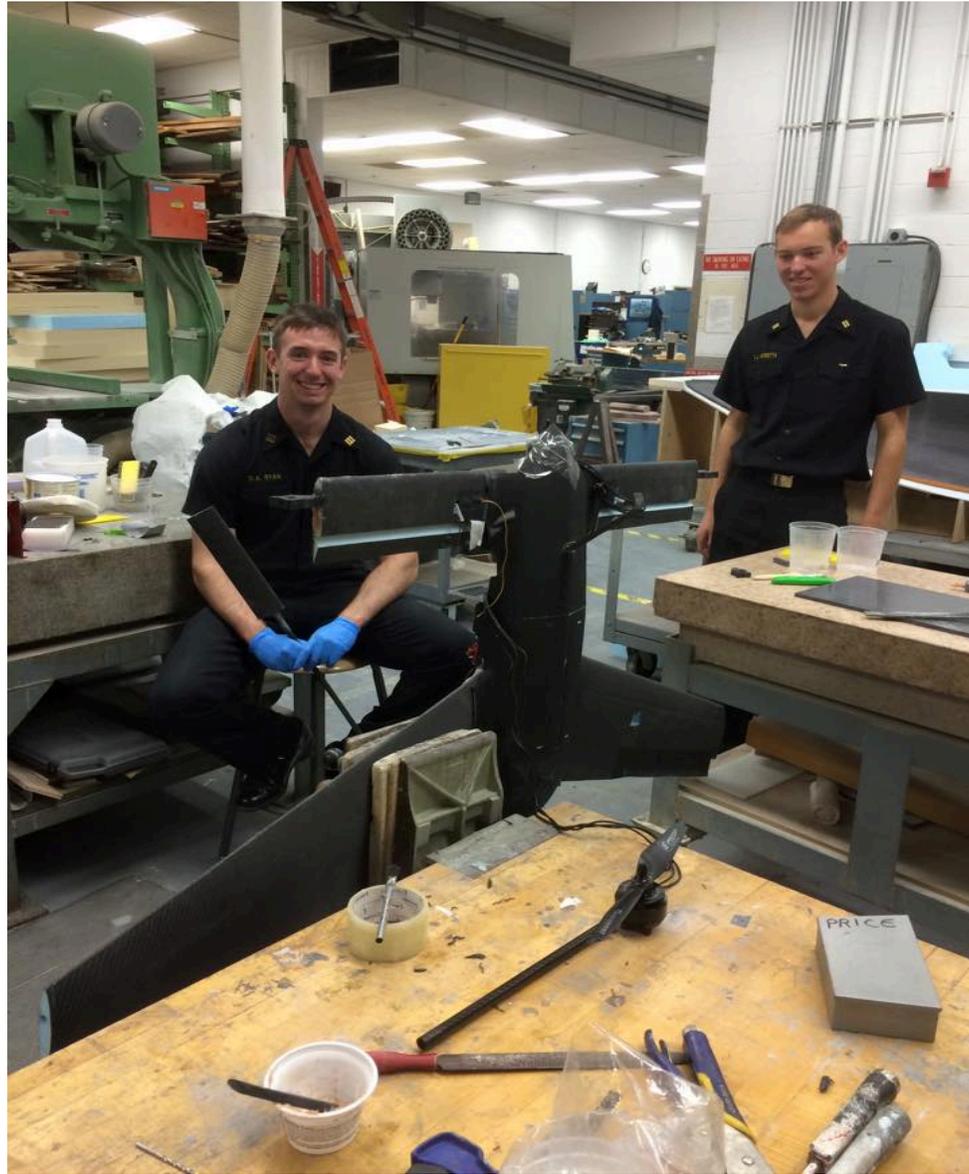
This years car 2 weeks ago!



DBF aircraft testing



DBF aircraft



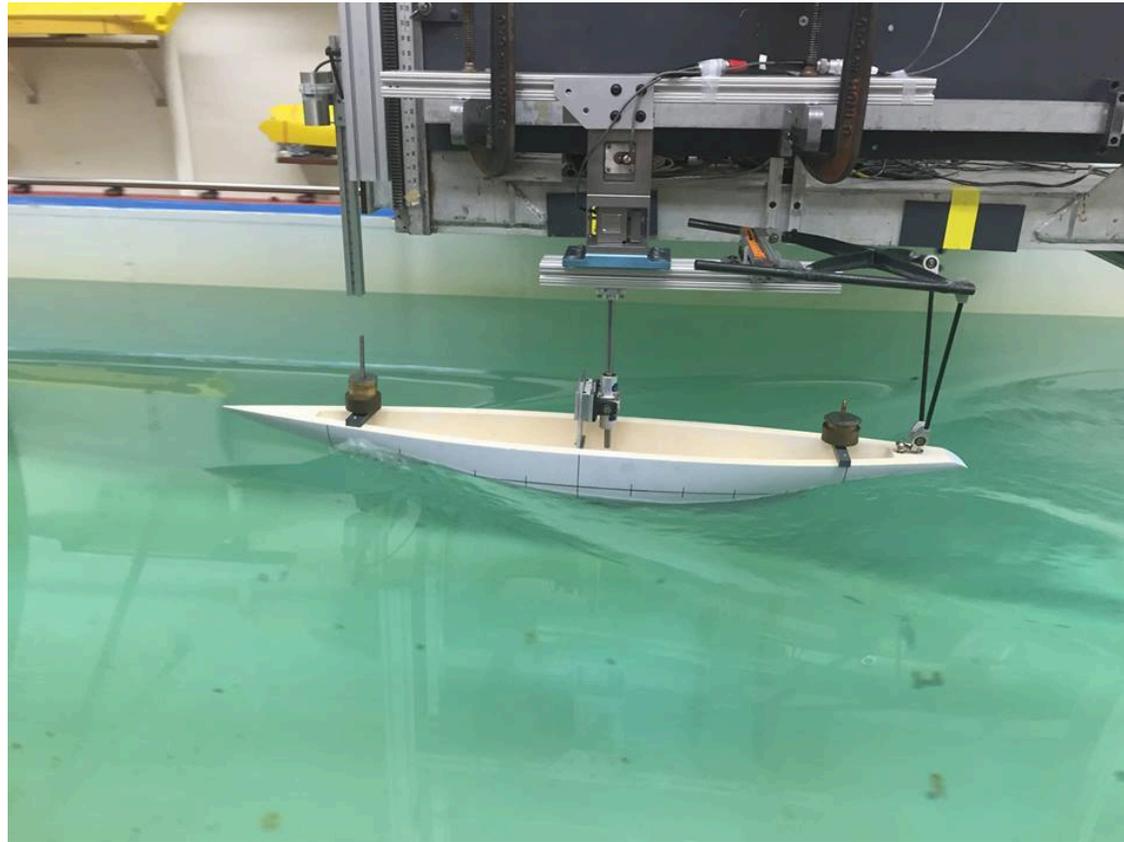
Foiling rowing shell!



Worlds lightest 10' canoe (6#)



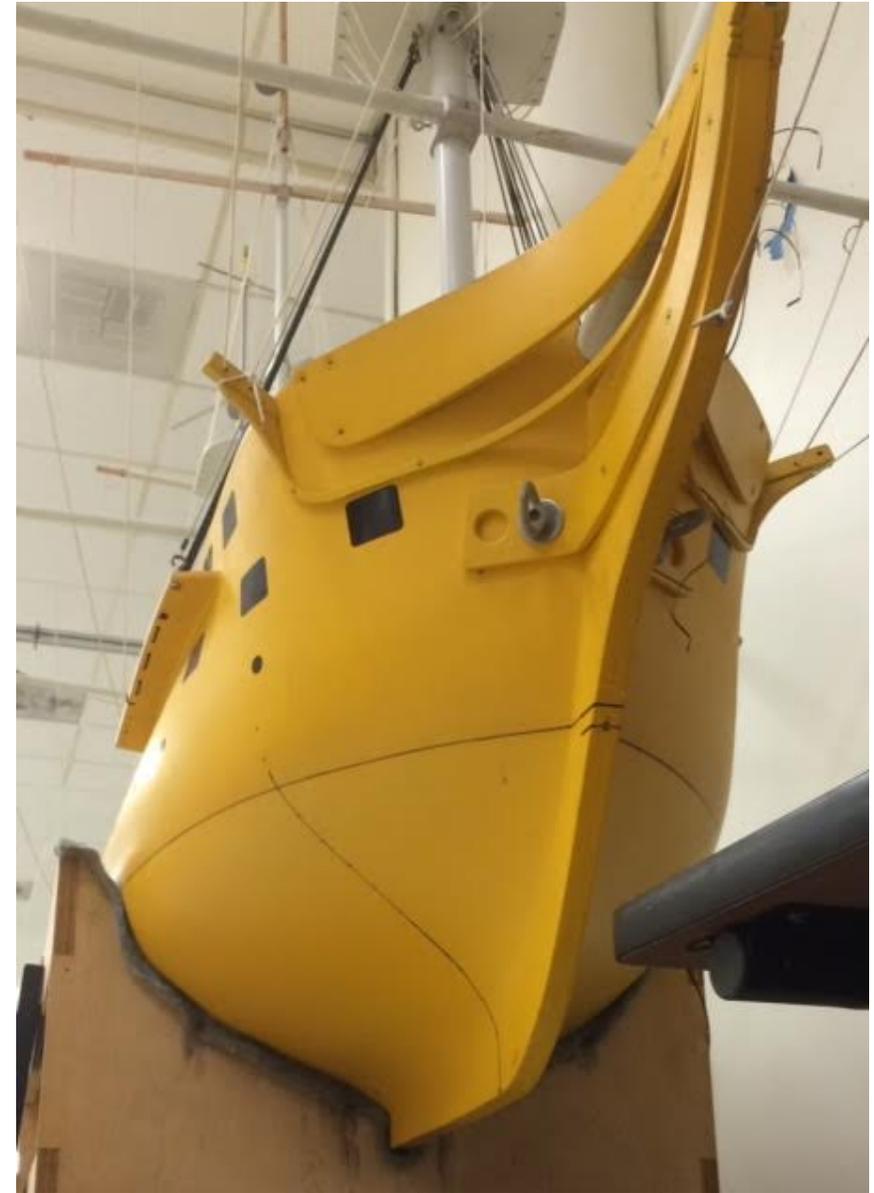
Midshipman design towing tank model



Some testing models are pretty....



Constitution Model



Some models are complex





10 towing tank models



CNC machining of hull interior. Foam



Isabelle! Rickover becomes an island



Isabelle. Indoor pool?



It takes space, tools and qualified craftsmen



Totally engaged.....

