Applied Programming I

Project #3 **Jan. 17, 2011**

Ver. 2.0

Program:

Upgrade the VF computer program that your group prepared in project 2 to include plots of the main variables: SHP, Total and Frictional resistance (in the same graph), Tau angle, and, Wetted surface, versus, velocity. To estimate the Shaft horsepower, assume an appropriate value for the Propulsive coefficient (0.40). Also, the plots must be first generated on the screen, and then saved in a *dxf* file, whose names are input by the user through the dialog box. The source code of the subroutine to generate the graphs must be included as an appendix of the report.

Application:

Applying your own implementation of Savitsky's 64 method, you have to determine the best design variables for a planning boat powered by a waterjet, for a velocity of 32 knots, with the following characteristics. The thrust acts parallel to the keel, and about 30 cm above the Base line.

Displaced volume (full load)	12.7 m^3
b (Chine beam)	3.20 m
β	12 ^{o}
ε	0^o
LCG (original, full load)	4.10 m
VCG (original, full load)	1.15 m
ρ	1025 kg/m^3
ν	9.39E-7 m^2/sec
Diesel tank capacity	280 gal

The two parameters that may be modified are the longitudinal and vertical position of CG, that is *LCG* and *VCG*, which depend on the position of the diesel tank, originally located at the stern part of the ship. Also you have to consider that the diesel consumes while the boat is travelling.

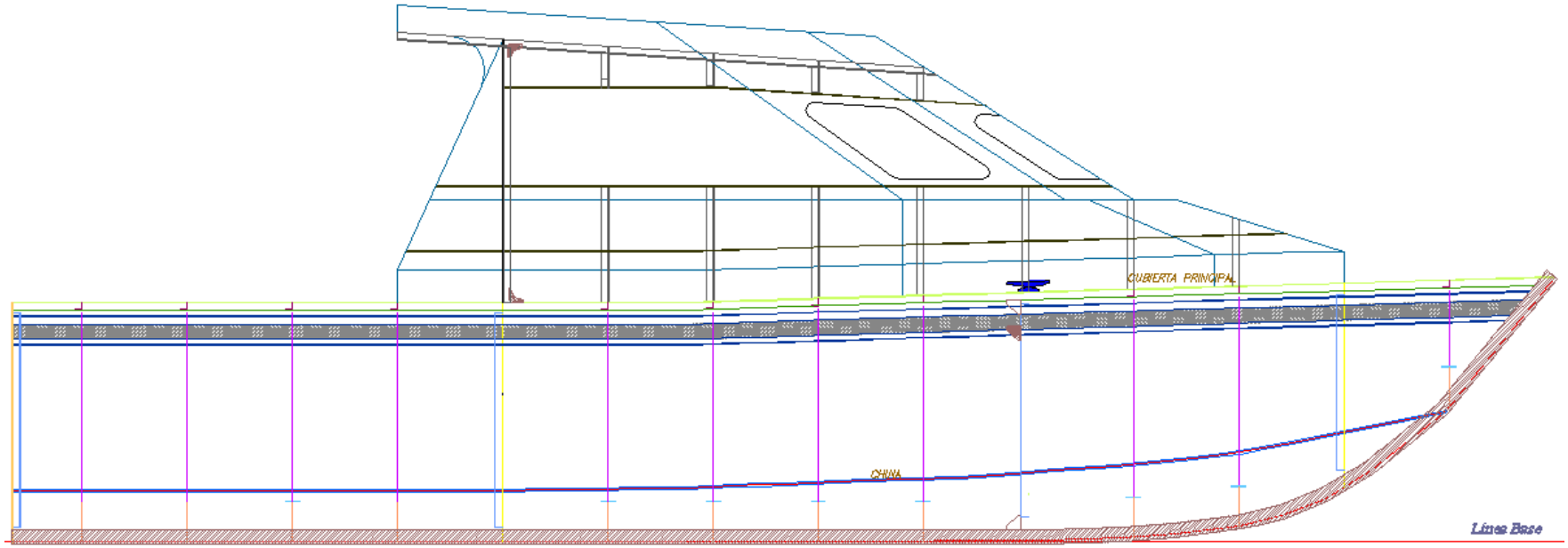
The grade will be assigned according to:

- Written report (Aestethics, table of content, numbering, organization of material, references). (40%)
- Oral presentation (15 minutes). (25%)
- Applicability of results (Technical content, reality of parameter values). (35%)

Do not forget: you must report # of hours employed to complete the project.

Deadline: First version of reports and Oral Presentations: Friday 28th of January '11.
Final report: Wednesday 2nd of February, before meeting with Prof. Wiggins.

jrml/2011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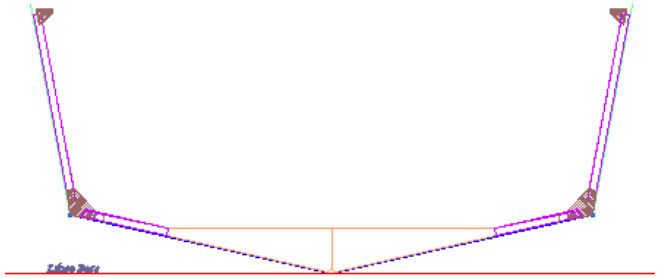
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