



Design and Development of an Autonomous Underwater Vehicle

Team 23: Erik Olson, Ross Richardson, Jordan Clein,
John Nicholson, Max Austin, Corey Cavalli



Aim

Design an autonomous submarine to perform a series of challenges at the AUVSI RoboSub Competition

Competition Objectives

1. Follow path markers between tasks
2. Interact with colored buoys
3. Pass over an obstacle
4. Drop markers at a specified location
5. Fire torpedoes through specific target
6. Locate an object, pickup and move to a specified location

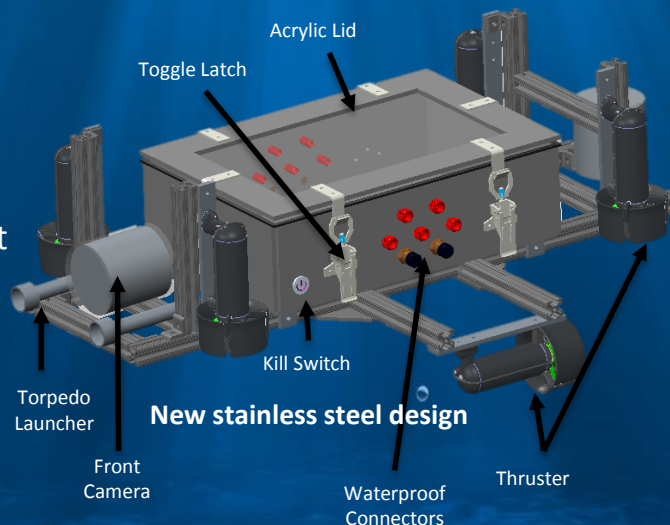
Marker Dropper Development

- Implemented new servo actuator
- Developed new control
- Adjusted mounting bracket



Team Accomplishments

- Redesigned and optimized hull
- Designed gripping mechanism
- Redesigned pneumatic system
- Fully functional torpedo firing



Hull Features

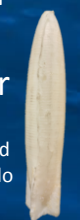
- Toggle latches for accessibility to electronics
- Pneumatic torpedoes and gripping mechanism
- Modularized connections

Design Analysis and Revision

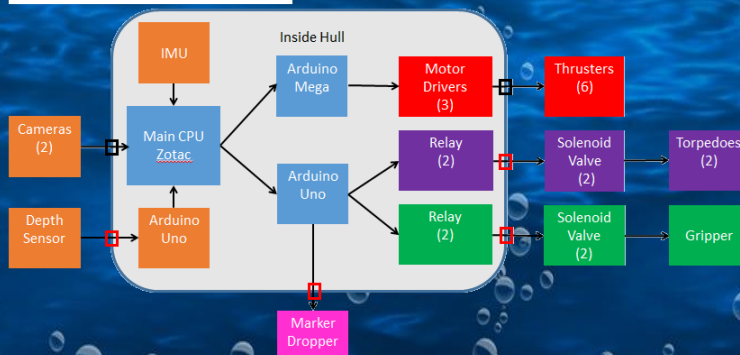
Property	Equations	Old Hull	Revised Hull
Material Density (lb/in ³)	m/V	0.0975	0.2781
Dimensions (inches)	$L \times W \times H$	22x15x6	12x18x5
Weight (lbf)	$m \times g$	84	71
Buoyancy (lbf)	$\rho \times V \times g$	100	72

Torpedo Development

- Developed CAD model
- 3D print CAD in abs plastic
- Negative plaster mold made of 3D printed piece
- Urethane rubber cast made for high density projectile



Robosub Signal Diagram



Future Plans

- Assemble Frame
- Finish autonomous systems
- Make competition ready