Ran Shao  
rs422  
Mechanical Engineering  
GE Aviation  
Term 1

For my rotation, I spent a total of seven months in the combustor manufacturing facility in the Supply Chain division of GE Aviation, which is responsible for the production and shipment of combustor parts. My specific responsibilities included reducing aged inventory and tracking CIDs (Changes in Design) to make sure they get implemented on the shop floor. This involved directing the flow of hardware through the different manufacturing processes. My manager is the Quality Leader for the plant so a lot of my job also focused on resolving any quality issues with the hardware before they ship. I spent a lot of time on the floor daily in order to carry out these tasks, and it was a very fast-paced environment as shipment deadlines were always looming. The long-term projects I worked on involved improving manufacturing processes to reduce costs. This involved collecting data from the hardware documentation, analyzing it statistically, and suggesting ideas for improvement. I enjoyed this aspect of my rotation as it allowed me to be creative and I could tell that my projects had a lasting impact. My biggest project was for Six Sigma certification, and it involved revising a grit blast process to reduce the number of defects it causes. This was something that I was only able to finish and see the results of because I was there for such a long time. While my engineering background helped me succeed in this rotation, my assignment was primarily non-technical. There were many interesting dynamics between the different groups that I had to work with. I had constant contact with the union workers; while they were responsible for machining the parts on time, there was no accountability. There was also an interesting
relationship between the design engineers and the manufacturing staff: they are required to work together in order to ship conforming hardware, but they both had different priorities and worked at different paces, so at times, it got ugly. I learned a lot about the business from observing these relationships and it was a good experience to view everything from a manufacturing perspective rather than an engineering one. I also learned that I would ultimately prefer to work in an engineering role.

I spent the first part of my rotation living in Lynn, which is a fairly rough area (my co-workers always noted how brave I was for living there). It was a short commute to work, but I still wouldn’t recommend it. I moved to Boston halfway through my rotation; that’s where most of the co-ops lived. There is plenty of public transportation in and around the Boston area, although the buses were pretty unreliable. Outside of work, there were plenty of opportunities to socialize with the other interns and new employees (though not as many in the spring as in the summer). There is a committee that organizes events such as tours of Fenway Park, picnics, paintball games, etc.

What I enjoyed the most about this rotation was working on assignments that were very time-sensitive, which added an extra challenge. All of my projects also had some sort of dollar value associated with it, so I could tell that they had an impact. My co-workers were helpful in giving me meaningful work to do, and I enjoyed the GE culture overall. However, there were many mundane administrative tasks associated with this job, but they are important nevertheless. The hours were also harsh considering how much trouble I have waking up for ten o’clock classes at Cornell (I had to attend a production meeting at 6:30 every morning). My average work week also included about six hours of overtime, which I was paid time and a half for. I would recommend this role
to anyone doing more than one rotation at GE; it is important to learn about the manufacturing side of the business as engineers often have to work with the manufacturing staff and it would help to know the terminology and processes used in the shop.
Co-op Job Summary

A. Co-op Work Assignment

This fall, I worked in the Repair Technologies Center of Excellence (RTCoE) at GE Aviation in Evendale, OH, serving as the Materials Application Engineer (MAE) co-op. The RTCoE plays an important role in the commercial aircraft engine business as it oversees what processes are used to detect and diagnose engine problems, how to go about fixing those problems, the revising/improving of current procedures, and the certification of other businesses/shops to carrying out these processes. For example, I worked with one engineer who was developing a new kind of solid-state weld, and I helped a few engineers confirm the analyses of samples submitted by other companies.

My job was to support about six engineers in their various projects, and as a result, I learned a lot. It was interesting working in this position because each engineer focused on repair processes associated with different parts of the engine. As a result, I was exposed to a great variety of hardware, superalloys, coatings, and more. I even helped with GE Rail hardware as well. Whereas the other materials co-ops in other departments focused more on only one aspect of an engine, such as the rotating parts or airfoils, I was able to get an overall understanding of the layout. However, because repair shops need a quick turnaround, most of my projects were short-term ones that I started and finished within a week or two. Other co-ops, it seemed, had more in-depth projects that took months. Mine was still, however, a great learning experience.

To help the senior engineers, I had to carry out several different kinds of tasks. Most commonly, I would cut up different engine parts, submit them for mounting, and then perform a metallographic analysis. I would then take measurements, pictures, and/or notes on whatever I was looking for; finally, I would put together a presentation to report my findings and give my opinion/suggestions to the engineers. Some projects required me to analyze chemistry via SEM, microprobe, or chemical testing, and one project even had me present my findings to another company!
Although I had no background on engines before coming to GE Aviation–Evendale (GEAE), it did not turn out to be too much of a problem. All co-ops go through the Jet Engine Basics (JEBs) course, and I had several resources to turn to for answers to questions. I was assigned a mentor my first day; moreover, all of the senior engineers and my manager were very helpful (and friendly) when it came to explaining different materials concepts or how an engine works. A lot of them had been co-ops here themselves and understood any problems I faced. Several technicians showed me how to use the various types of equipment, and I also found it helpful to ask other materials co-ops who had already worked an earlier rotation.

B. Assessment of Learning and Development

Although I am a materials science and engineering major, I didn’t really know what to expect coming in. I had no idea whether or not my job would have any relation to my courses at school and was afraid I might be disappointed.

Well, it turns out that GEAE has an entire department focused on materials. Almost everyone in the huge Materials and Process Engineering Department (MPED) seems to have been a materials major. What a pleasant surprise! The RTCoE where I worked is part of MPED and therefore I was presented with many materials issues. I was especially thankful that I had taken MSE 261; I witnessed first hand pretty much everything we discussed in that class from dislocations to phase diagrams to solution hardening and more.

While on the job, I would be assigned several projects, and at first, it was a little overwhelming. However, after a couple of weeks, I learned to prioritize and keep track of each of the assignments, after which things ran more smoothly. In short, I feel I developed professionally and in some cases personally through a combination of applying coursework to industrial applications, learning to organize a variety of tasks, and, moreover, having numerous opportunities to improve my communication skills with other project members.

C. Life Outside of Co-op

Finding housing was really easy. After I accepted my position, GE sent me a list of several rental units near work. The list included the costs for rent and deposits, a description of the place, and contact information. I chose the Short-Term Rental Properties (STRP) on Longford Drive and highly recommend them to other GE co-ops. There are two fully-furnished duplexes, each with two three-bedroom units shared among three GE co-ops. Thus
there are twelve GE co-ops total, so living in the Longford duplexes is a great way to meet new people, and self-organized co-op activities are often held there.

As for transportation, I had a car and would highly recommend having one. I don’t really know much about public transportation system in the Cincinnati area, but all the co-ops seemed to have a car, unless they were sharing with someone else they knew before coming here. While most of the co-ops work in GE’s main plant in Evendale, the plant itself is a mile long with numerous buildings and parking lots, and some co-ops are assigned to other GE locations in the greater Cincinnati area; thus it might not be practical to carpool. Thus, I highly recommend having one’s own car.

As for social activities, there was a lot to do. Since GE Aviation is a big company, there are over 100 co-ops at any time. Twice a week, a co-op distribution email is sent out to all the co-ops with a list of upcoming activities. For example, there were weekly events such as beach volleyball, disc golf, bible study, barbeques (@ Longford), and pick-up basketball. In addition, there were several special activities throughout the term organized by a few co-ops that included going downtown for festivals or fireworks, skydiving, a go-karting race, and a ski/snowboard trip. Co-ops can also get GE discounts at theaters and a student discount for the Cincinnati Symphony ($12 tickets instead of about $40!!!)

Finally, there are opportunities at work to get involved. During this rotation, there were a couple of after-work parties/outings/picnics. About once a month, there is also a “fun events day” where you can leave work an hour early to participate in activities such as disc golf, baseball, or flag football. There are also several opportunities to get involved in community service as well. All of this is on company time (you get paid)!

D. Evaluation

Overall, I had a great time working at GE Aviation, and there weren’t really any negatives. The members of the team I worked with were all very friendly and knowledgeable. I got assigned several projects that kept me busy throughout the rotation, which really made the time fly by quickly. At first, it was difficult to keep up with all the terminology and information, but as time went on and I settled in, everything was fine. I appreciate very much the wonderful opportunities that GE and this cooperative assignment provided. I learned a lot and look forward to returning to GEAE next summer.
Co-op Job Summary

A. Co-op Work Assignment

This summer, I worked in the Materials Behavior sub-group of MPED (Materials Processing and Engineering Department) where I helped characterize the behavior of different materials under various conditions. There are several reasons why testing a material has a big impact on the entire business. For example, if a new material is being developed, it is necessary to understand the properties in order to determine whether or not it can be applied and how. Similarly, GE has a long history of developing engines and has been using several of the same alloys for a few decades. It is important to ensure that the materials being made now are the same material as back then because the parts were designed with the original properties in mind. If they are different, one has to determine whether it will affect the application and why these changes are happening. Also, analyzing how test bars broke can also aid in improving processing techniques, thus improving the properties of a material.

I worked mainly with about 6 different engineers on both superalloys and composites. During my rotation, I learned a lot about different kinds of tests, such as the LCF and crack growth test and used various tools to apply fitted curves to raw test data. Major projects that I worked on included characterizing the oxidation behavior of several alloys, creating creep curves of a nickel based alloy, studying the microstructure of TiAl (which had somehow changed significantly from earlier studies of the material), testing mechanical properties of composites, and analyzing the tensile, LCF, and charpy test results of inertia welds. Through these and many other projects I had to use several different tools and take advantage of the many resources. Because there is spread in data points, statistical analysis had to be taken in most projects. As I worked on various projects, my fellow engineers showed me how to use the different statistical analysis software as well as how to access previously published test results/curves. I also made use of the SEM, metallographic mounts, and chemical testing to help in analyzing causes
of failures or the microstructure of metal test bars or determining the physical properties of composites such as the fiber volume or glass transition.

**B. Assessment of Learning and Development**

Because it was my second rotation, I had a better idea on what a materials engineer does and how course work relates to industrial practices. I knew that I would be applying knowledge learned from my mechanical properties class as well as from my chemistry classes to understand different situations. For example, a class that I had just finished in the spring on kinetics and phase transformations helped me to understand why I was observing certain microstructures, such as dendrites, how cooling rates can greatly impact it (like in the TiAl project).

I also noticed that I had grown professionally some from my previous rotation, partly do to the fact that I was more used to the people and the work culture. I was more confident this rotation and more willing to talk with the support team in metallography and SEM, which resulted in me better explaining what tasks I needed to get done and what properties I was looking for.

**C. Life Outside of Co-op**

For housing, GE provides a list of nearby apartments and during the summer and many students choose to stay in the Xavier University dorms. I personally chose to stay where I lived last fall, Gold Standard Properties (formally called Short Term Rental Properties) where I lived with 12 other co-ops (split among 4 apartments and a basement). I chose this place because it was a great way to make close friends, and furniture and utilities were all included. For travel, there is a metro system that allows one to take a bus to downtown Cincinnati, but I never used it. For the most part, one needs access to a car to get to work and I carpooled to attend various events taking place downtown or hosted by co-ops.

For social activities, there is plenty to do. A social distribution is emailed to all co-ops biweekly, and (co-op student organized) both weekly and special events are listed. Weekly events typically included poker nights, barbecues, and sports activities such as sand volleyball or soccer, while special events included going to baseball games, ski
diving, and go-kart racing. If you are a roller coaster enthusiast, there is plenty to satisfy you too. King’s Island is about 20-30 minutes away and Cedar Point is about 4 hours away (one of the special events). GE also offers monthly gym memberships for a little over $20 a month. I also got involved in a University of Cincinnati club sponsored by a GE employee to repair 3 engines (including a helicopter engine), which will hopefully power a go-kart in the future.

D. Evaluation

Overall, I very much enjoyed my rotation this summer in materials behavior. In addition to the benefits of learning a lot about both materials engineering and how GE works, GE has great people to be working for and with. All the engineers were very friendly and helped me to understand the projects and the materials; They made me feel very welcome. In fact, one of best features of this job was the people I got to work with. They also kept me very busy on several projects, which made the summer fly by quickly.
Anil Hegde
Mechanical Engineering
GE Aviation
Fall 2008

During my time at GE Aviation in Lynn, Massachusetts, I was assigned to the Mechanical Systems Engineering group, a department within the Rotating Parts Center of Excellence. As with most of GE Aviation's divisions, the Rotating Parts Center of Excellence is spread between the primary headquarters in Evendale, Ohio and the plant in Lynn. The Evendale location employs administrators and several thousand engineers who work with all engine lines, whereas Lynn combines both manufacturing and engineering operations for smaller military and commercial engines. As its name suggests, the Rotating Parts Center of Excellence has full control over the design, development, manufacture, and support of all rotating components within GE jet engines. Although Mechanical Systems Engineering is one department among many in the Rotating Parts Center of Excellence, the projects that I learned about and even participated in involved a wide variety of components and systems. For example, one of my major tasks was to perform a preliminary reduction in size of a tube within the engine's lubrication system. Another project that I worked on involved stress and fatigue analysis on cracks in bearing housings, which are essential to the proper interaction between rotating and stationary parts. I also had the opportunity to gain exposure to the detailed procedures involved in gear design, as well as to the operation of gearboxes.

In order to truly understand the systems I was dealing with, I relied largely on the senior engineer who assigned me projects, as well as on the design engineers I was working with. The learning curve is definitely quite large, as I had to get properly acquainted with not only the engine systems and components, but also with the computer programs, documentation and the people from whom I would be getting critical information. As with any first-time engineering occupation, it is always tough to transition from an academic environment, where problems are largely laid out for you, to the work environment, where you must learn to define the problem appropriately with the information at hand. Although the engineering calculations that follow are fairly straightforward, a lot of time is spent organizing the entirety of the problem, calculations, supporting information, and conclusions into a concise presentable form. This information must then be presented to senior engineers for technical review, who provide feedback on whether your conclusions and procedures are correct, as well as where to go next. My four months at GE were therefore a continuous learning process, in which I learned not only how to apply almost all of the subjects I'd learned through core mechanical engineering coursework, but also how to interact productively with other engineers in order to learn and to effectively communicate my results. My mentor, the senior engineer who gave me my assignments, always emphasized how the Mechanical Systems Engineering department provides the opportunity to apply almost every subject learned in a typical engineering education to the projects at hand, a trait that is not common among other more specialized departments. My experience, although relatively short, certainly reflects this fact, as I had to apply analyses derived from a number of subjects over the course of my term. Further more, it certainly taught me that engineering is just as much about interaction and collaboration as it is about numbers and
analysis. I feel that the skills I take, and even the knowledge of what I need to improve on, will help me perform better academically as well as in my professional engineering career.

Life outside of coop was definitely a great experience. My roommate from Cornell, who also happened to be coop ing in the Boston area, and I found an apartment using Internet sites such as Craigslist and Sublet.com. However, we did not check the place out personally, and when we first moved in it didn’t really meet our expectations. In hindsight, we realized that it would certainly have been a good idea to start as early as possible in the housing search, and also to visit if at all possible before making a decision. The area was not particularly great either, but transportation to work and to pretty much all of Boston and the surrounding areas was a breeze. I took advantage of this early on, taking the T (that’s how the transportation system is known in Boston) to downtown and getting lost on purpose. As a result, I learned my way around downtown very quickly. Whenever I was truly lost and couldn’t find my way back to a familiar place, I just found the nearest subway stop and worked my way back home from there. One thing to note is that unlike New York City, it’s easy to walk around most of downtown in a couple of hours. There are plenty of sites to visit, such as Quincy Market, Boston Common, and the Prudential Center, all of which are on the main subway lines and even within walking distance of each other. The T also made my commute to work very easy, although it was somewhat long at about 40 minutes to an hour. Boston has a lot to offer, especially for students. Given the number of universities here, there are a lot of events both on campuses and off that cater to students. I was fortunate to meet a number of people at MIT through my roommate’s friend, and we have all become very good friends in a short period of time.

Boston also offers a wealth of opportunities to get involved in the community. I was able to participate in a community service event through my employer, where all of my coworkers and I picked vegetables to distribute at a farmer’s market. I also found an opportunity through the International Rescue Committee to be a mentor to an Iraqi refugee family that had recently arrive in the US. Although my time was limited, this was a very rewarding experience, as I could see the progress and enthusiasm with which this family moved towards learning conversational English and building a life in the US.

As a whole, my experience at General Electric over the summer was a very enjoyable learning experience. I had the opportunity to experience the real world applications of engineering first hand, while at the same time interacting with engineers of all levels of experience. Applied engineering is certainly quite different than academics, and the opportunity to come to terms with that difference and overcome it was eye opening in itself. My manager, supervisor, and all of the engineers with whom I interacted were very friendly and helpful. The only real gripe that I had with my experience was that the coop and intern system in Lynn was not very well organized. There was no official orientation for coops, so I did not meet too many others besides the other Cornell student who was working there. There were very few student-oriented activities and events, which I feel would have helped facilitate the transition from academics to the real world. Additionally, I had no idea where I would be assigned until I went to the plant on the first day, which was somewhat vexing. However, this lack of organization was likely due to a transition between coop coordinators that occurred while I was there, and the new coop coordinator is indeed very nice and helpful. Despite these
reservations, my experience at GE Aviation and in Boston was very positive and enlightening on the whole, and I look forward to returning during the summer.
Co-op Job Summary

For the summer of 2009, I worked as a Quality Engineering Co-Op for one of GE Aviation’s Northeast Supply Chain subsidiaries, Unison Engine Components, in Manchester, CT. Unison EC is primarily responsible for the design and manufacture of key engine components for both the commercial and military aircraft engines designed and manufactured in Lynn, MA and Cincinnati, OH. As a member of the quality engineering team, my role was to work with fellow quality engineers and manufacturing engineers to continuously improve both the product and its manufacturing process to ensure the quality and reliability of the product. Specifically, my roles involved the tracking and analysis of part and process non-conformances and defects, and the revision and review of operation sheets and engineering drawings to account for the characteristics and dimensions for First Article Inspections of new product lines prior to ramp ups in manufacturing.

For the most part, I had no formal training period during my first few weeks, as a lot of my tasks for my projects were learned as I encountered them. My manager assigned one of the Quality Engineers as my “buddy”, who was available for me to ask questions and offer assistance with my assignments. However, the entire quality team and many of the manufacturing engineers were also very supportive and friendly, and I had the opportunity to work with many of them during my rotation. The openness of the working environment made going to work every day very enjoyable and gave me the opportunity
to learn from many of the experienced quality and manufacturing engineers who have come from a wide variety of backgrounds.

My main project during the first half of my rotation involved developing a tool using MS Excel Visual Basic programming to track and analyze part non-conformance and defects data. During the manufacturing process, inspectors and engineers identify parts that do not conform to the given specification and then log information on that specific part to a database for further review. Every week, these parts are then reviewed by a board of manufacturing and quality engineers and corrective action procedures are discussed on how to bring a certain part back to conformance. My task was to develop a tool that could take an input file of non-conforming part data, and then sort and analyze the data in a meaningful way so that the engineers could better assess which parts were having the most non-conformances and what the trends were in the causes of these non-conformances. With this information, the engineers would be able to better focus their efforts on improving the parts and processes that were regularly resulting in the most non-conformances, thus saving costs, resources, and time during the manufacturing process. During the first few weeks, I regularly attended these meetings in order to get a better idea of the type of data and information they needed to better focus their efforts, and from there I went to work developing an Excel tool that could automatically sort and track data from an input file on various parts and types of non-conformance. Once I completed the tool, I was tasked with training the individuals that would be using the tool and ensuring its implementation went smoothly. Overall, while I did not utilize much of my existing mechanical engineering knowledge, I did however learn a great deal about the complexities of the manufacturing process and the role that quality engineers play in
ensuring the reliability and quality of the parts that are manufactured.

Another one of the projects that I was involved with was preparing documentation for the First Article Inspections of a number of new parts that have until recently, not been manufactured by the team in Manchester. The First Article Inspections of these parts involves highly detailed and thorough inspection and documentation of the first lots of the completed parts. This process is necessary to ensure that the manufacturing process is adequate and that the design characteristics of the drawing specification can be met reliably. My role was to review the drawing specifications for accuracy and account for each design characteristic and dimensions that needs to be inspected and documented for FAI. The annotated drawings and table of design characteristics are then utilized during the inspection process to ensure part conformance to the spec. I had the chance to work on a number of different parts, including a bearing housing for one of GE Aviation’s helicopter engines. Overall, I gained a great appreciation and understanding of the detail and sequencing of operations that goes into the manufacture, and also the design, of very high detailed and tightly tolerated parts and assemblies.

Outside of work, much of my time was spent going to the gym and playing in both lacrosse and ice hockey men’s leagues in the area. The plant is in close proximity to Hartford, one of the major cities in Connecticut, as well as being close to both the University of Connecticut and Central Connecticut State University. As far as housing, the number of apartment complexes that offer short term leases less than 6 months is limited. I would suggest looking in West Hartford, Rockville, Vernon, and Ellington first, as they are all in close proximity to the plant in Manchester. Another option is to sublet apartments from students in nearby colleges. However, almost anywhere you live
you will need a car.

I have really enjoyed my rotation with Unison EC in Manchester, CT. I have had the opportunity to gain valuable experience in working as part of a quality engineering team, and I have learned a great deal about the complexities and processes that are involved in the manufacturing process. Overall, I feel this opportunity has exposed me to another aspect of engineering, which will no doubt benefit me in navigating the vast field of engineering as I begin my career.
Farrah Tan
f37
Mechanical Engineering
GE Aviation Fall 2008
Job Summary

I spent my Fall 2008 co-op term at GE Aviation in Lynn, MA. I worked in the Rotating Parts Manufacturing Operations (RPMO) department of GE, which is essentially a machine shop that produces disks, shafts, and spools for civilian and military jet engines. My day-to-day routine covers a little bit of everything - from keeping track of where production parts, tools, and people are - to cost and scrap reduction projects. Mostly, my job entails trying to move production parts along, helping expedite repair procedures on previously nonconforming hardware, and coordinating with various parties to ensure we have the tools we need to run the scheduled jobs.

On a daily basis, I interact with many of the union workers who run ancient machines, inspect dimensions to ensure quality, and move parts along the line. I help to enforce timely calibration and ensure the availability of measuring tools needed to run each part at every operation. Over the course of my co-op I also worked on several spreadsheets for product audits that required an understanding of hardware drawings and planning sheets. I carried out data collection projects on turbine disks we make that had problems out on the field. Occasionally, I worked with Department of Defense representatives on quality issues concerning nonconforming hardware.

Though working in a predominantly male environment, I had no problem fitting into the culture of the manufacturing facility. The guys were all willing to help, given they believed it was reasonable. Working with a new face seemed to make some of their more mundane days less routine - something I was glad for. One of the first things I had to figure out was the difficult task of balancing management's sense of urgency to ship the committed numbers to engine assembly or military spares, and the more laid back attitude the guys on the shop floor have after 30 years of experience of the same thing day in day out. I still have not completely mastered the role of being caught in between, but one way or another things work out.

I lived near Boston University in an apartment with a graduate student from BU. Although our schedules were not always compatible, we found the time to have cooking parties and invite friends over. Some weekends I volunteered at the Museum of Science, while others were spent walking around MIT or simply exploring Boston. Karaoke in Chinatown was a favorite pastime, as well as indulging myself at the Cheesecake Factory and taking walks with friends down some famous Boston streets - Charles, Newbury, and Boylston. After having spent eight months continuously in Ithaca, I was glad to be back in a city environment where sushi and bubble tea were right around the corner, shopping malls were plenty, and the Charles River was only a walk away. It made me vaguely nostalgic of New York City, where I had spent four years of high school in downtown Manhattan next to a beautiful park and river.
In conclusion, this co-op has been a great learning experience of people skills and effective communication. My classes at Cornell gave me a basic understanding of airflow in jet engines that helped me make sense of why certain hardware was designed the way it was. Working in a manufacturing department also helped me to see how difficult it really is to physically make some of the greater things we as engineers try to create. Getting accurate measurements is also a big challenge since measuring tools may not always be easy to use or reliable. Some circumstances make working in manufacturing stressful, but I cannot imagine a more diligent and fun group of people to work with than the guys who’ve helped me along in RPMO. We’ve shared many frustrated sighs, laughs, and inside jokes. I’ve become a part of the team, worrying about department deadlines and projects as if they were my own. I hope to return in the summer with one more semester of knowledge and skills to help them out.
Farrah Tan (ft37)
Mechanical Engineering 2010
GE Aviation
Lynn, MA

I spent my 10 week summer co-op term at General Electric Aviation in Lynn, MA. I worked with the Stress Analysis group of the Rotating Parts Center of Excellence division. This group creates and runs all the finite element models for rotating parts of both military and commercial engines, and post processes the results to study failure in critical regions. The Stress group is part of a multidisciplinary team that ultimately aims to calculate how many cycles an engine will last under specified circumstances. The Stress group uses pressure and temperature mappings from the Heat Transfer group in the finite element models to run sample mission cycles that generate data for the Life Management group to do the engine lifespan calculations.

During my short term, I had full responsibility of three projects. One was to modify and run an ANSYS model for the CT7-8 engine to look at the contact status between a seal and a shaft during flight. Data from the study was then used to substantiate a design change initiative for two similar components in a different engine line. The second project was to perform creep assessment on two regions of the F414-400 High Pressure Compressor. This project involved accurate data extraction skills and technical knowledge of how stress and temperature affect creep in critical areas. The final project was a mesh convergence analysis on a J85-21 ANSYS model. In particular, I looked at critical fillets in the stage 1 and stage 2 disks to ensure that the mesh was fine enough, according to GE best practices, to yield accurate stresses and temperatures that the Life Management team needs in order to carry out lifespan analyses.

It was helpful that I already learned how to use the basic functions of ANSYS from MAE 327 since I was able to apply my skills directly. Despite having only 10 weeks, I jumped right into the projects and completed them to yield high quality results. I met with my manager and assignment leaders on a weekly or as-needed basis to discuss my progress and concerns. The Stress team was very helpful, whether it was technical knowledge I needed or information on how to book a conference room in Microsoft