

My name is Jessie Privett. I was born and raised in Portales, New Mexico, home of the ENMU Greyhounds. When it came time to choose a college I had little guidance as to what I wanted. Except, of course, that I wanted to get out of Portales. This quickly crossed ENMU off my list of prospective schools. Throughout school I had a propensity for math and chemistry which made me think that, based on the name alone, chemical engineering might be for me. Little did I know what I was getting into.

With this idea in my head, my mom and I set off to tour college campuses across the state. Albuquerque was never my favorite city, so that crossed UNM off my list. My tour of New Mexico Tech at Socorro left me feeling like we drove four hours to end up in a smaller version of Portales. Sitting in the car, half in tears, we decided to drive back to Las Cruces for a second tour and demand someone give us a tour of something more than the Activity Center. Driving around the horseshoe I stumbled across a building that said, "Engineering Complex III". Well that's closer, right? We wandered into the building, looking for anyone to point us to the chemical engineering department. An industrial engineering professor guided us to Dr. Rockstraw's office. Where he was locking his office door, ready to leave. In what I would come to know as typical Rockstraw fashion, he set everything aside for a (prospective) student and proceeded to give me an extensive tour of the department and provide insight into the world of chemical engineering. Needless to say, I was sold.

Three and a half years later I am senior in the Chemical and Materials Engineering department at New Mexico State University. As of fall 2017 I am enrolled in CHME 452. Before this, during the summer of 2017, I had the exciting opportunity to be employed as a process safety management (PSM) intern at Chevron Phillips Chemical Company, Borger, Texas. My objectives, experiences, and accomplishments will be outlined in this report. Additionally, I will address the emphasis that was placed on communication and safety during my time at Chevron Phillips Chemical (CPChem).

I was assigned two major projects to be completed during my summer internship; a process with identified hazards and web application conversion and training. Additionally, I was able to pick up several small projects along the way. Before I could get started on any of these though, my fellow interns and I underwent four days of plant specific safety training. This included everything from chemical safety, to fall protection, and emergency procedures. Included in these trainings were an overview of the Borger plant operations. It produces specialty chemicals from petrochemical feedstocks obtained from an oil refinery located across the street. The major products produced are organosulfur chemicals used for the odorization of propane and natural gas, performance fuels, high-purity solvents, and mining chemicals.

My first assignment was to offer solutions for process with identified hazards. My education at NMSU prepared me for this assignment in many ways. Not the least of which was the ability to learn and understand a process in order to solve a problem. I approached this assignment no differently than I would have any project in my engineering classes. The major difference was rather than relying on a textbook for context, I was able to go out into the plant and look at the process for myself and talk to the people who work on it every day. In this unit a hazardous chemical is filtered through a large bag filter at 400°F. The operators must replace these filter bags one to two times a week. Not only is there the possibility for residual hazardous material, but the operators are working in cramped conditions, having to lift heavy particulate bags which are ergonomic hazards. Through talking with the operators and the plant subject matter experts (SMEs), I was able to not only address why the process was so hazardous, but also propose an engineering solution that would eliminate operator intervention and allow for reclamation of the particulate for recycling. At the conclusion of my internship I was consulting with a vendor for the development of a pilot scale filter and was able to pass this project on to a colleague to continue in my absence.

The second major project I was assigned was the conversion between online applications. This venture focused less on technical ability and instead emphasized attention to detail and my ability to convey information. The most difficult part of this assignment was identifying the clearest and most concise way to convey the information I had learned. This is not dissimilar to the tutoring programs I have been a part of through OXE both as a tutor and a tutee. I used these skills and experiences to accomplish this task. First, I had to learn how to operate the new system. With nothing other than an outdated user manual I set to my task. I worked closely with IT contractors and the system administrator to add and assign privileges to appropriate users. This application is used for tracking management of change, a practice used to control changes made to any system that might affect the process, safety, or environment. Once I understood the application of the system I was able to develop a user-friendly training program that anyone would be able to pick up and use. Additionally, I held training sessions for the users of the program, primarily engineers and operators, where I walked everyone through the system and how to use it. At the conclusion of my internship all necessary users were trained in using the application and the complete switch over was planned for the coming month.

The additional projects I worked on ranged from a steam trap survey to economic analyses. It was in these small projects that I saw the breadth of knowledge that my years in chemical engineering had instilled in me. I was able to use ASPEN to model a system and find the pressure of an overhead condenser, a skill I learned in CHME 352L. I also used the economic analysis tools I acquired in this class to prove that an actuated valve system was not economically feasible. During the steam trap survey, I used the knowledge I acquired from CHME 306 about heat exchangers and heat transfer to find a steam trap that would work in a low pressure-differential system. Throughout this internship I utilized skills that cannot be defined by one class; critical thinking, creative problem solving, and the ability to learn on the go.

During this internship my methods of communication varied widely and were a cornerstone of my ability to succeed. It was imperative that I could communicate effectively with everyone I was working with, from my direct supervisor, to operators, and even the executives of Chevron Phillips Chemical Co. The methods of communication varied from phone calls, emails, meetings, and presentations. No matter the media it was important to keep in mind both the audience and the message I was trying to convey. My project progress was presented to the executive leadership team at the corporate headquarters in Houston, Texas. This was the ultimate test of my communication skills in a high-pressure situation. Through preparation and practice I was set up to succeed. Thankfully, it went very well, and I was able to represent both my school and plant site.

My education at NMSU fully prepared me for this internship. At no point was I overwhelmed by what was being asked of me. In addition to this, I feel like the experiences I had during my internship revitalized my passion for chemical engineering and brought about a new perspective that the material I was learning in class is applicable in the industry that I would like to work.