

Careers in Aviation



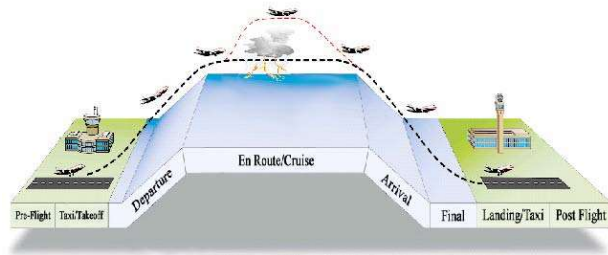
Air Traffic Control Officer (ATCO)

Ray Draper



I was born in Liverpool-born in 1949 and was lucky enough to turn a plane-spotting hobby into paid employment. I worked in several locations across the UK, but such a degree of mobility has become less common as new technologies have been introduced.

ATC - Sequence



ATC is a service industry in which aircraft operators (e.g. airline, private, military, gliding,) can opt to receive support services of control and/or information according to their needs, and for which they (mostly) pay. The slide shows how differing services are provided as an aircraft progresses from one airfield to another. ATC variously refers to these as Aerodrome, Approach/Departure and En-route (or Area) functions. ATCOs may carry out their jobs by looking out of the control tower window to see what aircraft are doing, or may use surveillance systems (radar) to control and monitor planes which may be hundreds of miles away. Where no surveillance is available, flights may be conducted by use of procedures involving aircraft speed, altitudes and timing. Such operations are known as 'procedural'.

ATC - Liverpool



While at secondary school, I had ambitions to fly helicopters in the Royal Navy, but final exam grades ruled that out and I joined ATC at Liverpool Airport, as an ATC Assistant in 1967. This was in an administrative role, handling the paperwork, aeronautical information and messages which controllers and pilots use. This job still exists to a lesser extent and may be used as a stepping stone to a career as an ATCO.

ATC - Liverpool



I spent 18 months at Liverpool, working a shift pattern (ATC operates 24/7) and making the tea, at which I was pretty good. Getting paid to watch the planes was a bonus! At the time, quite a lot of the ATC staff had been RAF personnel. This too is less common but the RAF still employ their own staff at some airfield and area control locations.

ATC - Ulster Radar



Ulster Radar - in 1969, I moved to Northern Ireland, upon promotion to the next higher Assistant grade. This job involved writing (see image) onto clear plastic strips the details of flights in contact with the radar controllers. This civil cell was sharing radar equipment at a RAF unit on the Irish Sea coast of County Down and worked closely with ATCOs in the en-route ATC Centre in Prestwick. These shared units no longer exist.

ATC - Training - Flying



After 18 months in Northern Ireland, in 1971, I successfully competed for further promotion into the ATCO grades, initially as an ATCO Cadet. This involved three years of both theoretical and practical training with regular examinations after each stage. To enable Cadets to appreciate the pilot's task, the course provided flying training up to private pilot standard. This picture was taken just after landing from my first solo flight at a small airfield in Buckinghamshire. This flying was eventually dropped from the training syllabus, due to its cost, but it was of value. Similar flying and simulator time was provided for successful Cadets, towards the end of their courses, with UK airlines.

ATC Training Technology 1971



The first year of Cadet training included studies in navigation, meteorology, radio telephony, aviation law and control of traffic around an aerodrome. This image shows an instructor with a Cadet (seated) and the wall-mounted plan of an airfield. Coloured lights displayed the positions of simulated flights around the airfield, with voice responses coming from training staff and other Cadets in a separate room.

ATC Training Technology Now



Aerodrome control training is now provided on simulators, with use of computer-generated images on wrap-around screens – a vast improvement on the devices available back in the 1970s. Later years as a Cadet saw me completing courses in Approach Control and Area Control. The bulk of theoretical and simulator work was carried out at the College of ATC in Bournemouth, with, in my case, practical training at Pershore in Worcestershire, in West Drayton, in Sopley in Hampshire and in Glasgow Airport. After the last few days in Glasgow, I was granted my ATC Licence and, along with the other survivors of the Cadet course, was allocated to the London ATC Centre (LATCC) at West Drayton, just to the north of Heathrow Airport.

ATC - London Centre



London Air Traffic Control Centre (LATCC) 1973 - The first year or so at LATCC saw me employed mainly with flight data, much as in earlier Assistant roles - but this was a licensed position as it required procedural allocation of altitudes to aircraft and data transfer to adjacent ATC units. Other, more senior, controllers had the task of getting aircraft to these altitudes by use of radar control techniques. A lot of data transfer was, and still is, managed by direct links between ATC computer systems, with ATCOs monitoring such transfer to ensure accuracy and safety.

ATC - London Centre



Eventually, I undertook further training as a radar controller and did other associated jobs at LATCC. The controller pictured is using a radar with a vertically aligned tube – a truly flat screen, the rectangular strips in front of him hold details of the flights within his sector of responsibility; he can write instructions and changes on them. These strips are regarded as legal documents and are kept for a minimum period before disposal.

ATC - Hebrides



After several years at LATCC, the opportunity arose to take on the job of ATCO and Aerodrome Manager on the Inner Hebridean island of Tiree. These posts existed with ATCO staff benefiting from the managerial experience of a small unit, generally with only a dozen or so staff. The levels of aircraft activity also meant that ATC could be provided by the same person, who could occasionally put his feet up!

ATC - Hebrides



The activity at the Hebridean airfields was hugely variable; apart from the regular airline services by Loganair, we would get commercial flights in for local cattle sales; small aircraft on private flights landing for lunch and a refuel, and occasional visits by RAF Jaguars and Buccaneers from Lossiemouth doing practice attacks on the airfield. Tiree also had a fuel cache for the yellow Sea King helicopters of the RAF search and rescue flights. These aircraft, and Loganair's ambulance Islanders, were often handled during the night as airfield staff were called out to respond to accidents or medical emergencies.

ATC - Hebrides



Loganair's services through Tiree enabled me to visit adjacent islands such as Barra. The job on Tiree lasted for less than 18 months as a Headquarters decision was taken to withdraw the ATC service from several of the islands. It should be noted that, whilst the use of ATCO/Managers has more or less disappeared in the UK, there will always be opportunities within ATC for staff to undertake interesting and challenging jobs or projects outwith the basic ATC task.

ATC - Hebrides



After Tiree, my next station was Stornoway on the Isle of Lewis. Here, after the necessary local training, I replaced the departing manager and went on to spend nearly five years there. Stornoway was busier than Tiree so had two resident ATCOs and more fire and rescue staff.

ATC - Hebrides



The Stornoway control tower building was of an old design and did not provide good, all-round vision.

ATC - Hebrides



The control tower building was, however, well-lit and generally warm enough during the winter months. This tower was the focus for many pilots entering and leaving the UK en route to Iceland and this made the job more interesting. There also remained the constant requirement to staff the airfield outwith normal opening hours - but the overtime payments helped to restore the spirit.

ATC - Hebrides



Many opportunities arose to fly from Stornoway and I had memorable trips to lighthouses in helicopters....

ATC - Hebrides



...and in military aircraft based in the Hebrides during multi-service exercises.

ATC staff at many airfields may be closely involved with their resident operators and get such offers – they serve to improve relations and understanding between organisations and are encouraged.

ATC - Hebrides



The aerodrome fire service welcomed an extra hand during practice launching of the unit's Zodiac rescue craft. There is no record of them attempting to drown the ATCO/Manager.

ATC - Hebrides



I was on the receiving end of a telephone call one Sunday morning, reporting that the aerodrome fire station was on fire. Apart from being somewhat embarrassing, the damage from an electrical fault did not greatly impact airfield operations and was soon repaired. Sadly, the inflatable boat seen earlier had exploded due to the heat generated during the incident and, when tested, the fire appliances pumped out warm water for a while.

ATC - Scottish Centre



This is an aerial view of the Scottish and Oceanic Area Control Centre (ScOACC) at Prestwick - the airport main runway is just out of sight off the top of the picture. By 1987, my time as aerodrome manager was ended and I found myself based here. A period of local training followed and I was eventually qualified in most of the working positions of that part of the Centre which handled domestic traffic.

ATC - Scottish Centre



This picture shows the operations room as it was in 1987. This view shows about one fifth of the room. Radar tubes were built into control desks alongside other angled boards which held the paper strips which were still in use. On busy sectors you would see two controllers – one in front of the radar tubes, and the other in front of the sloping boards. These were known respectively as the 'Executive' and 'Planner' controllers. There were also a few positions staffed by RAF controllers who handled military flights in the Scottish area.

ATC - Scottish Centre



A sector display – the 'Executive' position. The Executive would provide radar control and issue instructions to pilots by radio, whilst the Planner would organise and update the paperwork (strips) relating to the traffic and liaise by telephone with other sectors in the Centre and with other external airfields and Centres.

I worked on the sectors and spent quite a few years as an instructor which I enjoyed. The controller training scheme requires a very hands-on approach and usually makes extensive use of simulators. These allow trainees to gain experience in handling the traffic flows at their own particular unit. They are exposed to the experience of instructors and gain the confidence to safely deal with aircraft emergencies and with other situations which arise only rarely. When students eventually progress to handling real aeroplanes, an ATC instructor will closely monitor each situation to ensure that the student does not get out of their depth and compromise safety. However, it is recognised that people do learn from their mistakes – a good instructor will be aware of his/her limits and those of the student.

Quite soon afterwards, I applied for and was given another post as an Operations Officer. Such positions exist at both airfields and Area Control units, so to have a knowledge of both regimes is really useful. My Centre job entailed formulation of new procedures and their inclusion into operational manuals, and also liaison with many civil and military units in Scotland and northern England.

ATC - Aberdeen



Of particular importance was the safe integration of helicopter operations in the North Sea. This Sikorsky machine is taking off from Aberdeen Airport which was, for a while, the busiest helicopter airfield in the world. I was involved in agreeing operational procedures with my colleagues at Aberdeen, Sumburgh and Lossiemouth, and with adjoining ATC Centres in Iceland, Norway, Denmark, Holland and Ireland.

These were challenging and interesting years and this post made use of my experience over my time at the Centre as well as in London and in the Western Isles.

ATC - Concorde and Reds



The regular business of managing ATC matters occasionally included integration of military exercise and air display traffic, and of charter flights by Concorde - which flew huge circles around the North Sea whilst passengers enjoyed their supersonic lunches. I also dealt with aircraft flying up towards Iceland, during winter months, to view the Northern Lights and with many seasonal round trips to the Finnish home of Santa Claus.

ATC – Prestwick Centre



Prestwick Centre - Around 2001, I joined a small team of staff who were planning the operation of a new ATC Centre at Prestwick, which would have the capacity to cope with increased traffic and use more modern technologies. A reduction in the growth of traffic caused the new Centre to be delayed and the project team were dispersed. I went back to shift working in the operations room.

Quite soon afterwards, I applied for and was given another post as an Operations Officer.

The new ATC Centre at Prestwick did get finished eventually though. This is an aerial view when it opened in 2009, around the time I retired from my Operations Officer post and from NATS.

ATC – Prestwick Centre



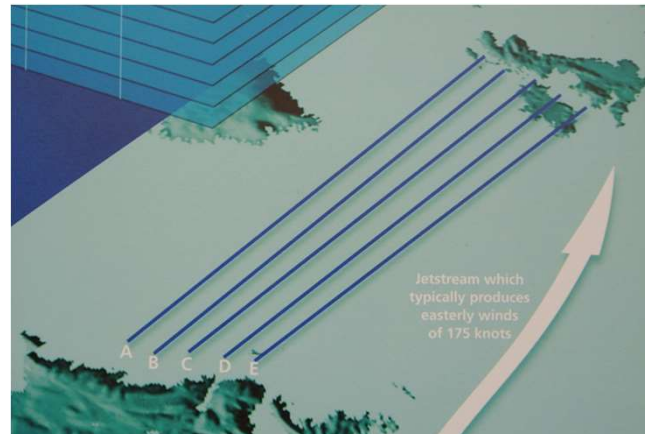
Here is a view of the Operations Room in the new centre. It much more brightly lit and spacious than its predecessor that we saw a few slides back.

ATC – Prestwick Centre



Here is another picture of the Operations Room which the Scottish domestic operation, and also the training section simulators. RAF operations were also conducted from here but these have now relocated to the London Centre which is near Southampton. Note that racks were still provided for stacking paper flight progress strips, but technology is rapidly making this a thing of the past with 'strips' now presented on screen. The Operations Room at Prestwick Centre is also home to another unit, providing a very different and, as far as the UK is concerned, unique type of air traffic control...

ATC Oceanic Flights



This is the Prestwick Oceanic operation.

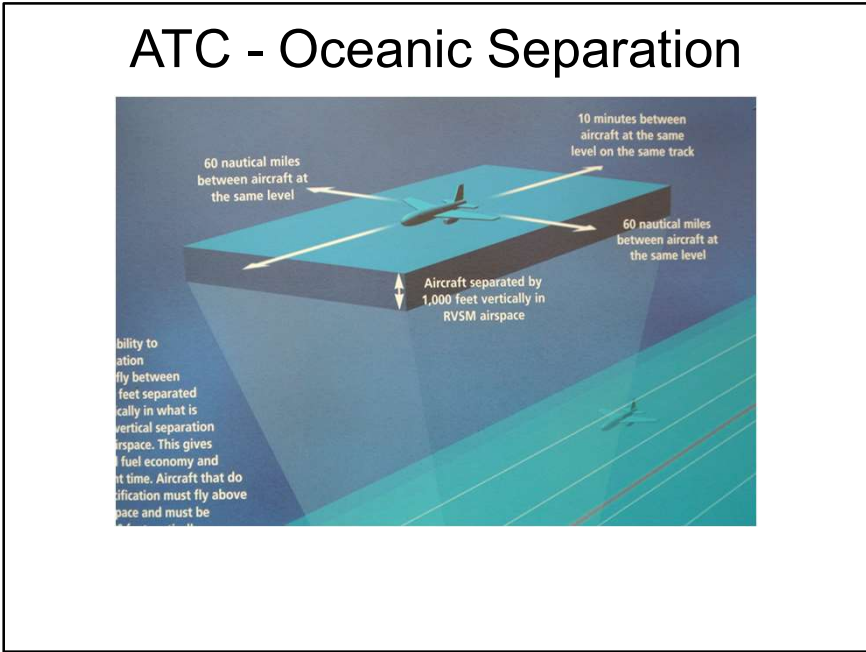
The prevailing westerly winds over the North Atlantic ocean are often linked to the position of the 'Jet Stream'. This is a fast-moving 'river' of air in the upper atmosphere which winds around the globe and may shift its position, northwards and southwards. This movement results in the presence of headwinds to westbound flights, and tailwinds to eastbound flights.

Given that airlines will always wish to stick to schedules and fly with greatest possible economy, the ATC authorities establish daily routes which make best use of prevailing wind patterns. Thus, the tracks across the N Atlantic vary according to the daily weather situation. A similar process is used in respect of the N Pacific routes between the USA and the Far East of Asia.

ATC - North Atlantic Flights



This slide indicates very broadly how the main westbound traffic flow from the UK and Europe runs from 1000 to 1700 and the returning eastbound flights operate overnight. Approximately 600 flights take place, in each direction, each day. They are controlled from the Oceanic Control Centre (OACC) located in PC. This unit formulates the track structure, in conjunction with the Centres in Iceland, Gander, Shannon and the Azores.



The Centre issues clearances for flights to operate on their required tracks and applies procedural control – there being no radar surveillance available from the middle of the ocean. The tracks are usually some 60 nm apart with flights on each track spaced at least 1,000 feet apart vertically and 10 minutes apart longitudinally. Such minimum procedural separation, including flight at a specified speed, will be maintained until a flight is established in radar coverage at the far end of an oceanic route and other forms of separation may be applied.

Until advanced forms of aircraft navigation and position reporting are developed, the use of radar will remain the prime means of moving large amounts of traffic – because one can see where each aircraft is and thus ensure that they do not come close to each other. The limiting factors in everyday operations are now the speed of data transfer, the varying needs of different types of aircraft and, for the individual controller, how quickly he/she can assimilate and respond to changing circumstances and issue appropriate instructions.

The ATC operation at the Prestwick Centre has recently brought into use a system called iTEC (Interoperability Through European Collaboration) which is intended to increase airspace capacity. It will enable pilots to fly more direct tracks away from the published route structure, thus saving time and fuel. iTEC will also improve safety by automatically detecting potential conflict of flights and alerting controllers in time to take appropriate action.

As NATS pursues its aim of making flying cleaner, quieter and more fuel efficient, it will work to initiate the use of advanced systems across the 2.2 million square kilometres of oceanic airspace under its jurisdiction. The big question is how safely to squeeze more traffic into the finite amount of sky available.

ATC - London Heathrow, then...



This image shows what was the iconic control tower at London's Heathrow Airport, dating from the 1950s.

...and now



Heathrow's new tower was constructed in pieces and towed into position overnight, before completion to its final height. It offers a spectacular view across one of the world's busiest international aviation gateways, and staff sometimes find themselves above cloud, and in a tower that sways in a strong wind.

ATC – Heathrow by night...



ATC is a fascinating job and no two locations will be the same. No two days will be the same as the traffic flow, the crews, the weather etc. will all vary. You will need the ability to think clearly under pressure – to formulate a plan, act on it but be prepared to change it as necessary. You will need the self-confidence to tell pilots what to do, as usually you have no back-up. But note...

...if shift working is required, it may have some impact upon your social life in that regular attendance at the football match, or the badminton or athletic club, may be affected.

This is the spectacular view of London Heathrow Airport as seen from the control tower at night - this could be the view from your office window!