



Left to Right: John Ayers, Jeremy Baouche, Cullen Cole, Aaron Adap

ELECTRICAL AND COMPUTER ENGINEERING

TEAM: 1906

SPONSOR: General Dynamics Electric Boat

ADVISOR: John Ayers

Cylindrical Inspection Rig

GENERAL DYNAMICS Electric Boat

Located in Groton, CT, General Dynamics Electric Boat is one of two U.S. shipyards that are capable of building nuclear-powered vessels. They are the primary submarine builder for the United States Navy. The company built the first nuclear powered submarine, the USS Nautilus, and the first ballistic missile submarine, the USS George Washington. Currently the company is contracted for the design and construction of the Columbia class ballistic missile submarine as well as improving the current Virginia-class design.

The company has tasked a joint Mechanical and Electrical Engineering team to design and create an inspection rig. This rig is to be 20 ft. long and accommodate a 34 ft. diameter cylinder. The rig will be able to accurately position sensors to within an inch along the surface of the body. The operator of the rig should be able to communicate with the rig wirelessly to a range of 300 ft.

The electrical team is responsible for the wireless positional control of the inspection rig. To achieve wireless capability we used HC-12 transceivers which allow for theoretical ranges in excess of 3000ft. These modules are then connected to Arduino Uno boards which then communicate with the rig's onboard motors. These motors then will move either the inspection arm or the sensor package.

