Job Summary

Air Products is one of the world’s leading suppliers of industrial gases. The company has plants all over the world that take in air and separate it into its pure components, such as oxygen and nitrogen. I worked at the company’s global headquarters, in Trexlertown, Pennsylvania. The group I worked in, Global Support Services Machinery, is responsible (as the name implies) for lending support to existing plants for technical issues with the machinery, including compressors, expanders, pumps, fans, and blowers.

I worked on one long-term project during my time in the group, which was assisting the roll out of a new equipment condition monitoring program. The operators at every plant have alarms set for when certain parameters on machinery, like bearing temperatures and vibrations, reach levels dangerous to the well-being of both the machinery and the people working at the plant. However, when these alarms are reached, most of the time the plant will need to be shut down to perform unplanned maintenance on the problematic equipment. The purpose of the equipment condition monitoring program is to catch mechanical problems and degradation of the machines as early as possible to cut out unplanned maintenance costs and plant downtime.

Most of my work was done either on the computer, using Microsoft Excel and other Air Products software, or with plant diagrams. My job was to find all the data-collecting instrumentation on each piece of equipment in the plant using the plant diagrams and data historian software and compile it into a master list. From there, I would create statistical predictive models based on the past data for the parameters we were interested in monitoring.

For this project, I worked on a team with two other interns, a first year Air Products employee, and my supervisor, a global reliability engineer. The five of us shared an office together, which made it very easy to bounce questions around if we needed help with anything. My work environment was very conducive to a team project and was one of my favorite aspects of the job.
Being placed in this group with this project was very beneficial to my professional development. My job functions were not extremely heavy on direct application of classroom knowledge, but I was able to see many of the principles of thermodynamics and statistics used in the industrial world. I was able to learn a lot about the air separation process and the machinery that makes it happen, which will be very valuable as I move on to my next assignment in the summer. Being at Air Products also opened my eyes to the true scope of the engineering profession, which is much larger than I realized. I will likely be working at a plant for my summer term in order to get more hands on experience, but this work term laid an excellent foundation for pretty much any position I may end up in.

Outside of work, there was a surprising amount to do. The Allentown area itself doesn’t have many attractions, but because Air Products always has a large group of interns and co-ops, we constantly had plans. We traveled to a lot of different places on the weekends, such as Philadelphia, New York City, DC, Boston, and even Canada. (Note: I didn’t always go on these trips; it’s good to break up the traveling with some weekends at home.) We also went out to dinner as a group on multiple occasions. If you plan to visit Cornell during your term, working in Trexlertown is the way to go, as it’s only about three hours away from Ithaca. The other Cornell co-ops and I visited school several times.

Overall, my first co-op term at Air Products was a very valuable experience. I would highly recommend the co-op program to anyone on the fence about it because you learn a lot about engineering and the professional world, not to mention the program gives you a nice break from the rigors of the classroom. If you have any questions I can help with, feel free to contact me by email: bag84@cornell.edu.
I was in the Continuous Improvement (CI) group within the Global Engineering and Manufacturing Group (GEM). GEM made new plants for the company (Hydrogen, Cryogenic, Energy, etc.), and we supported these various groups to help them make more money for Air Products. Air Products uses a combination of a Lean and Six Sigma CI programs. Both approaches aim to save money for the company, while Lean focuses on waste reduction, and Six Sigma focuses more on reducing variability. My supervisor, Heather Marshall, is a Black Belt in Lean Six Sigma (LSS), which means that her job is dedicated to only CI work. There are other belts in the company (White Belts, Yellow Belts, Green Belts) that dedicate a percentage of their time to LSS, in addition to their normal job. Heather is the Black Belt aligned to our Hydrogen business (HyCO), which means that all of her projects were dedicated to improving that business. The other Black Belts in our group were aligned to other business groups in GEM.

As the CI intern, I mostly worked for Heather, and I also did some work for the other Black Belts, and the GEM CI Manager, Janice Peterson. During my time here this fall Heather had two LSS projects that I assisted with throughout the semester. LSS is about being driven by data, so we collected and analyzed lots of data surrounding past HyCO projects to help us find solutions in the LSS projects. This data was then presented to the teams and was used to drive the solutions.

I also did some work for a manager in the HyCO group to make a database about our bids. A group within HyCO receives requests from companies for a bid for a HyCO plant from us, and then they develop the plant, the schedule, and the cost, and present it to the company requesting the bid. That company will then decide to have us build their HyCO facility, or decide to purchase from a different chemical company. The HyCO group wanted to create a database with information about the bids we had won and lost, to help with future bid development. I went through the bid information for ~20 plants, looking for specifications on certain financials and design elements and added it to the database for future use by the Project Development Engineering group.

I also had a project for all of GEM CI. Once a year, each engineering group has a multi-day planning meeting to decide which goals they want to reach this year. After the meetings, the CI group sends out a survey to all participants to get feedback on the meetings, and how they could have been improved. This year, the manager of GEM CI, Janice Peterson, also wanted to conduct interviews with a few people from each group to get more in-depth feedback about the meetings. I created the survey and sent it out, then conducted the interviews with the various members of each group, who were mostly functional and group managers. I then analyzed the responses to the survey.
and interviews for each group, created a presentation, and presented it to the manager of each engineering group, and their aligned Green Belt and Black Belt.

In addition to these longer term projects, I did lots of smaller projects for the Black Belts. I helped find data for our Cryogenic columns, created and managed two different sharesites for the group, and did some data analysis for our Liquefied Natural Gas group.

I had a good amount of training throughout the semester. During my first week, I did almost entirely online training. Most of these were generic Air Products trainings. Heather then gave me some technical documents to have me learn how our HyCO plants work. I also took formal 1 day training to be a CI White Belt, and another training day to learn how to use Last Planner, a CI tool.

Generally, Heather was my mentor-figure throughout the semester, though it wasn’t a formalized program or relationship. I mostly worked for her, so I often ended up talking to her. She was also invested in getting me to meet a lot of managers and other people throughout the company, and getting me to think about what kind of work I’d like to do for the 2nd co-op session next summer, and was always very helpful in giving suggestions and information about various groups and positions. The other people I regularly interfaced with in our group were also open to helping me and answering my questions.

My position generally was not directly related to the kinds of classes I’ve taken in school. It wasn’t a technical position, though an engineering background was required to understand how chemical reactions, heat recovery, and efficiency affect our projects when trying to improve the business. I was open to having either a technical or more business oriented position coming in to Air Products, so I was happy with the work, though I’ve asked to have a more technical position for next summer. I’d like to see the actual project work in the company as well as the business side.

In terms of affecting how I view engineering work, this position influenced how I view following the work process and documenting my activities accurately. I feel like in future positions I will always have CI in the back of my mind, and will think about making data-driven decisions, rather than using only thoughts and gut feelings. In terms of my career, this position made me see how many options there are for chemical engineers, even within Air Products. We have 6 groups within GEM, which is only one organization within the company. There are many job options and opportunities to learn more throughout my career, and I should not have to feel stuck in a position if I want to continue to develop more skills. On the other hand, it is also possible to become the authority on a certain type of technology or process, and be the go-to person that knows all about that subject for projects throughout your career. Throughout this semester, after seeing how various peoples’ careers have developed, I
have found that I'd like to have a different position every few years, rather than stay in one for the majority of my career.

This position gave me the opportunity to interact with many different types of people. I also got to be in charge a few projects and have more responsibility, which made me more comfortable with being in charge of something, and being accountable to other people. I feel like I also improved my communication skills with my supervisors.

If I were to do this again, I would start looking into what work I want to do next summer earlier. I started talking to people about opportunities for next summer in November. This seemed early enough, but not much can get accomplished the week of Thanksgiving, and after that there are only 3 weeks left in the term. I was able to speak to the manager of the position I want during the first week of December, but at that point he'd already heard from other interested co-ops, and was unable to promise me a position. If I'd started looking a bit earlier I could have been the first person to express interest to him. Keith Holtermann, the manager that hires the Cornell Co-ops has been very helpful, and is a good person to talk to about your career plans.

We found our housing through the Air Products housing portal, which worked out nicely for us. However, one group found their apartment the same way, and it turned out to be in not the best of neighborhoods, and in bad condition. Over the summer, 3 of the 4 Allentown co-ops came down for a day to go house hunting. We had 3 places to look at, and after visiting it became very clear that our house was the best place we were going to find. The best way to find a place is probably to find a few options through the Air Products housing portal, then visit and find what best fits your needs.

We were lucky in that two of us had cars, so there was never an issue transporting the 4 of us. In Allentown you pretty much have to have a car, though you could take the bus if you have no other options. One group of interns rented a car for the semester.

There was a good amount of interns here this fall (~30), and everyone was quite open to making friends and doing activities together. We had a few dinners with all the interns, did laser tag, went to Dorney Park, and other activities like that. There are also a lot of younger people at the company who were friendly, and the interns would occasionally hang out with them. I lived with the other 3 Cornell interns in Allentown, and one intern from Purdue, so we would often hang out, doing puzzles, movie nights, going out for dinner, and other house activities. We spent many weekends in Ithaca as well, as we would often have reasons to go to school. We also traveled to other places, spending weekends in D.C., New York City, and Philadelphia.
There were many opportunities for community service and athletics. Some other interns and I participated in a volunteer activity every other Wednesday night to get high schoolers interested in engineering. We would have a theme each week related to some aspect of engineering, and plan a hands-on activity for the students around that activity. We’d tell them more about college, engineering, and Air Products. There was also a training program to become a Liquid Nitrogen (LIN) Ambassador. The ambassadors go to events, mostly for students, tell them about LIN, do some demonstrations, and make ice cream with the LIN. I got to give one of these demonstrations for the high schoolers attending the Wednesday night program. There were some intramural sports teams, and an Air Products 5K, though I did not participate in those activities. There was also a gym on the Air Products campus.

One of the greater things about my position was how much of the company I got to see through my position. Heather wanted to make sure I got to meet lots of managers, and see the many facets of Air Products. I feel like I have a good background on all of the groups in GEM, and a lot of knowledge about how our HyCO group operates. The technical training I got, the LSS projects, and the interviews and presentations I conducted were all very informative. Co-op is also very relaxing after taking classes straight from January to August.

Often times, the day to day work could be a little dull. Data collection isn’t very exciting, and some days all I would do was make graphs in spreadsheets. My boss was aware of this, though, and good about giving me other work to do that was more engaging. The hardest thing about co-op is working straight for 8 hours a day. My studying style is very different, and involves taking lots of breaks, but working for longer periods of time, so it was hard to adjust to this style.
Jessica Liu-jl2493
Chemical Engineer
Air Products Fall '13

Job Summary

A. Co-op Work Assignment

For my first co-op assignment, I worked in research and development in the Performance Materials Division at Trexlertown, PA. My project consisted of working in the lab with a Cowles type dispersing blade and determining if it is sufficient for the breaking down of silica solids in a liquid medium.

Because safety is very important at Air Products and there are safety risks to be aware of in the lab-type setting, the first week was solely devoted to safety trainings. This consisted of classroom type training with one on one interaction as well as online courses through the Air Products online “university.” Courses covered a wide range of topics such as very general office ergonomics and safe driving skills, more company specific topics such as diversity and confidentiality policies, and more laboratory specific topics such as personal protective equipment in the lab and hazard communication. In total, I had to complete around 50 of these courses which I focused my effort on during the first week. Also, many of these courses were required to be completed before being able to access the lab.

Before running experiments, I did a lot of research on the Cowles type blade, the materials to be used, and solid-liquid dispersions in general. From this, a general plan of action was proposed. Throughout this whole process, there were a number of people to talk to that made sure I was heading toward the right direction in my initial research findings. This was done through referring me to papers that were useful for my research as well as setting up meetings to talk about my findings so far. Everyone I am working with is in my building on my floor and therefore, I could always go to someone for my questions. Most of my research was done on the internet as well as Air Products resources. Also, many of the references found was from my own findings and I liked that I was free to search and learn on my own with guidance once in a while to set me on the right path. In this aspect, I believe it helped me gain a deeper understanding of the project as I had to cycle through many references that were not so helpful in terms of my specific project but useful in terms of general concepts that applied to the project. I was always learning and researching even after starting experiments.

My research findings were summed up with a plan of action and after some revisions, the actual experiments were started. I had weekly meetings with my supervisor on my findings, what it meant, and future actions to take. This was a time to report my findings as well as give input on the reason for my findings as well as receive input and recommendations. I generally asked my supervisor any
questions I had at these meetings as well: flexibility of work hours, how certain meetings in the
group ran, etc. For questions I had while in the lab or about lab related topics such as where to
throw out residual waste, I was able to ask other people in the lab who were more than willing to
show me or teach me their ways.

I also got to help determine an analytical method for determining particle analysis of the
product. I worked on the Luminizer, a centrifugal particle size analyzer, and trying to understand
how the machine works and the data as well as coming up with a method for determining settling
rate. After the project was completed, a final presentation was given as well as a final report issued.

B. Assessment of Learning and Development

I was happy to learn that I was to do research for my first co-op assignment. Coming into the
assignment, I wanted to go to graduate school after my undergrad and end up in a research setting
similar to that I experienced here. Coming into the assignment, I also thought that the scope of
chemical engineers were limited. Research is what I have always been interested in, whether doing
research in high school, doing research in college, and now doing research for Air Products. Being
able to work in research-based environment gave me a glimpse how it really is.

The great thing about Air Products is that the people are all willing to share their experiences
and refer you to someone they think will also be beneficial to talk with. While on assignment, I was
able to conduct many informal interviews with a variety of different people. I got to talk to many of
the people I work with and seeing their journey through grad school and through the company. I
also got to talk to those that did not go to grad school and their journey though the company.
Through this, I learned that a degree in chemical engineering is so much more than what I originally
thought. It made me really consider the pros and cons of going to grad school on a more serious
level than I thought of before this assignment. I had a great networking experience in which at first I
found to be a little awkward and did not know what to say. I am more confident now in these
interviews and can ask questions that are more informative to me than before.

If I were to go through the same experience again, I would have started the informal interview
process earlier. I found them very helpful in learning about all the different fields a chemical
engineer could do. I am also more comfortable e-mailing people as well as scheduling meetings. I
would also have made more of an effort in getting to know everyone around me. I do say a friendly
‘hello’ to everyone I see but I realize I do not know what they do or I do not know some names of
people I say hello to and see often around the floor.

C. Life Outside of Co-op

Life outside of co-op was great! There are many other co-ops and interns here for the fall
semester and I was able to get to know them pretty well. Everyone eats lunch together and there
wasn’t a weekend where I had nothing to do. The interns are always up to something whether
traveling over the weekend or watching a movie together or going out for dinner.
In terms of housing, this semester there are 4 of us from Cornell at the same location. We found a house 10 minutes driving from work with 2 out of 4 of us having cars. I did not know the other 3 people at all before the assignment but now we are all housemates and we have baking nights, movie nights, and dinner nights. The area is pretty suburban so there is not a lot of public transportation and would definitely need a car or find some kind of carpool system.

The Air Products community is very close group and there is always something to do. There are different sports that people come together to play once a week. I was involved in the Engineering Explorer Post which is a program for high school students interested in engineering. We meet once every 2 weeks and do fun projects like the marshmallow project or protect the melon project that uses fundamental engineering skills. They were very fun to participate in and I enjoyed talking to the kids. I also got to meet a few CDPs who are recent full-time hires and run the program. There are also several opportunities to volunteer in the community.

D. Evaluation

Working for Air Products has been an eye opening experience. I got to talk to so many different types of people doing different things. It really has got me thinking on my future and where I see myself going. I am very exciting to go back to school and see how this experience changes how I perceive and learn things. I definitely think I have a better understanding of the overall picture. During my assignment, I was also able to start and complete my research and being able to see the process from the start to finish was rewarding. I only wish I could stay longer to expand my project. There is a lot to learn and a lot of room to grow in the company.

The only thing I can think of for worst features of the job is how late we get our assignments. It is extremely stressful to not know where you are going to be placed well into the middle of summer. This is one of the reasons why I requested Trexlerstown for the first assignment. For the second rotation, you have a little bit more control in that you can start contacting people in fields you might want to work for and choose where to go that way.

E. Additional Information

I would take advantage of the Air Products discounts to Dorney Park or Hershey Park. They also have additional discounts for food places nearby the campus. For instance, while on this assignment, Chick-fil-A had free breakfast for 3 different weeks. There is also more things to do in Bethlehem and a lot of restaurants I wanted to try but wasn’t able to. I fully recommend co-oping with Air Products. It is a great company to work for with a lot of supportive people. Feel free to contact me if you have questions.
Katrina Curtiss  
Kmc359  
Chemical Engineering  
Air Products & Chemicals, Inc.  
Fall 2013  

A. Co-op Work Assignment

For my first assignment, I worked at the corporate headquarters in Allentown, PA. My group was a subset of the Global Operations (GO) group called Continuous Improvement (CI) that focused on the plants that produce hydrogen (HYCO). Global Operations pertains to projects on plants that already exist, as opposed to trying to start up new plants. Continuous Improvement is pretty self explanatory – I was working on trying to make improvements to HYCO plants.

When we arrived in Allentown on our first day, there was a half day orientation for all of the new co-op students. Air Products offered several start date options, each two weeks apart so we could get on the payroll at the right time. I was in the first wave of co-ops, and there were about 15 of us on that first day. This was just a basic introduction to the company, and we turned in the required paperwork to be employed, as well as our travel reimbursement forms. We also got our pictures taken for the ID badges. We ate lunch as a group, and then our supervisors came to pick us up one by one. My supervisor was Eric Wolfgang, who also first worked at Air Products as a Cornell Co-op student. That first day, he gave me a tour around the building I would be working in, and helped me get everything to set my desk up. As we walked around, he introduced me to a few other people I could come to with questions. My other main mentor, Candice Silvestre, was in training that week so I met her later. The two of them provided me with most of my assignments and I met most often with one of them when I hit roadblocks on my projects. However, I did ask multiple other people questions on occasion, and every single one I spoke with was very friendly and willing to help.

There were other online trainings called LSOs required at the start of the assignment. I think I had about 30, ranging from things like diversity inclusion, to hazard identification, to work ergonomics. Most of them were about safety. They all pretty much consisted of going through powerpoint slides with the occasional video, and a short quiz at the end to make sure you were paying attention. I heard if you failed one you could just take it again until you passed, but they were easy enough that I never had that problem. Also, the actual time it takes to complete each training is much less than the average time that it says on each. I did a few each day and was done within the first few weeks, since I actually got an assignment fairly quickly and had other things to work on. There were other students who didn’t get work immediately, so it’s nice to have the online trainings to keep you busy for a few full days. Aside from the required trainings, there were also a ton of other LSOs available. My supervisor had me do an extra one that went through the HyCO process in great detail so I could understand the process we were working on. There are also sometimes LSOs for computer programs that you can use at work, and these were extremely helpful for getting started. If there was not an LSO available, I could find someone who was willing to spend a little bit of time showing me around the program. This was usually my supervisor, but not always.

I worked on a lot of different projects, but had one more consistent project that I worked on throughout the whole assignment. It was called the HYCO Entitlement project. Basically, I looked at all of the HYCO plants in the fleet and their efficiencies over the last three years (a previous intern had tabulated all of that data). From here, I graphed the data in Minitab (which is this fantastic tool that

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looks a lot like Excel but is statistics focused, and also does a lot of graphs). After removing the outliers, looked at the interquartile range of boxplots by rate, and found that it varied quite a lot. From here, I worked with my supervisors to choose which two plants we were going to focus on to try and figure out what was contributing to the variation in the net efficiency so we could work on reducing that (and saving money) in the future. We are doing the project as a Lean Six Sigma project, which means that every so often you have to do presentations on what you’ve accomplished to pass different stages of the project — I put together and presented our findings for the define stage of the project. From here, I’ve started on the next phase, which involves pulling data from the plants to make sure that the mass balances properly.

I did some other smaller projects, like balancing hydrogen meters on the hydrogen pipeline to try and figure out which meter was reading incorrectly, doing a heat balance on a plant to show that our performance had improved after the cleaning, and looking through trip data to see where we can reduce travel costs.

I was also lucky enough to spend a week at some HYCO plants in southern California. There are two plants fairly close to my house, and I coordinated with Eric to go home a week early and spend it at the plants. While I was there, I was able to get a tour of both plants, so it was possible to see what the boxes on a P&ID look like in real life. I also got to shoot reformer tube temperatures at one of the plants, which involves opening the little windows on the side of the reformer and then yelling out the numbers for someone to write down as you get the temperatures of 20 tubes in a row...for 20 different rows. The temperatures of the tubes are on a scale of 1500 degrees, so it is really hot inside the reformer. Some other activities I got to do at the plant included taking pressures, taking some gas samples, and following an operator around for part of a day. The CDP at the plant also took time to teach me things — for example, he showed me how the logic works in the control room and how the plant runs itself, as well as how an operator would make changes to how the plant is running. Overall it was a really great experience, and seeing a plant in person helped some things click better than just looking at the process on paper.

B. Assessment of Learning and Development

This term I was not in a very technical role, but I still learned a lot. This was a nice introduction to learning about Air Products and their hydrogen production process. I did get to apply a few ChemE concepts like mass balances and heat balances, and it helped to know some chemical principles to understand how the HYCO plants work. Going into this, I had absolutely no idea what I want to do after I graduate from Cornell. I still haven’t really picked something, but I’m more aware of what opportunities are out there. I think I have at least decided that I am not interested in going to grad school — work life is too nice to think about staying in school for longer. In my assignment, I liked that I was able to learn about some of the tools that are available in the workplace, and see what engineers can do in the job force. I thought that it was necessary to make a choice between doing something very technical, or doing the opposite and go into business or something. However, there are a variety of niches in between that as well, like my position, and that was definitely good to know.

I definitely had to get used to some things that were expected in the workplace, like being able to drop by someone’s office without warning to ask a question, or having to give presentations remotely (over the phone and by sharing your laptop screen). You really have to get used to just asking people when you need help or information — and everyone is very willing to provide that. I wrote a lot of emails to people I’ve never met in person. Since these people all have more experience than me, I spend more
time than is probably necessary in phrasing emails and trying to sound professional, but I learned that sometimes it is as important to just get to the point, since these are busy people. In order to figure out what I want to do for my next term, I had to schedule informational interviews with more important people. I put this off longer than I should have – it seems that every person I talked to, gave me another person to get in contact with. This was great, because once my supervisor gave me one person to speak with, it sort of snowballed from there and I met with a lot of different people. However, since a lot of them are busy, once you get a name you usually have to schedule the meeting a week or so in advance since their calendars are all booked up. I regret not networking earlier, so I could have spoken with more people and learned about more opportunities.

C. Life Outside of Co-op

Air Products had an intern housing website that I used. A lot of people live with employees that rent out rooms. I lived in a house with 3 of the Cornell co-ops, a Purdue co-op, and two other people. You need a car or a carpool to get to work, as far as I know you can’t take public transportation there. The four of us from Cornell carpooled to work every day.

There wasn’t much to do in Allentown per se, but there was a lot of stuff within driving distance. Bethlehem is about a half hour drive away, and has a lot to offer. The Lehigh Valley Mall is great. Dorney Park is maybe 15 minutes from work so that is fun. The co-op kids went to laser tag nearby as well, and I know some of the others went to salsa dancing. We planned out trips for the weekends at the beginning of the semester. Cornell is a 3 hr drive, and we went back quite a few times. We also spent a weekend in DC – another 3-4 hrs. New York City is around a 2 hour drive, and there is also the Bieber bus (not kidding) near work that can take you into the city. Hershey’s Park is about an hour away, as is Philadelphia. I also took a trip to Boston to visit my brother at school, but that was a longer drive –more like 6 hours. It is nice to be able to take advantage of not having homework (and having an income!) and just taking trips on the weekend.

The Air Products campus does have a gym, and they hosted a 5K during work that was fun. Some of the groups had community service days while we were there, but mine did not.

D. Evaluation

I have absolutely loved the co-op experience. It was nice to get a taste of the real work life. I love the people at Air Products – everyone is so friendly and welcoming and I think that helps make it a great place to work. I had a lot to work on and learned a ton, so that was great.

I wouldn’t say that I have a “least favorite” part about working on Air Products. Everything that I want to change for my next term is self-based, like networking earlier.
Fall 2013: APCO Job Summary

For my first term co-op assignment with Air Products and Chemicals, I worked in the chemical engineering department of the Carlsbad distillation plant. The Carlsbad location is responsible for 13 different chemical purifications that they later sell to numerous electronic companies. The engineers in this group are in charge of the various distillation systems and making sure they are performing properly and are always finding new ways to optimize or simply fix the system. The plant is in a constant state of growth, which allowed me to have interesting and relevant projects to work on.

I started my 20-week stay by working through the training modules Air Products required of me. I learned all about their safety procedures, office ergonomics, emergency response, etc., in addition to many plant-specific topics. With the exception of two topics, my training was done online. I was able to go through the information at my own pace which allowed me to move through the powerpoints and quizzes in a comfortable manner.

My direct supervisor, Walt Spiegel, was extremely helpful and patient with me. He was always available if I had any questions and willing to assist me through any issues I had with my projects. In addition, I had the support of all the engineers around me. They were all tremendously accommodating and would allow me to drop by their desks and ask questions whenever I needed. Since I was the only intern for the majority of my time here, it was really up to me to figure things out for myself. My supervisor and the other engineers I worked with were really trusting and allowed me the time I needed to find my own rhythm.

During my time here, I was given many different projects. My three biggest included updating the RO/DI water system, working with the hazardous material report and performing a gap analysis, and updating and transferring all bill of materials to a new template. In addition to these assignments, I helped with relief valve sizing, calculating the theoretical heat transfer on a pipe, analyzing and comparing flanges and writing reports for various types of analysis.

As a mechanical engineering major, I was quite nervous to be going into a chemical engineer position. Other than my general chemistry class freshman year, I had little to no experience working with and understanding the chemistries of different materials. I have learned so much during my time here, not just about the purification processes, but also about communication protocols, system design, code requirements, and various general engineering procedures. There were also a couple of projects that utilized subjects I had studied before. For example, I was able to use what I had learned in heat transfer on a project concerning a pipe, which was nice to see the information I learned in a real world application instead of just textbook examples.

Overall, this position gave me a great experience in a well-established engineering company and office. I was able to sit in on a variety of meetings and take note of the work that was being done. By working on tasks with all the engineers around me, I was able to learn through observation and see how they would solve a problem. I had started the co-op afraid that I was supposed to just know the answer, but once I started, I realized that even professional engineers are still learning every day. There is nothing wrong with having questions and I was often encouraged to learn more about subtopics from other assignments I found interesting.
This job not only helped me grow professionally, but also aided in my personal growth. I had to make sure I was proactive in asking for projects, getting to know my co-workers, being on time, etc. It was my own responsibility to stay on top of my work, ask for new projects and seek help when needed. By being in control of my own work and duties, I gained a lot of confidence and am now more comfortable starting new experiences (like this internship) and taking on projects that I may not have too much background on.

If I were “redo” my first term co-op, there isn’t much I would change. The time I had here was a fantastic growing and learning opportunity and all the experiences I had here contributed to that.

For my first term, I was fortunate enough to be able to return to California for my assignment. The Carlsbad plant is located about an hour south from my hometown. Since I lived at home, I didn’t have to go through the trouble of finding a place to stay. But, I’m sure there are many different housing options, including but not limited to, apartments for rent and off-season beach house rentals. Housing in Southern California can be expensive so I suggest going into the housing search with a flexible budget. In terms of transportation, having a car is easiest. The public transportation in Southern California is not the best and may not even facilitate your work schedule. Everyone drives in CA, which means distances to offices, grocery stores, movie theaters, and even the gym reflect the assumption that you drive. If you do have a car, then weekends and nights have endless possibilities for meals and entertainment. There are beaches, zoos, museums (some even free), county fairs, theme parks, shopping centers and a barrage of restaurants to try. Since the weather is almost always nice in southern California, you’ll have the whole term to explore the area.

All in all, I had a really enjoyable first term co-op assignment. The best features of this job were the engineers I got to work with, who were very knowledgeable and personable, and the work environment, which was professional and pleasant. The only downside was the commute but only because it was long. I encourage all ChemE and MechE students who have an interest in co-op to apply for an interview with Air Products. I’ve had nothing but great experiences with them, from my initial interview to working with HR to my first term assignment itself.