Bryan Guner

Senior Interview

11/18/14

Eng 095-02

Underwater Location Beacon

Interview:

What is your project title?

Underwater Locator Beacon (ULB) Redesign

Who are your team members?

Maxwell Duffy

Joseph Urciuoli

Kenny Ruddick

What is the goals of your project?

The major goals of the project are to tackle the three main issues with the current ULBs. Our group has set out to extend the range of the ULB to 20 nautical miles, this will be completed by redesigning the acoustic transmitter, receiver, and modeling the attenuation and dispersion of the signal over distance. The second goal is to extend battery life from 30 days to 90 days. This will be accomplished by determining how often the signal is sent and with what energy density. We will also be investigating other alternative forms of energy storage. The third goal is to encode the signal with useful information such as an ID and GPS information.

Why did you choose it?

I choose the project because I wanted to investigate acoustic communications and the field's symmetry with electromagnetic communications. I also wanted make a contribution to the engineering community and potentially help prevent the loss of human life.

What are some obstacles you must overcome in order to make your project a reality?

Since it is not a well defined competition the parameters and direction of the project can be hard to determined. Organization is always a issue working in interdisciplinary groups. There are also technical challenges when dealing with areas which are not very well researched.

Summary:

Eric Blow is currently working on completing a capstone project inspired by the recent crash of a Malaysian Air Liner into the ocean, who’s location could not be traced via it’s under water location beacon. His team intends to improve upon a traditional beacon by extending it’s range, strength and longevity. In order to improve range they are altering the modeling and attenuation of the acoustic transmitter in the hopes of discovering the optimal sonic qualities for the transmission of sound through seawater. They also intend to improve battery life by decreasing the frequency of sonic pulses over time with an ultimate goal of a 90 –day battery life. Perhaps most interestingly, they intend to incorporate information like GPS location and beacon ID into the sonic signals their beacon emits. Eric’s main motivation in choosing this project was to better understand the similarities between sonic and electromagnetic signal transmission and processing. While it may appear that the greatest challenge in this project is to achieve all of it’s design constraints, in reality the greatest challenge is choosing which criteria to discard at the expense of performance. Furthermore, cooperating with other students who are also balancing the demands of their senior year has proven to be an organizational challenge amongst technical hurdles. The final challenge lies in the fact that they are trying to improve upon current technology, and therefore are treading new ground, with little external inspiration from other teams innovations. If only marginally successful, this team will have produced cutting edge technology that could potentially save lives or at the very least provide consolation to the families of crash victims.