



The Air League Newsletter

Issue 2: March/April 2014

PROGRESS ON NEXT GENERATION AIRCRAFT

Progress on the UK's Taranis stealthy air system demonstrator has been shrouded in mystery ever since the futuristic aircraft was first revealed at the BAE Systems Warton factory two years ago. Now, six months after it made its first successful test flight, MOD has released images showing a very clean tail-less blended-wing airframe featuring a small triangular air intake and a narrow stealthy jet exhaust outlet.

Conventional pitot tubes and aerials seen on the first flight were later removed as embedded sensors and aerials were brought into use. Powered by a Rolls-Royce Adour engine, the aircraft is slightly bigger than a Hawk. The release of news and images of Taranis follow the Anglo-French announcement in February that both governments will work together to exploit the information provided by Taranis and Neuron demonstrators to help define future requirements for a next generation stealthy unmanned strike aircraft. This might operate in the late 2020s flying alongside manned aircraft in a mixed force, or operate autonomously. The decision to build and flight test Taranis was seen as an essential measure to keep the UK's extensive design and development capabilities competitive, along with the associated involvement in low radar cross section and signature management technologies, advanced systems integration, rapid prototyping, advanced aerodynamics

and autonomous navigation and mission management techniques. In all these areas Taranis is said to have accomplished the programme goals. This unmanned air system, while under constant human monitoring, with the ability to intervene at any stage of the flight, has shown the way forward, which is to fly autonomous missions using highly advanced onboard systems, including artificial intelligence. This means that a human pilot (as in today's Reaper Remotely Piloted Air System) is not going to have to fly the air vehicle while sitting in a control room on the ground. Future unmanned air systems will be able to take off, fly the mission and return fully automatically. Rules of engagement will still apply so the human in the loop will continue to decide whether to fire an offensive weapon, but the image of "intelligent drones" roaming over the battlefield looking for and destroying their own targets, is likely to remain science fiction.



ABOVE: Taranis on an early test flight. (BAE Systems photo)
Inset, Dassault-led European UCAV demonstrator, Neuron. (Dassault photo)

In this issue...

The Air League in Parliament P2 • Aeronautica Commentary P3
Re-birth of manufacturing leadership P4-5 • Members news P7

The Air League in Parliament

The Future of London Airports – Mainstream or branch line?

On 14 January, Sir Michael Hodgkinson, former CEO of BAA and Deputy Chairman of TUI Travel plc, addressed Parliamentarians, Air League members and guests at the House of Commons. The meeting was sponsored by Steven Baker MP. This is a summary of the main points from his presentation.

“So what are the reasons that lay behind the Airport Commission’s Interim Report? To understand their reasoning, here are a few important background facts, all of which are not readily known, understood or talked about.

1. Airlines today are private sector companies aiming to maximise their profits. Aircraft will be flown on the most profitable routes – not routes that politicians would like them to fly!
2. Unlike Paris or Hong Kong, UK based travellers tend not to live in the centre of London. They generally live in the suburbs or the South East of England.
3. Regular travellers will tend to live in areas which are easily accessible to an airport they are likely to use on a regular basis.
4. Airport charges need to be competitive, particularly on short haul services.
5. There is general agreement that the South East does need an extra runway in the next 10-15 years and that the UK needs more flights to the world’s developing markets.

“So what does the aviation market look like in London, and why do the airlines, particularly long haul, make so much more money at Heathrow rather than at the other London airports? Just to highlight the extent of this consider the following – a 747 flown by the same airline to the same overseas destination will make between £4 - £5 million a year more profit at Heathrow than from Gatwick. And it is £2million a year more for a legacy carrier’s short haul 737.

“It was this dynamic that led to the long haul airlines leaving Gatwick en masse in 1991/92 when access restrictions at Heathrow were lifted following the demise of Pan Am airlines. All these airlines immediately saw a substantial increase in yields. This of course left BAA with the dilemma of not just having to fill the gaps left at Gatwick, but also trying to fill the newly opened new-look Stansted. It soon became clear that the traditional flag carriers were not going to help. So, BAA had to understand what was driving this phenomenon. When we looked at the natural catchment areas of where overseas passengers

were travelling to, and where UK travellers were travelling from, the answers became clear.

“Some 65% of passengers were coming to or going from Heathrow’s natural catchment areas. Gatwick accounted for 30% and Luton and Stansted some 20% each. These numbers do of course add up to more than 100% but that is because the natural catchment areas overlap. Further analysis showed that Heathrow’s catchment area was the wealthiest, followed by Gatwick. This meant that it was easier to fill the most profitable premium seats than at any other airport. Another important factor was that Heathrow had relatively easy access to Bristol and the West Country and to the South Midlands. Furthermore, Heathrow’s sheer size meant that it could attract transfer passengers. Hence the airline industry saying –“You fill the plane from the front at Heathrow and from the back at Gatwick!”

“So having understood how the market worked, we had to find solutions for marketing Gatwick and Stansted. At Gatwick, the loss of long haul services was followed by the demise of Dan Air. We worked closely with British Airways to replace these routes, but BA couldn’t make Gatwick work as a mini-hub, so we decided the only solution was to concentrate on Gatwick’s strength, which was leisure travel. The low-cost airlines were beginning to take off, fundamentally serving the leisure routes. So the solution was to persuade Stelios that EasyJet routes would be more profitable at Gatwick than Luton. The rest is history, although now firmly established EasyJet is trying more and more to compete on business routes. Stansted was an altogether different business proposition. A completely different airline business model was the only solution. Fortunately Ryanair appointed a highly competent CEO, who had a vision of building a European version of South West Airlines. To expand they needed early morning slots and Stansted was the only game in town. Their unique business model worked at Stansted.

“So it is not surprising that the Airport Commission’s prime options include new runways

Continued on Page 6

THE STRUGGLE TO MAINTAIN NUMBERS

The much reduced size of today's Royal Air Force is starting to have an impact on its ability to maintain its global capabilities. While new aircraft and systems deliveries are continuing to replace ageing fleets with the latest, more capable equipment, the small and declining numbers of all operational aircraft types available are of increasing concern within and outside the military community. Not without significance have been comments from leading senior US politicians who suggest the UK is no longer well-placed to act as America's "special" ally as its forces are shrinking alarmingly, as are those in most other European NATO nations. With more permanent overseas bases, national military space satellites and deterrent forces, an operational nuclear aircraft carrier and three helicopter carriers, France is increasingly being regarded by the US government as an ally with military clout, while the UK is seen as struggling, as indeed it is.

The recent grounding of the RAF's new fleet of Airbus A330 Voyagers, following an incident during the cruise phase of a trooping flight to Afghanistan, resulted in the unprecedented situation of the UK possibly having no air-to-air tankers of its own available for the first time since the early 1950s. The reduction in strategic airlift resulting from the Voyager grounding could also have hardly come at a worse time, following the withdrawal of the C-130Ks and VC10s, and shortly the TriStars, leaving just a depleted fleet of C-130Js and the over-worked eight C-17s, plus two modified BAe146s to carry out all military air transport just as the massive return of forces from Afghanistan builds up. Using chartered aircraft without defensive aids suites is probably too dangerous out of Camp Bastion and other Afghan airports and this situation demonstrates how under-resourced the RAF has become.

There seems to be a highly risky policy pattern emerging – originally intended in the 2010 SDSR or not – to withdraw outgoing air assets well in advance of replacements becoming available and cleared for operational duties. This has become almost an epidemic and will soon result in significant capability reductions or gaps in air tanking, air transport, AEW helicopters, tactical

helicopters and fast jets. And of course there is still a complete lack of maritime air capability and carrier air support.

The A400M transports will eventually restore more air lift capacity than that provided by the lost C-130Ks, but they will now also replace the modern C-130J fleet. The result will be a tactical transport fleet that is half the size of the previous combined fleet of C-130Ks and Js. The new A400Ms may be much bigger, but they can't be in as many places at the same time! Clearly the RAF will need more A400Ms and more C-17s unless the government is not intending the RAF to be so operationally active in the future. With the drawdown of the Tornado GR4 fleet continuing apace, there will soon be enormous pressure on the Typhoon fleet to carry out just about every fast jet task, although the Storm Shadow cruise missile has yet to be integrated onto the aircraft and the first F-35B Lightning IIs will not be in full operational service until 2020. It seems as if the initial production order for the joint RAF/Royal Navy F-35Bs will comprise just 14 aircraft. Even if No 617 Sqn RAF and the Royal Navy's No 809 Sqn aircraft combine for deployment at sea, they are going to look rather lost on the vast flight deck of the new 65,000 ton aircraft carrier!



21st CENTURY LEADERSHIP

A new flagship location that encapsulates the nature of the high-value manufacturing sector's re-generation has been created alongside Sheffield University, within a fast expanding hi-tec business park dedicated to innovation in manufacturing processes, including composites, metallics and hybrid components. This is the Advanced Manufacturing Research Centre (AMRC) and it has just been boosted with the announcement of a new £43 million project to build an advanced showcase factory of the future, Factory 2050, and the opening of a very large training centre.

In the corridors of power the need for an industrial re-generation is now recognised as a vital ingredient in sustaining jobs and wealth creation. The key to this growing success that is allowing more and more manufacturing to be repatriated to the UK, rather than outsourcing and importing, has been a high level of technical innovation and its application in new manufacturing processes and methodologies. Leading world-class companies such as Rolls-Royce, Boeing, Airbus and GKN remain at the forefront of these developments and there has in recent years been a significant re-birth of the UK aerospace sector as it has readjusted to changing markets and new opportunities for growth.

Professor Keith Ridgway is Executive Dean at Sheffield University's Advanced Manufacturing Research Centre and said, "Our ambition is for Factory 2050 to be the most advanced factory in the world. It is part of our long-term development in high value manufacturing in which we have an international lead." The factory project will offer the latest technologies in the field of advanced robotics, flexible

Our ambition is for Factory 2050 to be the most advanced factory in the world. It is part of our long-term development in high value manufacturing in which we have an international lead.

automation, unmanned workspace and off-line programming in virtual environments. Initially around 50 researchers and engineers will work in the new 14,400 sq ft facility, which will incorporate the highest environmental standards. Academics and industry sponsors want Factory 2050 to be the UK's first fully reconfigurable assembly and component manufacturing facility for collaborative research. It will be capable of rapidly switching production between different high-value components and one-off parts. There will be autonomous vehicles and tracked robots and flexible fixtures to maximise the value of all these new assets. Factory 2050 will be a paperless facility with a "digital thread" throughout an integrated manufacturing group. In the past a lack of investment resulted in a gap between those with special skills carrying out the R&D and those engaged in manufacturing activity. Fundamental research leads to core technology advantages that can

deliver new business by unlocking more efficient output. At the AMRC the staff believe they are now creating a new and more focused interaction between academia and industry. Manufacturing industry is now re-inventing itself so that it is managing a system rather than just making parts and design is more widely seen as a means of manufacturing, helping to encourage greater quality right through the supply chain.

The AMRC funding comes from the University, the UK government, the EU and seventy seven participating companies, including the major aerospace manufacturers, extending down through 24 Tier One partners and others in the sector supply chain. From the outset Boeing has been a leading partner with the AMRC in the High Value Manufacturing Catapult, backed by the Technology Strategy Board. Setting up the AMRC was a key foundation stone in the process of establishing a hi-tec engineering R&D cluster with a world-class reputation. Participating company partners, all have a share in the technology benefits for they are involved in the overall goal of improving new means, methodologies,

tools and techniques that will advance manufacturing technology within their own organizations. Both Boeing and Rolls-Royce have invested heavily in the AMRC site and its spreading campus. A huge new Rolls-Royce single crystal fan blade manufacturing plant is already on site and due to start production in the



ABOVE: Just some of the latest machining equipment installed in the centre.

most efficient aeroengine component manufacturing plant anywhere with very advanced processes. Boeing is a commercial customer of many of the AMRC partner companies and has a vested interest in seeing progress in hi-tec manufacturing cascade down through its supply chain. There are many examples of how the centre's R&D and test and evaluation of new processes and technical solutions has already worked through to production standard components which have been adopted for company products such as the Boeing 787. For the facility managers, partner companies supply free of charge their latest equipment and systems for use in the various specialised work areas. These represent the very latest examples of hi-tec machines and specialist equipment, so they are ideal for using to evaluate and test new innovative processes and methodologies. In turn, this provides the suppliers with invaluable high-quality feedback which helps them improve the product to make it even more flexible and efficient and it also serves as a highly visible demonstration asset to attract new customers and sales.



ABOVE - A general view of just part of the extensive AMRC campus at Sheffield.

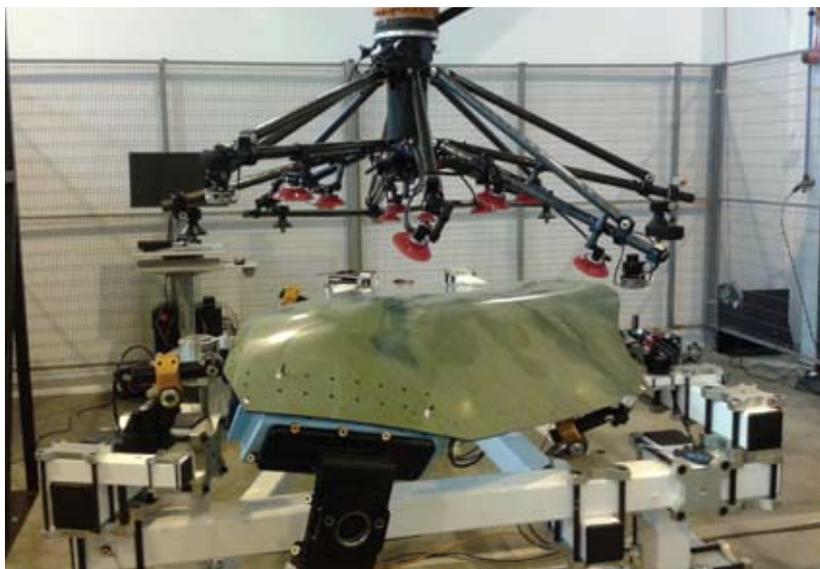
The AMRC was originally envisaged as an R&D centre-of-excellence for hi-tec machining technology, but with the increasing use of composite materials, hybrid metallic/composites and now, 3D printed components, as well as advanced metallics, the scope has been widened to cover all high-end manufacturing materials and processes. This includes casting and machining in titanium and aluminium and all methods of fabricating composite structures and components. This is said to be at least six years ahead of any other similar facility. Europe's largest electron beam welding facilities are also included on site. Deep hole drilling is another high value capability. The methodologies used at the AMRC have been shown to result in real, and quite dramatic improvements in target performance. An example of one case study features a collaborative project between Messier-Dowty and AMRC for the machining of a landing gear side stay, a simple prismatic part similar to the Boeing design. A new titanium material, Ti-5553, was used and the study focused on the specific machining time to extrapolate the overall cost of using Ti parts on Boeing 787 landing gear. The original time for the machining operation was 54 hours, and the target for using the new material was 27 hours. The achieved time was 11 hours. In another case study, this time on an Airbus part, the machining time was reduced from 145 hours to 19 hours. The Composites Centre in the AMRC has facilities for autoclave and out-of-autoclave composites manufacture. Computer controlled automatic



ABOVE - Apprentices learning new skills in the AMRC Training Centre

fibre placement of layered materials represents the latest technology, but Sheffield has a 200-year old local legacy of weaving skills and this has been exploited to incorporate traditional inter-woven material patterns and techniques that can be tailored very precisely using 3D weaving machines for today's hi-tec requirements. The research, testing and evaluating at AMRC extends into next generation wing spar developments and highly complex moulding techniques. GKN Aerospace is leading a project under the Structures Technology Maturity (STeM) programme that aims to automate the assembly of aircraft structures to reduce assembly times by 30%. An advanced winglet has been used as a demonstrator component to progress a range of innovative assembly technologies and the complete assembly tooling and robotic strategy for this has been carried out at the AMRC in conjunction with Nikon Metrology.

In the AMRC Assembly Centre the latest laser scanners and robotic systems are capable of working to tolerances of 15 microns, with huge reductions in operational timescales. One program successfully reduced a procedure that previously took one and a half days to just six minutes. Castings Technology International is wholly owned by AMRC and is a comprehensive casting research facility, with a titanium casting capability as large as any in the world. Some 75 partners are involved at the facilities on site. The production technologies are very wide ranging, from titanium casting to additive layered pattern manufacturing, with bespoke patterns grown from a laser using light sensitive resins. In the Design and Prototyping Centre new designs for manufacturing are studied in close cooperation with many SMEs who are currently involved in some 120 active projects. In the Structural Test Centre there are the very latest facilities for component testing and validation including 8-axis loading system. There is also a microscopy laboratory for micro structural evaluation where material changes require very precise and accurate measurements with screening to determine the chemical composition within the material. The AMRC campus includes a new Training Centre where this month 250 young apprentices are to be admitted to join others already learning basic engineering workshop skills, leading through a phased curriculum to more advanced training using the most modern CAD/CAM digital design and manufacturing tools and equipment, and classroom training aids. These apprentices are sponsored by companies who will directly benefit from the high quality and motivation of these young people. More details of the AMRC can be seen on the facility's website: www.amrc.co.uk



ABOVE: A demonstrator composite winglet structure manufactured automatically as part of a GKN/AMRC project within the STeM programme to reduce assembly times by 30% (GKN photo)

BOEING DISABLED BALLOON SCHOLARSHIP

When RAF pilot Tim Ellison broke his back in a horrific crash he was told he would never fly again. He was hovering above RAF Wittering in a Harrier when an engine failure sent it crashing onto the tarmac 120ft below. Tim smashed his spine in five places and broke his legs and ankles. But he wasn't the kind of man to give up easily. He became the first paraplegic in the world to gain an Airline Transport Pilots Licence and last year he was selected via Help for Heroes to receive balloon flight training funded by a 2013 Air League/Boeing scholarship. After training with Brian Jones and his team at Mondovi near Turin in January 2014, Tim passed his General Flight Test in balloons. He proved to be an exceptional student due to his skills and currency in aeroplanes and he reached the required standard about half way through the training course. Tim's



ABOVE - Tim immediately following his solo landing - keep your burner vertical, Tim!

achievement made the headlines on the front page of local newspapers, in part by meeting the mayor of Mondovi who is paraplegic and a Paralympic skier.

Continued from Page 2

at Heathrow and Gatwick. Let us look at what the challenges are that the Commission will need to study carefully for the various schemes. First of all let's look at Heathrow, which is the airlines' first choice. Managing surface access, minimising congestion and ground pollution are key issues. Here Heathrow will need to demonstrate that ground level pollution can be kept within EU limits. Have rail access requirements been properly identified? Understanding how many new people will be affected by the new flight paths of the new runway, and taking mitigating action will need to be considered. Is the M-25 realignment manageable? Will the resultant airport charges be competitive and will the scheme be fundable? Can Heathrow overcome local and formidable local authority opposition?

"Next let's look at Gatwick. A judgement will have to be taken on the future of the low cost airline model, and the leisure market in general. New direct flights to the BRIC market would not go to Gatwick, but is there space at Heathrow? How could slots be made available? Also, surface access issues will need to be resolved and as these schemes have benefits beyond the airport, how much government funding will be available? Understanding the concerns of the people affected by noise and the mitigation action needed are additional factors, and finally, will the net investment result in competitive airport charges and will the scheme be fundable?"

"Now let us look at the Isle of Grain. Surface access will be a formidable challenge. It is one

thing to get passengers to London, but quite another to get 100,000 workers to the site. Can airport charges ever be competitive given an £80 billion investment plus the compensation for closing down Heathrow and London City airports, plus all the relocation and redundancy costs? With high airport charges and the potential loss of traffic from the West Country and the Midlands (with passengers likely to transfer through Paris, Frankfurt or Amsterdam) will this all-new airport ever be attractive to the airlines and would it ever be able to support flights to the new BRIC markets? What would be the cost of moving 100,000 people from the West of London to the East? What about local opposition to these people losing their jobs in the West? Would this option ever be fundable?

"So there are challenging times ahead for the Airport Commission with no easy solutions. But for all the schemes ways of mitigating some of the disadvantages to the local environments need to be evaluated in addition to conventional agreements and double glazing schemes. An example might be to give back the Business Rates of the new developments as in the recent fracking development announcement."

Media Watch

In recent weeks the Air League has commented in the media on the loss of a USAF Pave Hawk helicopter in Norfolk in January, London Airport Capacity and the inquest on the death of Flt Lt Sean Cunningham in his Red Arrows Hawk T1 in November 2011.

MEMBERS' NEWS

Scott Patterson Air League Gliding Scholarship 2013, Due to the British weather, I made two trips to Bristol and Gloucestershire Gliding club at Nympsfield to complete my gliding scholarship. I arrived on the 12th August being a Grade 1 Pilot from the newly merged 644 VGS. My aim was to get my Bronze gliding qualification and cross country endorsement. The first day was a bit of a buzz. I was approached by one of the club's pilots, Trevor Stuart, who was looking at doing a task on the ridge. He was in his own glider, Nimbus 3DT, and was looking for someone to fill the back seat. I asked if I could jump in! He grilled me on some questions to make sure I wasn't going to be ill as there would be no chance of coming back to Nympsfield until we had finished the task. I assured him that I wasn't going to be ill as I have endured long trips before. So we set off from a winch launch to do some ridge running. This being very new to me I was excited and nervous at the same time. Having never been out of gliding range in a glider before, it was quite an experience and also one that I look forward to going on my own in the future. I arrived back about six and a half hours later, after a fantastic opportunity to do things in that flight that I had never done before - extremely low, running along a ridge, a cross country task and cloud

BELOW - The EAP agile fighter demonstrator has joined the Fly-By-Wire Jaguar demonstrator at the RAF Museum Cosford (RAF Museum photo)



New Members

Individual Members: Jack Abbott, Charles Allen, Thomas Anderson, David Ball, Ben Barratt, Andrew Bell, Daniel Bentley, James Bibbington, Kristian Boulter, Jordon Bridge, Harry Bushell, Peter Carter, Gregory Chamberlain, Joseph Cleary, Liam Cross, Oliver David, Joshua de Maid, Katie Dickson, Michael Ester, Matthew Eckersley, Gabriel Gainham, Ryan Gavin, Jordon Giles, Marc Griffiths, Paul Guest, Peter Hastie, Cameron Hay, Samson Hedley, Markham Jackson, Adam Johnson, Chayton Kent, Jack King, Patrick King, Steven Lee, Sarah Locke, Guy Lockwood, Daniel Lowe, David Marshall, Sam McCumiskey, Alistair McKenzie, Connor McNally, Sam Milligan, Ross Mitchell, Liam Molloy, Dale Mudie, Alexander Nicolai, Michael Otty, Jack Peters, James Phillips, Kristian Pickworth, Katherine Pound, George Power, Caeron Roberts, Joseph Smith, Ben Southern, Stuart Strachan, Ben Tate, Matthew Walter, Katherine Ward, Rebekah Watson, Stephanie Wen, Josh West, Steven Westgate, Samuel Whatling, Samuel Whitehead, Sam Woodgate

Diary Reminders

5 April 2014: Young Aviators' Dinner
20 May 2014: Annual Reception
7 June 2014: Youth in Aviation Flying Day, Bicester
11 June 2014: AGM
20 October 2014: Red Arrows 50th Anniversary Banquet

For up-to-date information on all our activities please visit our website at www.airleague.co.uk where you can register for changes to be sent to you by email as they are announced.

flying. All was extreme fun and I would love to do it again. Thank you Trevor!

Natasha Seel, Nigel Blood 2012 Flying Bursary, I am indebted to the Air League Trust and my sponsor, who provided me with the opportunity to obtain my seaplane rating. Inspired by my ancestor Edward Wakefield, who built the first plane to successfully take off and land on water in Britain, I had a burning desire to get my seaplane rating. I started training in August 2012 and encountered many adventures, thrills and challenges. Seaplanes are different to handle than landplanes in some respects. For instance, your approach to landing depends entirely on the surface texture of the water at the time. However, my instructor soon helped me get to grips with it and we had a lot of fun. After eight hours of training in the beautiful Highlands of Scotland, I took the practical test in November. The plane was being kept in a hangar at Oban airfield on the west coast at the time and its convertible undercarriage permitted take-off from the hard runway. I flew over to Loch Awe to do the water exercises. It was a beautiful flight on an extremely crisp day with barely any wind. In fact when we got to Loch Awe, the water was so glassy that coming in to land proved to be tricky; all I could see was our reflection in the water. However, I completed the skills and landed back at Oban ecstatic to have qualified. I hope to organise a seaplane orientated day in the near future to celebrate the undeniable significance of the seaplane. A huge thank you to the Air League for this fantastic opportunity!

James Taylor, Air League Trust Gliding Scholarship 2013, If anyone asks me "what did you do this summer"? I have a very good answer...

I competed in my first glider aerobatics competition. I started flying with the cadets in 2011. Soon after, I started BGA club gliding and then met Paul Conran, an aerobatic instructor, at Buckminster GC.

Having done a junior beginners course with others, I was immediately hooked and decided I wanted to learn more and possibly compete. Maybe one day get to the world championships! As aerobatic flying is 'not cheap', it quickly became clear that I needed some financial help to achieve this. It was fantastic to be awarded your bursary. I was then able to plan the training with my instructor, i.e. when I could get the time in school holidays. My training aim was to get to Sports level and compete in a competition - I would aim for the Saltby Open. Practicing aerobatics comes with its own pitfalls: you only get 5-10 minutes in a flight to practice; all the long, patient non-flying days when cloud base is too low to allow the min 4,000ft required, (you learn a lot about weather!); pouring over your own flight videos and to critique your technique; the attention to detail and complete focus on safety. But, I enjoyed every minute. The Saltby Open is a national level glider aerobatics competition open to all classes. Each pilot is given two unknown sequences to perform, just an hour or so before their flight. My first sequence was scored at a respectable 75.70% which gave me a fourth place after the first round. Having been issued with a more challenging test for the next flight, I managed to get a slightly better performance for my second sequence, of 77.60%, which was the best score in that round. The final results were announced on Sunday morning. Much to my surprise, I was first in my category (Sports class) and was delighted to win the bronze medal for the competition overall. The silver medal went to a seven times world champion (an Unlimited level pilot), who was visiting from Austria. We were within 0.35% of each other overall after the 2 flights, so it was very tight. The gold went to this year's British national champion (an Advanced level pilot).

In summary: I achieved my BGA/BAeA Sports level badge, (application is in the post); dramatically improved as a glider pilot; competed in my first competition; and won bronze, alongside experienced pilots. So, not bad for a first year and I'm already looking forward to next year's competition season. As my Dad always says, hard work brings its own rewards and I feel that my pilot skills have improved as a consequence. The progress would not have been possible without the generous support you have provided, for which I am extremely grateful. Thank you very much indeed and maybe one day I'll get to the world championships!


THE AIR LEAGUE

Broadway House
Tothill Street
London SW1H 9NS

Tel: 020 7222 8463
Fax: 020 7222 8462

E-mail: exec@airleague.co.uk

Editor: Richard Gardner
Material for consideration for inclusion
can be sent via The Air League's office.

ROYAL AIR FORCE AEROBATIC TEAM

50
Display Seasons

ROYAL RED
AIR FORCE
ARROWS



The Official Banquet to celebrate the 50th Anniversary of The Red Arrows will be held in the Great Hall Lincoln's Inn on Monday 20th October 2014.

The Air League is organising this very special evening at the request of The Chief of the Air Staff, Air Chief Marshal Sir Andrew Pulford KCB CBE ADC, who along with The Royal Air Force Aerobatic Team, The Red Arrows will be present at the event.

If you would like the opportunity to attend this highly prestigious one-off event the ticket price will be

£250 per ticket, or £2,500 for a table of 10.

There is also the opportunity to include a member of the Red Arrows at your table for an additional cost of £500



AIR LEAGUE TRUST
www.airleague.co.uk

BAE SYSTEMS
INSPIRED WORK

For details of sponsorship opportunities please contact: Event organiser, Terry Holloway (th@marcamb.co.uk or 01223 373227)