INTERNSHIP REPORT

Thor Paulli Andersen Aarhus University Department of Mechanical Engineering

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LOCKHEED MARTIN AERONAUTICS

Fort Worth, Texas, USA

LOCKHEED MARTIN



AARHUS UNIVERSITY

Preface

This report describes the internship program I completed at Lockheed Martin Aeronautics in Fort Worth, Texas, USA from January 19th to June 18th 2015. The report also serves as the passing criteria for passing the course "Industrial Research and Development Project", course code 240142U082 at Aarhus University. I am very grateful that this opportunity was given to me and would like to thank the following individuals:

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- Donny Weaver, Terma North America

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The members of the Danish F-35 team from International Business Development at Lockheed Martin have been very kind and had me involved in several exciting experiences. Thank you to Mark Pranke, Gregg Brough and Yung Le.



Figure 1: 2015 Aarhus University interns: Frederik Roi Midtgaard (left) and Thor Paulli Andersen (right). Photo: Lockheed Martin.

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Motivation for the internship

In the winter of 2013, Aarhus University, Terma A/S and Lockheed Martin started a collaboration to send Danish master students to Fort Worth for five months to be a part of the F-35 program. Denmark is a developmental partner on the program with Terma as the largest Danish company. At the time of writing this report, Denmark has yet to choose the future fighter aircraft for the Royal Danish Air Force, where the Lockheed Martin F-35 is one of three candidates¹.

The Technical University in Delft in The Netherlands has had a very similar program for the past +10 years. In The Netherlands, the aerospace manufacturer Fokker has the role of Terma to convey the interns within the walls of Lockheed Martin.

From the start of my education as an engineer, I have steered towards working in the aerospace industry. My great passion is, and has always been, aviation. Since no Danish university has an aerospace engineering program, I have studied abroad in Manchester, UK to obtain relevant technical knowledge. I spent my Bachelor's Degree internship with a small Danish company operating in the aerospace industry. After I completed my Bachelor's Degree in Mechanical Engineering, I worked for 6 months at Danish Aerotech, the second largest Danish aerospace manufacturer (after Terma). Danish Aerotech is a supplier to Lockheed Martin among others².

I enrolled in the Master's Degree program in Mechanics at Aarhus University in January 2014. During the first semester, I was made aware of the soon-to-start collaboration with Lockheed Martin and I was encouraged to apply for one of the two offered positions. Reading the description of the positions, I didn't recognize anything that fit my qualifications. Despite this, I applied for the position in Quality Engineering – the position that I found most interesting.

Preparation for the stay

Before I left, there was a lot of paperwork to be done. This work started around 6 months prior to my arrival in Fort Worth and included among other things:

- Safety approval by the Danish Defense Intelligence Service (Forsvarets Efterretningstjeneste)
- Visa application
- Accommodation contract
- Prior approval for course credit

Terma decided to hire the travel agency Kilroy to take care of all the paperwork. This turned out to be a wise decision since everything was in perfect order and Kilroy was very helpful during the entire process, which ran completely smoothly. Taking on the paperwork ourselves would have been a very complicated and time consuming task.

Living in Texas is very expensive for a foreigner. Since you don't have a credit history, you need to pay \$400 in deposit when signing up to an electrical company, internet provider, etc. – every time. In some cases, this could be avoided. Initial expenses, such as purchasing a car and furniture, are high –

¹ <u>http://nytkampfly.dk/intro-til-kampflykonkurrencen/kandidaterne</u> (Danish only)

² <u>http://aerotech.dk/references</u>

especially when there are only two people to share the expenses. I applied for funds from the Nordea Fondation and Reinholdt W. Jorck & Hustrus Fond and received funds from the latter.

Accommodation

Frederik and I shared an apartment with two bedrooms, two bathrooms, a living room/kitchen and a balcony. The apartment was in the Marquis at Stonegate apartment complex. This place was recommended to us by previous Dutch interns who have used the Marquis at Stonegate for many years. Here, they had the experience to handle foreign citizens and facilitating all the paperwork via email so everything was ready when we arrived.

Arrival in Fort Worth

We arrived late at night at Dallas/Fort Worth International Airport. Terma North America had been so kind to have a chauffeur to pick us up at the airport and take us to our hotel where we spent the first couple of nights. A big thank you to Donny Weaver for facilitating this and to Dominike Weaver for her help. The days up to starting at work were spent on acquiring the necessities for starting a life in a new country. These included getting an American phone number, buying a car, beds, getting keys to the apartment, internet and many other things. All these things took us 3-4 days, but could easily have taken a full week or more. The initial expenses were high, so it was an advantage to have some backup funds.

Lockheed Martin Aeronautics Company and Air Force

Plant 4

Lockheed Martin Aeronautics Company is the largest division of Lockheed Martin, which was formed in 1995 when Lockheed Corporation and Martin Marietta merged. The aeronautics division has its headquarters at Air Force Plant 4 in Fort Worth, Texas. This is the site where B-24 bombers were built during WWII. More recently, the F-16 was (and is to this day still) produced at the site, originally by General Dynamics.

The main production building at Lockheed Martin in Fort Worth is just over a mile long and is at this time occupied by the F-35 program. Earlier, the floor was dominated by the F-16 production, which is still active around in the corners of the factory. The F-35 is produced in an automotive-style manner where the production flow follows a line from the middle of the hall to the south before going to the northern door of the production hall. When aircraft exit the main production hall, they go through finishes (painting, measuring radar cross section and more) and end at the flight line where the first flights are made. When the customer does a final acceptance of an aircraft, it is flown to an air force base in Arizona, Florida or Maryland for evaluation.

The plant shares runway with the Naval Air Station Joint Reserve Base, which is located on the eastern side of the runway. Because of this, there is a fair amount of activity, including F-16, F-18, C-130 and of course F-35.

The F-35 Program and Denmark

The F-35 Lightning II is the development of the X-35 that won the Joint Strike Fighter program. The aircraft is designed as a fifth generation multirole fighter aircraft. Over the next decades, the three different variants of the F-35 will enter service and replace many types of military aircraft serving many air forces around the world. The F-35 program is the largest industrial project in history and has suppliers and partners worldwide - over 1,200 suppliers in the U.S. alone³. Denmark is one of the development partners with Terma bringing the biggest Danish contribution to the program. At Air Force Plant 4 in Fort Worth, all three variant of the F-35 share the production line as they are assembled side by side. The three versions are:

- A-version: CTOL (Conventional Take Off and Landing). The variant meant to replace types like the F-16
- B-version: STOVL (Short Take Off Vertical Landing). The variant for the US Marine Corps and other forces operating the Harrier
- C-version: CV (Carrier Version). Aircraft carrier based version that is meant for the US Navy

Terma manufactures the composite skin and leading edges for the horizontal tail, composite components for the center fuselage, pylons, radar electronics and the gun pod for the B and C versions⁴. The Royal Danish Air Force (RDAF) is currently supporting the program with an F-16 with crew at Edwards Air Force Base⁵.

At the time of writing this report, the future Danish fighter aircraft is still to be chosen. The selection process has been underway for more than 10 years. The current candidates are: Eurofighter Typhoon, Boeing F/A-18 Super Hornet and Lockheed Martin F-35 Lightning II. The final decision is expected to be made before September 2015. If Denmark chooses the F-35, 30 aircraft are expected to be purchased.

³ <u>https://www.f35.com/about/economic-impact</u>

⁴ http://terma.com/aero/the-world's-largest-industrial-project/

⁵ https://www.f35.com/global/participation/denmark



Figure 2: RDAF F-16 supporting the F-35 program at Edwards AFB⁶.

Working at Lockheed Martin in Fort Worth

The first day at LM Aero included a security briefing, printing of badges and meeting my supervisor, David LeBlanc, for the first time. I was instantly overwhelmed by the many new impressions and the size of the factory.

Navigating the corridors and hallways the first weeks was daunting at first, but I soon learned to find my way around and identify the different departments on the floor.

Working with Quality, something I had never encountered before, the learning curve was very steep the first couple of weeks. Not only was I in a new field of engineering, I also had to learn a lot about the program, the aircraft, and the way Lockheed Martin controls and monitors the quality of the production. In the words of Scott Sadler, it was like learning to drink from a fire hose.

Work Projects

The F-35 is under final development and testing at the time of writing. The projects I have been working on are thereby all parts of the large scale R&D project known as the F-35. I have been involved in a wide range of projects covering different disciplines.

I sought to be involved in as many different projects as possible. Mostly, people would come to my desk to ask me to do some work on a project, at other times I went looking for projects to contribute to myself. Thanks to this, I have worked with many different things, from programming to inspecting

⁶ Retrieved from <u>www.f35.com</u> on June 1st 2015

aircraft and planning production routines. The most important thing was to be open and show initiative. I brought in a very different background, both culturally and educationally. Plus, I had the benefit of being relatively unbiased, which meant I saw the problems and projects with a fresh set of eyes.

Quality Performance Index database

I immediately became involved with a project concerning QPI (Quality Performance Index), a method to monitor each aircraft's (or build area's) progress through the production line to ensure that the production goals are met. In other words, it's a method to see how the building the jets is going. QPI is a single number that describes if a goal is met or not. QPI is calculated as follows:

$$QPI = \frac{Target}{Actual}$$

"Target" is the projected target for e.g. number of rework hours on an aircraft in a specific workstation and "Actual" is the amount of e.g. rework hours actually spent. If QPI<1, the target is not met and if QPI≥1, the target is met or exceeded. An overall QPI number for each build area or the whole program can also be calculated in a similar manner. The target is calculated all along the completion of the aircraft in each workstation. The target corresponding to the current level of completion for e.g. an aircraft at a workstation is based on historical data, the so called QPI profiles. These show, based on historical data, what the percentage of the total amount of e.g. rework hours or defects should be at a given percent of completion. An example of a QPI profile is shown in Figure 3 below. The thick, red profile is based on an average of historical data from four completed aircraft, shown in thin lines.



Figure 3: Example of a QPI profile for a workstation.

The work on this project involved data mining and analysis and continued for most of my internship since new additions were frequently requested by senior management. One of my tasks on the project was to automate the process of updating the database every week, a procedure that took roughly 6 hours. This could be done in 30 seconds with the procedure I constructed.

The project also involved minor side projects, such as constructing tools for data gathering and analysis, e.g. a tool that automatically creates new QPI profiles for the build areas in order to produce as accurate numbers as possible.

Nut plates

One of the issues on the F-35 concerns the bonding of nut plates onto the structure. I became involved in the project to conduct experiments of several kinds, process, analyze and present the data. This project was very interesting since it involved lots of tests and new ideas that could be tried in the lab.

The project revolved around the bonding properties of the nut plates to the aircraft structure. Surface cleanliness and surface oxidization were factors that were investigated and measured using a device called Surface Analyst, shown in Figure 4. This device provides a measure of a surface's ability to bond using the principles of surface tension.



Figure 4: Surface Analyst device⁷.

Topics investigated during the project included the effects of aging and different cleaning methods and packaging methods of the nut plates. Several of the experiments were conducted in close cooperation with the manufacturer of the nut plates.

This project was characterized by classic, mechanical engineering principles that I knew from my education. I was able to benefit greatly from this when discussing causes and effects during the project.

Smaller contributions to the project included among others construction of small programs that could perform calculus numerically in order to process test data.

Consumables Replenishment

This project was about distributing consumables (gloves, swabs, bags etc.) to the workstations. Being a production project, I worked with Frederik on this project. We were able to identify several important features about the project that had been going on for years. This project involved interviewing many different people, gathering and analyzing data, identify trends and drawing conclusions.

Extensive data analysis was used to map the consumption of consumables over the past year. Comparing this data to a representative number for the production rate over the same time period, it was possible to extrapolate the consumption of each consumable item into the future up to full rate production. Until this project was initiated, no effort was made to actually quantify and track the consumption of consumables.

⁷ Retrieved from <u>http://btglabs.com/wp-content/uploads/2013/03/Surface-Analyst-Data-Sheet.pdf</u> on June 1st 2015

Fischerscope Data Extraction Tool

In the paint shop, technicians measure the thickness of the coating at several places to verify the correct thickness has been applied. The technicians use a measuring device called a Fischerscope using X-rays to measure the thickness of the coating. When exporting the measured data into a database, the data was entered manually. I was tasked with constructing a small program that would pull and process data from the Fischerscope and record data about the inspector, date and aircraft information automatically. This program reduced the processing time significantly.

FISCHERSCOPE Data Extraction Tool
Select a ".csv" file imported from FISCHERSCOPE, enter measurement data and select a destination folder.
Select file for import Browse
© AFF C CFF
Measurement information
Measurement plan
TVE (ex: 2AF0001) 2AF 💌
Inspector Andersen, Thor P (EXP I
Gauge S/N
Minimum thickness (in mils)
Maximum thickness (in mils)
Measurement date: 6/1/2015
4 June 2015
31 CD 2 3 4 5 6
7 8 9 10 11 12 13
21 22 23 24 25 26 27
28 29 30 1 2 3 4
Today: 6/1/2015
Select destination folder Browse
,
Export Excel file Cancel

Figure 5: The Fischerscope data extraction tool constructed to speed up the data processing time when measuring coating thickness.

Process Surveillance

Process Surveillance has the purpose of assuring that a process (e.g. a FOD inspection) or a system (e.g. an automatic tool dispensing unit) works properly. This is done by using a checklist with items specified for the relevant area where the surveillance is completed. I completed process surveillance in several build areas, including EMAS (mate, where the larger components of the aircraft are joined), wing systems (where tubing, wiring, gauges etc. are installed in the wings) and on the flight line (where the engine runs are performed and test flights are conducted).

The participation in conducting process surveillances emphasized the impression of the work culture I had experienced so far. It is extremely important that the processes are constantly evaluated to maintain the level of quality and safety.

PPV - Product Process Verification

PPV is a standard approach to evaluate a single process, e.g. the installation of a component or system on the aircraft. In short, the purpose of this is to ensure that the aircraft is built the way it is specified in the blueprints and by the processes specified. This includes for example use of the correct protection equipment, tools, cleaning agents, etc.

Other projects

I was tasked with supporting several projects undertaken by previous Dutch interns. This mostly included correcting flaws and adding new features in programs and databases.

From time to time I was also given the task of quickly analyzing and interpreting large amounts of data on request from senior management. This was a good exercise in working under pressure where all other work had to be suspended in order to meet a tight deadline.

Courses

PDCA problem solving

I was given the opportunity to complete a course in problem solving, learning about the fundamentals of lean, Six Sigma and other principles. This course lasted for a full day and provided me with tools that I was able to use in my daily work from then on. It also gave a good insight to how the leadership works in a company as big as Lockheed Martin.

The course was concluded with a capstone assignment. My assignment evolved into a separate project that I worked on for several weeks afterwards. This projects was about identifying the root cause(s) behind the fairly large amount of cancelled QAR (Quality Assurance Report) documents. Applying the principles learned during the class, several root causes were identified using the following tools:

- Cause and Effect Fishbone
- Waste Reduction Table
- 6S

FOD Audit

I participated in two FOD classes. The first was the basic FOD awareness class where I learned about the correct mindset towards FOD. All employees who go onto the floor complete this class. The second course was called the "super FOD" class and was targeted towards people who make sure others comply with the mindset of the first class.

To be able to conduct FOD (Foreign Object Debris) audits on the aircraft, I was trained to do so over the course of a week. This was an excellent opportunity to get hands-on experience with the aircraft and learn more about the systems and design of the structure. I learned how to inspect the aircraft to make sure that no foreign objects were left in the structure that would pose a potential danger to the aircraft later on and to inspect for minor construction flaws.

Inspection duties could include looking for delamination in composite parts, unpainted areas, caps left on tubes where they should be removed, dirt and dust left in the structure, etc. The inspections were often conducted prior to a buy-off inspection by the customer.

CATIA V5 course

I was given the opportunity to learn CATIA V5 over the course of 2 days. The course was an introduction to the CAD software used by all major aerospace manufacturers. Having used SolidWorks during my education at Aarhus University, the transition to CATIA was smooth and fast.

Hoping to spend my future career in the aerospace industry, the course was a great asset that I will benefit from in the future.

Other courses

During my stay, several "lunch & learn" arrangements were held by both my group, LMLA (Lockheed Martin Leadership Organization) and LMents, a group for new, young employees. This gave a good introduction to other disciplines and areas in the company. The arrangements included, among others, lunch with an F-35 test pilot and a lecture on design of experiments.

Working in the aerospace and defense industry

When working with aircraft, you need to have a different mindset about certain things compared to other industries. The absolute number one priority in manufacturing aircraft is safety. All along the manufacturing process inspections, tests and audits ensure the safety of the end user – the pilot. When encountering a problem with the aircraft while airborne, it is not possible to simply pull over like you would in a car. Seemingly small problems can lead to the loss of a multimillion dollar aircraft and potentially the loss of life. The above is extremely important to all types of aircraft, but is even more important to military aircraft operating in a combat zone.

The above is reflected in several ways at Lockheed Martin. In addition to the continuous inspections and audits, everything is carefully tracked and documented. Awareness of the responsibility of the manufacturer is highlighted with posters and periodic training of personnel. Posters on the walls on the production floor remind the employees of their personal responsibility to ensure the safety of the pilots who will eventually fly the aircraft.

Lockheed Martin takes great pride in the dependability of their products and being a supplier to the military. The close bond between Lockheed Martin and the U.S. military is very apparent. Many of the employees are former military personnel and many current military personnel are based at the plant.

Since Lockheed Martin is the largest defense contractor in the world, it is natural that the security and secrecy level is high. This was reflected in my every day in many aspects. The first major checkpoint when arriving to work is the main entrance where badges are checked by armed guards. The level of security is determined by the current Force Protection Condition. During my stay, the condition was raised from Alpha to Bravo due to the attempted attack in Garland, Texas on May 3rd 2015. The security measures inside the fence are not described in this report for obvious reasons. Awareness of the secrecy and security is an integral part of working at Lockheed Martin and it was something I felt and paid attention to every day.

The final product, the F-35, is a very expensive and complex machine. Because of this, the customer (called DCMA, an agency under the Department of Defense) is gradually "buying" each aircraft by inspecting and signing off after every major component install. Every aircraft is labeled from inception with the respective country's flag so the customer can track each individual aircraft all along the production line.

Lockheed Martin is a company that relies on sophisticated technology. When building fighter aircraft, leading edge technology from many disciplines is applied and used on a daily basis. Compared to Danish high technology companies, the cutting edge technology is much more present

at Lockheed Martin, simply because it is applied to the product here. Secrecy and guarding proprietary information is even more important here than in Danish companies since information must be protected from not only competing companies but potential enemies. A failure to protect the technology will compromise the safety of the people in the service who rely on this technology with their lives.

Work culture

Pride and heritage. These two concepts are very visible and important to Lockheed Martin. The company has a long history of being on the leading edge of technology and innovation in the aerospace and defense industry. Notable aircraft from Lockheed Martin's past include the F-16, SR-71 Blackbird, U-2 and C-130 Hercules. Many of the employees have been with the company for many years. It is not uncommon to meet people who have been there for over 30 years. This contributes to a moderately conservative work culture. As mentioned before, many employees are former military personnel. This adds a certain amount of discipline, pride and unity. Because of the history and almost mythical reputation of the company, it also attracts young, recently graduated people. The big gap between military veterans and young college graduates gives great diversity within the company. Common to all is the dedication to their work for Lockheed Martin and the pride they take in it. Employees gladly move across the country for an opportunity given to them by the company, you stay with the company. The sheer size of the company (+112,000 employees in total) adds to the feeling of being part of a culture rather than a company.

The terminology used in the company is almost an entire language of its own. In addition to the aircraft and aerospace related terms, Lockheed Martin makes extensive use of acronyms. Entire sentences can be spoken in acronyms, which can be hard to keep track of the first couple of weeks. The company has a dictionary with all the acronyms used within the company (called ACROMANIA), but this dictionary is unfortunately not accessible to non-US citizens.

Formal obligations

I was lucky enough to be a part of the program in probably the most exciting period of choosing the new Danish fighter aircraft – the decision date being shortly after I left the company. During the 5 months I spent at LM, I was invited to several events with representatives from the Danish media and industry. These included interviews with The Danish Engineering Magazine and Euroman, photo session with a delegation of Danish journalists, meetings with the board of The Danish Metal Workers Union and Terma's board, including president & CEO Jens Maaløe. In the first week of our employment, we also had a very pleasant dinner with the team selling the F-35 to Denmark.

As a part of our participation in the program, Frederik and I have also been asked to join the Lockheed Martin team for the 2015 Roskilde Air Show.



Figure 6: Visit from Terma A/S with representatives from Lockheed Martin and Terma North America. Photo: Lockheed Martin.

Spare time activities and Texan culture

Texas is huge (16 times bigger than Denmark by area) and the possibilities for recreational activities were endless. The Texas culture is very contagious and I made an effort to absorb as much of it as possible. I focused my spare time on outdoor adventures and aerospace related activities. My destinations included, among many others:

- Palo Duro Canyon
- Big Bend National Park
- Dallas
- San Antonio (Fiesta)
- New Orleans (Mardi Gras)
- Austin (SXSW Music Festival)
- Houston and Johnson Space Center
- Galveston
- Seattle
- Guadeloupe Mountains
- Carlsbad Caverns (New Mexico)

- Monument Valley (Utah)
- Pike's Peak (Colorado)
- Several gun ranges
- Miscellaneous aircraft museums and air shows

Being a private pilot, I enjoyed the excellent accessibility to general aviation in the US. Once I got my European license converted, I had numerous fantastic flight experiences that would not have been possible in Europe, not to mention in Denmark. Also, being an avid motorcycle rider I of course took the opportunity to ride Harley Davidsons.

Fort Worth is an exciting town in its own right. The historic Stock Yards are the quintessence of western cowboy culture, complete with rodeo, cattle drives, saloons and an old train station. Notable places in the stock yards include:

- Billy Bob's
- Coopers Old Time Pit Barbecue
- Joe T. Garcia's
- Stock Yards Coliseum (rodeo)
- White Elephant Saloon

The Texas culture is characterized by food (barbecue and Tex Mex), pick-up trucks and Western heritage. The culture is very distinct and one can easily assimilate with it. One of the great qualities of the Texans (and Americans in general) is the great hospitality they display. Since Danes tend to be a bit reserved, it made me feel very welcome that my colleagues, neighbors and people I met all had a positive and interested attitude towards me and my own culture. Food is one of the fastest ways into a different culture. During my stay, I visited over 100 different restaurants and shared food culture with colleagues through cooking.

Freedom is a concept that lies deep within the hearts of the Texans. The general idea is that you should be free to do whatever you want and this permeates the culture. Confronted with this, I reluctantly realized that I come from a country where the "Law of Jante⁸" (Janteloven, a sociological term used to negatively describe a behavior in Scandinavian countries where individual success and achievers are looked down upon) is still in effect to some extent. The extreme difference between Denmark and Texas in this context made this very apparent. I made the most of my sudden perceived freedom and accumulated experiences I would never have obtained in Denmark.

⁸ See <u>http://en.wikipedia.org/wiki/Law_of_Jante#Definition</u> for the rules of Janteloven



Figure 7: Spare time activities. Clockwise from top left: The car we bought (a 2001 Ford Mustang convertible), flying trip to Denton Municipal Airport, on top of the highest mountain in Texas (Guadalupe Peak) and hiking in Big Bend National Park.

Benefits and yield from the internship

Spending five months working with something you have never worked with before is a steep climb up the learning curve. I have definitely expanded my field of view about what to do when presented with a problem. Working with quality has given me tools and perspectives that I will carry on in my future career. Prior to my internship, my focus had mostly been on purely academic approaches.

From an organizational standpoint, I have learned about and observed the importance of structured leadership, standardized procedures and communication by being part of the massive F-35 program. Here, all of the above are paramount in maintaining control over each aspect of the program.

One of the core competences I have learned during my current education as an engineer is to quickly gather information and ask the relevant questions to quickly understand a problem. This skill was trained on an almost daily basis and I have become much better at quick assessments. As an example, I had almost no experience with a specific coding language (Visual Basic for Applications, VBA) prior to my internship - all I knew was MATLAB. I was tasked with creating and modifying programs in VBA, so I had to learn and master VBA in a matter of weeks. Since time was sparse recourse, I had to dispose of my time in the most efficient manner. This was a good exercise that demonstrated one of the prime duties of an engineer.

The opportunity to submerge myself into the Texan culture has changed my perspective on my own life and career. My encounter with the "Texan freedom" has made me think about options that I before would have considered unthinkable. The question "why not?" now appears more often in my head when dreaming about exotic career opportunities.

There is no doubt that the addition of Lockheed Martin to my resume has given my career a great leap forward. The lack of any dedicated aerospace programs at the Danish universities and the modest presence of aerospace in the Danish industry yields limited possibilities to future engineers with a passion for this fascinating area of engineering. The Aarhus University/Terma/Lockheed Martin program expands these possibilities greatly and I am honored to have been given the opportunity to initiate this program, which without a doubt will influence my future career.

Despite my degree not being pure aerospace, I was pleased to learn that I was able to make a contribution to the program and that my inputs were valued. It was extremely motivating to be able to make a direct and visible contribution to the F-35 program and work with people who have been with the program almost from its inception. Admittedly I am a huge aircraft aficionado so it was a daily pleasure to see the aircraft take shape and take flight. Considering the secrecy and security of the defense industry I feel additional appreciation that this internship was even possible.

For future interns

This internship program is certainly a life-changing experience. You will not be quite the same when you return from spending half a year in Texas. Your professional and personal development will be on full speed ahead during your time here. You will acquire skills that you will be able to use in your future career. You will bring home unique competencies and experiences that will make you attractive to a future employer.

The internship is not quite like studying abroad in the Erasmus style manner. You are responsible for more than just your own grades since you effectively work for a company. The expectations for you are higher than for the mandatory internship on the Bachelor's level since you now are at a higher level and are expected to perform as such. Your level of maturity and professionalism is also expected to be high since you represent your country, Terma and Aarhus University.

I will encourage you to apply for the internship if you fulfill the following:

- You are open-minded and like to get involved
- Show initiative
- Would like to experience a radically different culture
- Like to travel
- Think that fighter jets are awesome
- Have interesting hobbies (this catches the attention of the people who will read your application)
- Are interested in experiencing the technological, political and economic aspects of the largest industrial project in history
- Are proficient in written and oral English

If you are accepted into the program, you will receive the "AU Lockheed Martin Newbie Guide", an extensive guide on how to prepare for the stay, get through the first weeks, practical stuff and things to see. This guide was written by Frederik and I and future interns are expected to update this with relevant additions.