

Final Internship Report

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At a glance

In 16W, I interned at an aerospace company in Entebbe, Uganda. I have worked as a maintenance engineer for Cessna 208B Caravans, and also flew as a co-pilot with captains on a few missions. I did financial analysis on the maintenance costs of the company, and offered suggestions on budgeting for the board and the CEO. Airserv International is an NGO that offers humanitarian air services in Africa. It currently has six planes in its fleet, and cooperates with the United Nation World Food Programs, as well as Doctors Without Borders in Democratic Republic of Congo and South Sudan.

Overview of the Internship

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Projects + Types of Work

For most part of my internship, I was working with engineers and other interns from aviation college on aircraft maintenance. I went through technical training for maintenance and got to learn the regulations from Civil Aviation Authority of Uganda. We performed 100, 200, and 400 hour inspections for Cessna C208B Caravans, and there was a lot of hands-on work with the aircraft. I have worked with engines, avionics, airframes, etc. The work I have done gives me a general idea of the aviation MRO (Maintenance, Repair and Overhaul) industry. There was also maintenance field work for the aircraft, and I got to fly on a few missions in Uganda. It was challenging to come up with solutions to fix airplanes when we were in the bushes, without proper tools and with strict time constraints. It pushed me to come up with creative solutions with the limited resources we had.

Also, I worked with the administration and did a financial analysis on the maintenance costs of the aircraft fleet. Since maintenance cost comprises a large component of the operational cost, my job was crucial for the company to make predictions on future budget. There are three major variables that affect maintenance costs—flight hours, engine cycles, and calendar time. I performed regression analysis on past financial data and tracked all the parts purchased in fiscal year 2015. With the data, I came up with a prediction model for future maintenance costs, and the board used my maintenance cost estimation per flight hour as part of their budget for 2016. Also, I did a comparative analysis on the maintenance management software available for the company, and made suggestions on future purchase. Further, I made a tracking system for the company to track the training, licenses and certificates of maintenance engineers, and sent notifications to the administration upon expiration.

Expectations vs. Experience

I did not know what to expect before coming to Uganda, since it is very hard to imagine the work life in an aerospace company in Africa. However, it all worked out very well in the end. The hands-on engineering experiences and corporate working experiences I got at Airserv have helped me a lot in the field that I am interested in—aerospace engineering.

Before, I was not sure if I want to do aviation and aerospace engineering as a hobby, but after the internship, I realize that aerospace engineering is my passion, and I want to build a career along this path. Since I do not have any professional pilot or maintenance engineer license, I was worried before that I could not get much engineering experiences out of the internship, but my supervisors were very understanding, and I had the chance to work directly with planes, engineers and pilots. I also had a few chances to fly around in the fields, did charter flights, and took the opportunity to travel around the country with private airplanes. In summary, I cannot ask for more from my internship.

Work Environment + Work Life Balance

I had a fantastic work environment during my internship. I have connected with the management-- the CEO, CFO, and MD. For my daily work, I have a great relationship with my supervisors—Director and deputy Director of Maintenance, Safety Manager, and Quality Assurance Manager. There are also a few interns who are enrolled in professional aviation colleges, and I have worked closely with interns and engineers. From the operations side, I got to know almost all the pilots at Airserv in person, and I have friends across the company. Given the office politics involved in different departments, I had the rare opportunity to be the person outside the politics and got to work with different people. I also got to know other aerospace companies, engineers and pilots that operate in East Africa. My colleagues and supervisors are generally friendly and easy to work with, which makes my internship experience great. Due to the nature of aerospace companies, when the planes arrive for scheduled maintenance, they usually arrive at the weekends, so there were quite a few busy weekends from morning till evening. However, in general, I had a good work life balance. I got to travel a little bit around the country for a week, and I have joined the local Frisbee team and come for practice every Wednesday and Sunday. I have made a lot of local friends from the local community, and my company Airserv.

Personal Growth, Skills Learned + Cultural Differences Encountered

The internship has taught me a lot in terms of engineering. As a maintenance engineer, especially in the field, there is very little time, little room for error. My previous academic experiences at Thayer is great, but it does not intensively prepare me for an aerospace career. My internship gave me a good idea of aircraft systems, and lots of hand-on engineering experiences. In the beginning, it was difficult for me to do similar work that other engineers do—changing oil filters, inspecting engines, etc. However, I had amazing mentors and colleagues who were willing to help me and answer my questions anytime. I got to learn more not only on the technical side, but also the general information on aerospace industry. Before, my impression on aerospace industry was mostly about Boeing, NASA, Lockheed Martin, etc. And due to my citizenship status, it was very difficult for me to acquire a job in those defense contractors. I was hesitant about the career prospect of aerospace engineering as an international student, but I found out through the internship that there is still a huge demand for general and commercial aviation. Also, I found the business side of aviation attractive through my project of financial analysis. I learnt corporate accounting and corporate financial/cost analysis by myself, and it might open up other career opportunities for me.

It was also interesting to make friends within the company, and I learnt a lot from my colleagues. My director was Ugandan, started off as a gardener, and now he has maintenance engineering licenses in four different countries and very professional and devoted to his work. Despite the lack of equipment and resources, the maintenance team always delivers airplanes on time, and the quality of maintenance was way beyond FAA standard from the review of UN auditors. I learnt the professionalism needed for future career, and I realized the responsibility required for aerospace engineering. No matter it is for maintenance, design or operations, any tiny mistake can lead to crashes and loss of pilots. I remember the first time I placed the O-ring of the landing gear at the wrong place, and my supervisor found out at his final inspection. It was a difference that is barely noticeable to outsiders, but absolutely crucial to the safety of flight. On campus, responsibilities and commitments are so easy and so often to walk away from, but a career in aerospace engineering means responsibilities of life and death, even for the smallest details. Such sense of responsibility will accompany me for the rest of my life, and I am forever appreciative for what the internship has taught me.

Lasting Impact

Since Dartmouth Thayer School of Engineering lacks the resources I need for aerospace engineering, the internship at Airserv has helped me clarify my career goal. I have started to build up my engineering skills and people network in the aviation industry. Now, I would love to further pursue a career in aerospace engineering, and I have received a return job offer to continue working for Airserv. I would love to further explore other aerospace related opportunities, but I know I have at least one amazing place to go to after graduation.