



My job

Day-to-day role: As an Air Engineer in the Royal Navy we change jobs on a two-yearly basis, which gives me the opportunity to do lots of different jobs. In my current post I work on a project to buy an updated command and control system called “Identification Friend or Foe”. It will be used by ships, submarines, aircraft, Unmanned Air Vehicles and land-based equipment to identify whether other forces are friendly or unknown.

STEM Ambassador Profile:

Name:

Lieutenant Commander
Hannah West Royal Navy

Job title:

Requirements Manager, Air
Platform Systems Project Team

Location:

MOD Abbey Wood, Bristol

Education:

- GCSEs: Maths, Science, English Literature, English Language, Geography, History, French, Latin, Textiles, Technology
- A levels: Physics, Maths, Geography
- Degree: MEng Aeronautical Engineering, Imperial College, London
- MA International Liaison and Communication, University of Westminster, London
- Other: Chartered Engineer

The principal role for which I am trained is as an Air Engineer working on a Squadron of helicopters. In that role, I was responsible for managing a maintenance department, of 40 maintainers, to support the required flying operations of three helicopters. My job involved coordinating the medium/long-term maintenance planning, whilst also acting as Duty Engineer responsible for the engineering decision-making to prioritise aircraft maintenance. In particular, when a fault emerged on a helicopter that was outside the remit of the maintenance manuals, it would be my responsibility, in consultation with my maintenance team, to determine a safe way to proceed and ultimately decide if the aircraft was safe to fly (or could be made safe to fly) by weighing up the options and making a risk-based decision.

Favourite part of my job: Working on a Squadron, the most important asset are the team you work with - the men and women who maintain the helicopter, from trade specialists to junior technicians, are all critical to keeping the aircraft flying. One of the best parts of my job is seeing these maintainers receive well-deserved recognition in the form of promotion, and I was often fortunate in being in a position to inform them that they had succeeded in being promoted - a great feeling!

Most challenging part of my job: Assessing an aircraft fault and deciding what engineering action is required to keep the aircraft safe. This involves a risk-based decision making process that requires the support of the full engineering team to provide an understanding of the impact of the particular fault and determine the most effective repair or implement an alternative solution.





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STEM AMBASSADOR CASE STUDY

**LIEUTENANT COMMANDER
HANNAH WEST ROYAL NAVY**
STEM AMBASSADOR

“ Maths forms a
fundamental basis
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Motivation: In every job I have done in the military, the motivation, in some form, has been to deliver or support front-line operations. So, when I have been operating in a front line environment, at sea or on land, I have been working to ensure that my element of the overall mission is delivered effectively and on time. In a Squadron scenario this means endeavouring to provide serviceable aircraft for all of the planned flying missions. The motivation is the mission that is being flown, whether it is for Search and Rescue or counter drug trafficking or human smuggling. When I have been in non-front line jobs, my motivation has been to support the front line either by procuring the kit they need for the future or helping to train people to deploy.



My career so far

Most exciting career moment so far: I have been fortunate in having an extremely diverse career so far and could name a number of different moments. However, if I had to pick one out I would go for being deployed on a large fleet support ship in the Southern Arabian Gulf with three helicopters. The Squadron was often required to fly for long periods that involved keeping two out of three aircraft serviceable. Being a long way from any external engineering support, this could be a real challenge at times and I recall a number of occasions when I was called down to the hangar in the middle of the night to take a look at a fault and make an assessment of the planned way ahead.

Project I wish I could have played a part in: The Olympics - It really captured the nation and must have been an amazing project to have worked on.

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Maths in action

How I use maths in my job: There is a mathematical basis to most of the work I do, although this does not always mean wielding a calculator or completing complex sums. However, in terms of maintenance planning, there was a constant question of how much flying the aircraft was allowed to do before its next period of maintenance (a bit like an MOT, aircraft are not allowed to fly without being serviced every 200, 100, 50, 25 flying hours etc). This had to be balanced against how much flying it needed to do so that you didn't have to stop it flying at an inconvenient time to do maintenance. I also had the authority to extend some of the maintenance by 10 or 25%, which I could decide to do dependent on how long the maintenance would take to do and how many people it would take to complete. I would then apply the extension and, if necessary, apply to a higher authority for a further extension if required.

Also, in the case of specific defects or faults, it was necessary to be numerate to understand engineering diagrams and have a sense of the relative size of components. Taking an example of a small crack in the airframe (which is an issue recognised by all aircraft manufacturers and maintainers), this would involve measuring the crack, monitoring it for growth (i.e. measuring after each flight) and production of a graph to monitor the growth of the crack. By using maths I could predict whether a crack was likely to become a safety issue and could take the necessary action, thus maintaining flight safety at all times.

How maths makes a difference in what I do, or how it helps me to make a difference for others: Maths forms a fundamental basis for the work I do. It may not always be apparent, but being numerate is required to interpret the practical situation evolving in front of you. Having no, or limited, understanding of maths would be like being without the ability to read or write - a crucial skill would be missing and I would not be able to understand the situation sufficiently to make engineering decisions.

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Being a STEM Ambassador

I became a STEM Ambassador because: I feel that it is very important for students to meet with people from a variety of careers to inspire them and help them to consider what they might like to do. I was strongly influenced in my career choices by visits to my school or attendance on courses such as the HEADSTART engineering course, where I first met some Royal Navy engineers and considered this for my career.

What has been your experience in schools as a STEM Ambassador?

I have visited a number of schools, so far I have given presentations about my career, but I am currently developing a more interactive session based around a post-crash management scenario. The students I have met with have been keen to hear from someone who is using the knowledge they are learning at school in their day-to-day job, and to ask questions about what life in the Royal Navy is like. I hope that some of them have gone away with a new perspective on what a future career can offer them.

Words of wisdom to STEM students: I would recommend pursuing the subjects you enjoy but take any opportunity to get work experience or exposure to different jobs which you could do using your favourite subjects. If you enjoy what you do, you will do it well.



If I didn't do this...

If I didn't work in engineering I would... like to do research into the role of women in counter insurgency operations, stabilisation and development, such as the type of situation being experienced in Afghanistan. This was the subject of the dissertation for my MA and of great personal interest having deployed to Afghanistan in 2009 and worked with some extremely brave and inspirational Afghan women, from policewomen to local government officials.

When I'm not at work I... am often busy decorating our house, but when I take a break from this, I enjoy swimming, basketball and hill walking. Having spent four months of my degree course doing a project in France, I also try to keep up my French language skills by attending evening classes when I find the time.

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