CO-OP JOB SUMMARY

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Major: Mechanical Engineering  
Employer: General Motors Components Holdings  
Term: 1 - Fall 2013

Co-op Work Assignment

The main components manufactured at the Rochester plant are fuel injectors, fuel rails, and intake manifolds. The plant is split into divisions which manage each one of these departments. Within each of these departments, there is a quality side and a manufacturing side. During my first co-op term, I worked in manufacturing for injectors. This entity is responsible for improving and maintaining existing equipment, as well as acquiring new equipment related to fuel injector production.

At this time, the plant was in the midst of ramping up production for parts going into GM’s 5th generation small block engine, debuting in many of the 2014 models. This meant that there was a lot of newly installed equipment, and therefore, a lot of troubleshooting and fine tuning to be done.

I was assigned a mentor who guided my projects and was available to answer questions along the way. I helped investigate the causes of several problems with machines that were producing sub-par components, and then helped redesign pieces of the machines to improve effectiveness and efficiency.

There was brief training on overall company policies and organization, but technical training occurred on an as-needed basis. As I investigated things and worked on solutions, I learned how to use equipment whenever it became necessary.

Assessment of Learning and Development

A lot of my work involved the type of problem solving which benefited from a methodical approach similar to what is instilled throughout an engineering education. There was some technical knowledge applied for things like spring forces, fluid flow rates and frictional losses as they relate to pumping capacity, and one instance of fatigue analysis.

I found that a lot of engineering as a career is figuring out how to do things that you've never seen before. There are some fundamental concepts taught in engineering school, but from talking with many of the people I worked with, the majority of their knowledge and skills were gained on the job.

Going into this co-op, I was confident that seeing the manufacturing side of automotive engineering would be useful experience, but I did not expect it to be as challenging or interesting as I now realize it is. I imagined automated machines running well most of the time, and an occasional breakdown requiring engineers to come in, diagnose it, and fix accordingly. This is not the case at all. I have since realized that manufacturing is a far more complicated field. There are real problems present all the time, and the solutions are almost never simple.
As I worked on different projects throughout the term, I had to work with a lot of new people, so I got better at developing professional relationships. As a co-op, I found it important to know my place in the food chain, and to respect people's time accordingly. I also got better at being decisive. When there seemed to be too much talking, it was beneficial to just start doing something, even if it didn't end up being correct – at least then you could stop talking about it.

If I were going through co-op again, I think the main thing I would do differently is keeping better records of my day-to-day activities. I was doing a good job of this at first, but my notes dwindled as time went on. I realize now that consistently spending a little more time would have saved a lot in the end, when reports and presentations needed to be assembled.

**Life Outside of Co-op**

During my co-op, GM provided my apartment, so I did not have to find housing.

I had a car, so I drove everywhere. It was about a 20 minute drive to work from my apartment. The bus system would have worked fine for going to get groceries and doing things around town, but there is no bus route that goes from the town I was in, to the plant. For this reason, I would say a car is a necessity unless living in a different location.

As for social life, University of Rochester and RIT are both relatively close, both about a 5-10 minute drive, and a 20 minute bus trip. However, the buses back to my apartment did not run very late (only until about 10:00pm), so if you are looking to participate in nightlife at either college, a car is still necessary.

**Evaluation**

I am very happy with the experience I've had during this co-op term. I feel like I have gained a ton of useful knowledge, and I also think that I made valuable contributions to the plant. I think the best part of my situation was how independently I was allowed to work on projects, which can mainly be attributed to my mentor's style of leadership. He let me be responsible for a lot, which came with some pressure, but allowed me to learn in a very direct, hands-on manner. Although it may have taken longer to solve problems this way, I think that I took away far more from the projects I worked on that I might have if my role had been more observational.

**Additional Info**

I should mention that in my first week at the plant, I was assigned to a different role than the one I functioned in thereafter. Originally I was slated to do more administrative work, tracking and planning inventory of spare parts for machines, which would have been less applicable to my major and interests. I very quickly realized this as a less valuable experience, and spoke up. My original supervisor and HR representative were both very accommodating and moved me to a different office to work on more challenging projects.
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Fall 2013

Job Summary

During my co-op assignment, I worked in the Materials Lab at General Motors Components Holdings in Rochester, NY. My workplace was a plant that produced fuel injectors, fuel rails, and intake manifolds for engines. During my co-op, GM was in the process of launching a new type of direct-injection engine for the 2014 models of several vehicles. The Rochester plant where I worked was working primarily on this new fuel system and making improvements in its production. The Materials Lab, where I worked, carried out investigations of damage to parts and tools from all areas of the plant as well as returns from engine and vehicle plants, and customer returns. The Lab worked to identify issues in manufacturing to improve overall quality of production.

At my job assignment, I had regular responsibilities that involved using a variety of equipment to run tests on different component, both from suppliers and produced internally, to ensure they met specifications for production. In addition to these regular assignments, I worked on and assisted with many lab investigations. These most often involved evaluating and photographing damage to components, injectors, and rails, and looking for possible root causes of the damage. I also had to write reports and send them out to various departments, as well as attend meetings related to current lab investigations. As a co-op student, most of the projects I worked on were in collaboration with the metallurgists in the lab.

During my first several weeks I was trained on all the various lab equipment necessary for my job. A few of the machines I worked with I had seen before or used in labs, but almost all of it was new to me. However, I soon became comfortable using all of the machines I was trained on because I used them all so frequently. Most of my training was provided by my supervisor, the senior metallurgist at the plant. In addition to this, there was an orientation run by the HR representative that outlined topics like safety and environmental responsibility.

Most of my work was very relevant to my major, which was great. Many of the tests I ran and analysis I did was related to labs or classes that I had taken. Because materials science is so broad, I
didn’t have the specific metallurgical knowledge that would have been helpful in this position. However, I didn’t feel like that held me back, and I learned a lot on the job that will probably be helpful in future courses.

Housing was provided by GM in a local apartment complex, about 8 miles from the plant. Because there were only 2 out-of-town co-ops, we each got our own apartment. Transportation in Rochester is basically limited to cars. There is a small public bus system, but it is not convenient for getting to and from work. The city is very driver-friendly and traffic was never a problem for me, even in bad weather. As far as social activities go, there were two other Cornell co-ops in Rochester, so we got together for dinner sometimes or did things on the weekends. The University of Rochester and RIT are both in Rochester, so there were usually things going on there. There are also lots of shopping malls and restaurants, especially near where we lived. Also, Ithaca is only about 2 hours away from Rochester, which isn’t bad for a weekend trip.

I would say the best part of this job was the variety of things I got to do. Working in a large plant, people brought us different things to look at every day. I got to use materials science knowledge from classes and what I learned on the job to analyze all different kinds of damage. It was also great to see the kind of work that materials scientists do in a manufacturing environment. Overall, it was a great experience, and I would recommend it to anyone with an interest in materials science or metallurgy.