1. Test Plan

Titanic Positioning will test the system throughout the entire development phase. Table 1.1 below shows the order that components will be tested.

	Test Plan
1.	Test individual sensors to ensure the data being captured is correct
2.	Test the control system with all sensors connected to ensure that the sensors are properly communicating with the controller and with each other
3.	Test control system to ensure it communicates to the thrusters properly and to the interfaces on the motors
4.	Test the DPS on the boat

Table 1.1: Order in which components and code will be tested

The following table outlines the required testing that will be done at SFU in the lab, and the expected results.

Component/sensor to be tested	Test Procedure	Results/Comments
MRU	Tilting and measuring output signal	Ensure the MRU communicates with the embedded computer and that the reading is accurate
GPS	Develop a mobile system and move around campus	Ensure location accuracy and communicates with embedded computer
Anemometer	Simulating wind using a fan	Ensure the accuracy of wind direction and communicates with embedded computer
Motor Control	Simulating maneuvers	Ensure proper outputs are being communicated to and from the embedded computer
Shutoff Command (switch)	Pushing manually	Verify complete release of control to manual mode
Control Algorithm	Move all sensors and computer on a cart	Verify proper output compensation depending on sensor inputs.

Table 1.2: Test plan at SFU

The keyboard will be first used by the test engineers to verify throttle and angle control. A Panasonic Valve Regulated Lead-Acid 12V battery will be used on the mobile system suggested for mobile testing at SFU, which will be similar to the power supply on the test ship. The control system will use the ship's internal power supply. Once the initial sensors and motor unit have verified functionality, they will be installed on the test ship. Table 1.3 below shows the test plan for testing on the boat.

Component/sensor to be tested	Test Procedure	Results/Comments
Shutoff Command (switch)	Pushing manually	Verify complete release of control to manual mode
Control Algorithm	Remain idle and let boat move under water conditions	Verify proper output compensation depending on sensor inputs.
Motor control	Manually adjust destination coordinates	Ensure proper outputs are being communicated to and from the embedded computer

Table 1.3: Test Plan for boat