Ashley Benson  
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Mechanical Engineering  
LJT and Associates, Inc.  
Co-op Term 1  

Work Assignment  
For my co-op I worked for LJT and Associates Inc., which is an engineering company that provides services to various federal and civil customers. I worked at the NASA Wallops Flight Facility (WFF) in Wallops Island, VA. WFF is a research range where different aeronautical technologies are developed and tested on various launch vehicles. During the first term of my co-op with LJT, I worked with a small team to test a new ship surveillance system, called SureTrak, which will be used during missions to track the location of ships around the Wallops Island area. The developmental stage of the project had been completed, so our job was to design and implement a test plan that would bring the system to operational status. We worked with our Range Services Manager (RSM) to develop a baseline schedule. We had to perform a risk assessment of the faults and requirements of the system by giving each risk a likelihood and consequence rating between one and five. We compiled our results into a report that was given to Range management and the Range safety office who would tell us, based on our analysis, which of the 35 faults and 78 requirements were acceptable risks without being tested. In order to test the various risks, I created data files that were comprised of real mission data and tailored to test a particular risk. I also created test procedures that were followed to test various faults and requirements. Even though I was working on the testing phase of the project, I still needed to learn a lot of the technical background about how the different software modules were written in order to write test procedures and fully understand the best way to test different requirements of the new system. I helped run the test files through the software in the Range Control Center and then analyzed the results on the tracking screen and the debug files to determine if the test was successful. After analysis, some test files and procedures needed to be revised in order to more appropriately test a particular fault or requirement. SureTrak was the primary project I worked on during my co-op, but I also did some data entry in the Range’s configuration management system and other small tasks where needed.  

Assessment of Learning and Development  
Most of my work this term was in systems engineering and I was able to apply “soft” skills that I have learned and improved upon at Cornell including analytical thinking, teamwork, and communication. I didn’t use many of the technical skills I learned in my mechanical engineering classes. I felt MAE 2250 prepared me the most for my co-op because it exposed me to the engineering project process, from initialization to implementation. While working this fall, I became familiar with the different aspects that are required to move an engineering project forward and how much of it is a coordinated effort between people in various departments and levels of the management chain. I am planning on earning my Masters of Engineering degree in either engineering management or systems engineering, but after my work this fall, I am more interested in pursuing systems engineering because I want to work on a project throughout all of its different phases while still remaining on a more technical level.
Life Outside of Co-op
My life outside of co-op was different than most because I lived at home in Salisbury, MD which was an easy 45 minute drive from where I worked in Wallops Island, VA. I carpooled with another employee for the long commute, which is pretty common for people that live in Salisbury and work at WFF. I work in a rural area so public transportation is basically non-existent and everyone drives wherever they need to go. I found this co-op on my own and there weren’t any other co-ops in the fall. In the summer months, there are a lot of interns to work and socialize with. There are various social and sports events organized in the summer months when there are more interns working and Wallops Flight Facility is about a five minute drive from the beach. Also, Washington D.C. and Baltimore are only a few hours away and are nice places to go for a weekend or day trip.

Evaluation
I enjoyed the fact that I was doing work that made an actual contribution to a project. I would definitely recommend the co-op program to any engineer who wants to gain valuable experience and encourage you to consider LIJ. For me, Wallops Flight Facility is a great place to work; it’s a small town environment close to the beach but only a few hours away from Washington D.C. and Baltimore. Work hours are flexible and the people you work with are friendly and willing to help whenever you have questions. I enjoyed the work I did with LIJ, but I would have preferred to do more mechanical engineering work and see how the technical skills I’m learning at Cornell can be applied in a real engineering setting.
Ashley Benson  
alb333  
Mechanical Engineering  
LJT and Associates, Inc.  
Co-op Term 2

Work Assignment

For my co-op I worked for LJT and Associates Inc., which is an engineering company that provides services to various federal and civil customers. I worked at the NASA Wallops Flight Facility (WFF) in Wallops Island, VA. WFF is a research range where different aeronautical technologies are developed and tested on various launch vehicles. During the second term of my co-op, I continued testing a new ship surveillance system call SureTrak that I began during my first co-op term. SureTrak is used during missions to track the location of ships around the Wallops Island area. The developmental stage of the project had been completed, so our job was to implement a test plan that would bring the system to operational status. During my first co-op term, we compiled our results into a report that was given to Range management and the Range safety office who would tell us, based on our analysis, which of the 47 faults and 78 requirements were acceptable risks without being tested. This summer, in order to test the various risks, I created data files that were comprised of real mission data and tailored to test a particular risk. I also created test procedures that were followed to test various faults and requirements. Even though I was working on the testing phase of the project, I still needed to learn a lot of the technical background about how the different software modules were written in order to write test procedures and fully understand the best way to test different requirements of the new system. I helped run the test files through the software in the Range Control Center and then analyzed the results on the tracking screen and the debug files to determine if the test was successful. After analysis, some test files and procedures needed to be revised in order to more appropriately test a particular fault or requirement.

I also worked on two summer projects with the NASA Mechanical Systems branch. I worked with other co-op students to design and test a payload flotation recovery system. Our project used salvage lift bags that would automatically inflate the lift bag with CO₂ gas when in contact with water and float a payload to the surface of the water and allow for easier recovery. We were given the lift bags and inflator valves with minimal information about their capabilities, so we had to research and calculate the performance of the system to see if it would be able to lift a 250lb payload. I used fluid dynamics to calculate the flow rate out of the valve and performed buoyancy calculations of the system. I also calculated the time it would take for the bags to reach the surface once they were inflated. At the end of the summer we went out on a recovery boat and dropped the lift bags in the water, using lead plates to simulate the weight of the payload. Three of our four lift bags successfully brought the weight to the surface and the fourth bag had extensive leaking through the seams. After testing, we compiled all of our analysis and results into a comprehensive report.

The second project I worked on with the mechanical systems branch involved tensile testing of ABS plastic. ABS plastic is used in 3D printers and our goal was to test the mechanical properties of the material and verify the results from the manufacturer. I helped design test specimens and then perform tensile testing using an Instron machine to gather stress and strain data.
Assessment of Learning and Development
My work on the SureTrak project was in test engineering and I was able to apply “soft” skills that I have learned and improved upon at Cornell including analytical thinking, teamwork, and communication. I used fluid dynamics and tensile testing that I learned in my mechanical engineering classes on the projects I was involved in through the Mechanical Systems Branch. I felt MAE 2250 prepared me for my co-op because it exposed me to the engineering project process, from initialization to implementation. In addition, the tensile testing I did in MAE 3272 was almost identical to the tensile testing I did this summer. I am planning on earning my Masters of Engineering degree in either engineering management or systems engineering, but after my work this summer, I am more interested in pursuing systems engineering because I want to work on a project throughout all of its different phases while still remaining on a more technical level.

Life Outside of Co-op
My life outside of co-op was different than most because I lived at home in Salisbury, MD which was an easy 45 minute drive from where I worked in Wallops Island, VA. I work in a rural area so public transportation is basically non-existent and everyone drives wherever they need to go. I found this co-op on my own and in the summer months there are a lot of interns to work and socialize with. There are various social and sports events organized in the summer months when there are more interns working and Wallops Flight Facility is about a five minute drive from the beach. Also, Washington D.C. and Baltimore are only a few hours away and are nice places to go for a weekend or day trip.

Evaluation
I enjoyed the fact that I was doing work that made an actual contribution to a larger range project and work on two smaller projects from start to finish. I would definitely recommend the co-op program to any engineer who wants to gain valuable experience and encourage you to consider LJT. For me, Wallops Flight Facility is a great place to work; it’s a small town environment close to the beach but only a few hours away from Washington D.C. and Baltimore. Work hours are flexible and the people you work with are friendly and willing to help whenever you have questions. I enjoyed the work I did with LJT and NASA, and it was exciting to work on mechanical projects and see how the technical skills I’m learning at Cornell can be applied in a real engineering setting.