Overview of Accomplishments:
This week we started our preliminary research, to familiarize ourselves with overall topic of our senior design. We researched prior work accomplished in the field as well as possible options for underwater communications and localization. These options can be further analyzed when more details about the project are determined. In addition to researching the topic, we formulated a high level list of tasks that need to be finished by the end of this semester. This list of tasks will be updated and made more detailed, as we move forward with our project.

Individual Accomplishments:
Mike Daukas:
I have begun research on various underwater communication network systems. This includes acoustic, electromagnetic, and optical wave communications. Each type of wave has different properties that may prove useful or disruptive in underwater communication. As we gain more knowledge about where our units will be operating, it will be easier to specify which type of waves will work the best.

Connor Burns:
This week, the first week, was the preliminary week. I mostly learned about the topic, roughly learned how it works, and what needs to be done. We then sat in on a fellow group’s meeting to gain an insight of what to expect in the near future. Based on these things I made a very rough list of tasks that need to be completed this semester, from basic research to testing our prototype.

Joseph Folz:
This week I investigated prior work done with networks of AUVs. I discovered that very little work has been completed in this field. There is a large amount of research in different specific components of this type of project; such as, underwater communications, swarming behaviors, and underwater sensors. However, I only found a couple examples where groups actually implemented this research into a network of AUVs. Such networks of autonomous vehicles do exist for land and air applications, but even these fields are also limited.

Questions:
- How intricate/detailed does the list of tasks need to be?
- Is this more of an outline for our knowledge or a real outline for us to base our year off of, like a checklist?
- What do we want our AUVs to be able to accomplish?
- What kind of mobility will our AUVs need?
• At what ranges/depths will our AUVs be operating?
• What kind of data transmission is required/expected?
• How close together will the AUVs be operating?
• In what type of water will the AUVs be operating?
• What are possible factors for multipath?
• Are there combinations of communication systems that would improve the overall system?

Future Goals:
First and foremost we want to look into some the high level details of our design. We need to determine what our AUVs will be capable of. Also we want to start to examine the physical framework of our design; this will help us to determine any basic physical constraints our design will have. Using this information we will refine our list of tasks and continue to make it more detailed. Also we will use this information to start to analyze which sensors will fit our project best. On top of these technical tasks there are a couple organizational tasks we would like to accomplish in the coming week. First is to set up a dropbox, or similar service, for our project so we can easily share files as a group. And second is to work on, and if possible complete, our group’s webpage.