

CAREERS IN

AEROSPACE AND DEFENCE

Eyes in the sky

From monitoring aircraft to managing airspace, safety is paramount.

Thea Jourdan reports

When Malaysia Airlines' flight MH370 disappeared from the skies last March carrying 227 passengers and 12 crew, the tragedy highlighted the immense task of keeping track of the thousands of aircraft that cross international flight paths every day.

A huge global industry exists to ensure that aircraft stay safe in the sky and reach their planned destinations. **Inmarsat**, a pioneering British satellite communications company, helped to identify the most likely final location of MH370 in the Indian Ocean by analysing pings sent intermittently from some of its on-board equipment. Inmarsat, which employs 1,600 people around the world (400 in London) and owns and operates its own global satellite network, has just offered a free GPS tracking service to all commercial airliners in an

effort to ensure that no passenger plane can simply vanish again.

Chris Ashton, director of Spectrum Engineering at Inmarsat, was in charge of a team of "frequency planners" who contributed to the work that identified the probable final location of the Malaysian airliner. "We had a very small amount of information to work with and the challenge was to pinpoint the location precisely," he explains. The team used frequency data and the Doppler effect, which showed how fast, and in what direction, the aircraft was moving away from its Indian Ocean Region satellite.

But tracking is just one very small part of what Inmarsat's aviation arm does. The company is now building the next generation of satellites as part of a US\$1.6 billion worldwide high-speed broadband network called Inmarsat Global Xpress, which could be used to offer inflight broadband on airliners.

Ben Moores, 28, a payload engineer who gained a first in engineering at the University of Cambridge, as well as a distinction for his masters in Aeronautical Engineering, is part of a team based

in Los Angeles overseeing the design and build of the four satellites being created by Boeing. "Everything needs to be reviewed and we are drilling down to the fine detail," he says. He adds that the work is rewarding and challenging, forcing him to use all the skills he has honed over the last five years with Inmarsat. "Every so often I'll be scratching my head trying to recall the properties of crystal oscillators, but it's been amazing. I feel so lucky to be in a career where I am doing a technical job, and the toys you get to play with are pretty cool. There aren't many places where you can reconfigure a \$250 million satellite."

Kate Roddy, HR business partner at Inmarsat, says: "We are growing all the time and we need engineers and analysts to contribute to our expansion." The company does not have a dedicated graduate scheme, instead hiring talented STEM-subject graduates straight from university. "We are looking for systems engineers, electrical engineers and graduates with physics and maths degrees, at 2:1 or above," says Roddy.

Keeping track of planes in remote locations is one thing, but managing

the airspace over major cities throws up different challenges. UK airspace is among the most crowded in the world. Major hubs Heathrow and Gatwick are hoping to

expand to increase capacity still further. Professionals like Nick Boud, 44, senior airport development consultant at Atkins, are responsible for ensuring that planes have room to manoeuvre and time to avoid any potential problems, both in the air and on the ground. Atkins is growing its aviation sector and recently welcomed one of the largest intakes of young people in its 75-year history, with more than 400 graduates and apprentices joining its UK business.

"I look at all the data available and come up with a plan that is safe and effective and allows business objectives to be achieved. This may mean understanding the impact of seasonal schedules on UK airspace and runways as well as developing long-term master plans for airports," explains Boud, who started working for Atkins in 2005 following a 13-year career with BAA. He holds a degree in operational research and operations management from Lancaster University Management School. "I also model scenarios that show how expansion at airports or major sporting events, for example, may affect air traffic," he adds.

He was closely involved, with the Department for Transport, in planning for the significant rise in the number of flights into UK airports during the London Olympics in 2012. "I reviewed 20 airports to assess their ability to cope and we looked at solutions to spread the load and make it easier to use available airspace," says Boud. No one is more important in the chain than skilled air-traffic controllers. Mistakes can lead to loss of life, and to reflect their safety-critical role, a senior air-traffic controller working in a major UK hub airport can expect to earn a six-figure salary.

British company Nats (National Air Traffic Services) has played a pivotal role in the development of UK air traffic

and employs 1,900 air-traffic controllers. It also has an engineering arm with around 1,000 engineers and technicians, as well as an airports arm, and offers consultancy services.

Each year Nats handles 2.2 million flights and 220 million passengers in UK airspace. In addition to providing services to 15 UK airports, it has global reach, working in more than 30 countries across Europe, the Middle East, Asia and America.

Claire Burton, talent acquisition manager at Nats, heads a team that selects potential air-traffic controllers. Minimum academic requirements specify at least five GCSEs (including maths and English) at grade C or above, but the rigorous selection process also involves a battery of cognitive, verbal and numerical tests, as well as spatial and diagrammatical reasoning. A radar test, for example, requires candidates to deal with scenarios in which planes appear to be moving rapidly in different directions on a virtual screen.

"If they pass all the tests, they then need to get through an interview at our assessment centre, where we look for essential skills, such as good communication, calmness under pressure and the ability to multitask," explains Burton. Fewer than one per cent of applicants make it through the selection process and are then taken on for a three-and-a-half-year traineeship with the company. Nats, which has its own inclusion policy and is actively seeking to encourage more women to apply for roles within the company, is also keen to recruit project managers, programmers, HR professionals and technicians.

Graduate trainees can look forward to a starting salary of £24,000-£25,500, and students who win a place on the Nats industrial placement scheme for their sandwich year at university can expect to earn £16,000. Once you are established in a career managing airspace, the sky's the limit.

**Hot spots: Europe's
main air routes**

