Warrenton Aquatic Robotics - The Rays

Non-ROV device - Torpedo Ray

Torpedo Ray got its name from a species of ray called a Torpedo Ray; it also goes with the team name The Rays.

Torpedo uses a custom built PCB (Printed Circuit Board) that houses a SparkFun RED Board, pressure sensor, open log, RTC (real time clock), PWR monitor, a small screen, JST ports for all other inputs, and an Xbee for communication. Torpedo Ray is also equipped with a buoyancy engine which is a syringe attached to a linear actuator. The buoyancy engine pulls in water when diving and pushes it out when ascending. Torpedo Ray is run by six C cell batteries helping maintain a constant voltage.

The software utilizes a state machine, which runs Torpedo Ray through different states during the dive. These states include Initialize, Ready, Dive, Ascend, and Upload.

Since Torpedo Ray has such a big enclosure our team needed to add four pounds of BB's to get it heavy enough to sink when needed.

Torpedo Ray uses six C cell NIMH Batteries going into a 5 amp blade fuse which is more than enough unless we run the lights at full brightness, if we do that it would exceed the limit of the fuse. So we only have those at a little below half brightness and only have them on for table display.

Fuse calculations show the total amps with neo pixels at half brightness. If they are at full brightness they exceed the fuse at 5.6 amps.

Item	Max amp taken (mA)
RED board with Xbee	245
Pressure sensor	0.002
Real Time Clock	0.022
PWR reader	15
Open LOG	23
Small Screen	20
Linear actuator	450
Neo pixels	2050
Total amps	2803mA 2.803A
Fuse we chose	5amp