



The Air League Newsletter

Issue 3: May/June 2008

More C-17s for RAF



Britain's armed forces received a much-needed boost to strategic airlift capacity on 7 April with the arrival at RAF Brize Norton of a fifth Boeing C-17 Globemaster III transport aircraft. A sixth is due later in the summer. The new aircraft, ZZ175, flew in from the Boeing plant at San Antonio, Texas, after a 10 hour delivery flight, to join No 99 Squadron.

Four other C-17s have been operated by the squadron since 2001 and have flown 41,000 hours since delivery, carrying 56,924 passengers and 78,649,939 kilograms of freight up to the end of March. Commenting on the acquisition Chief of the Air Staff, Air Chief Marshal Sir Glenn Torpy, said: "This fifth Royal Air Force C-17 will increase our ability to rapidly transport troops and heavy equipment to operations, and significantly enhance our overall logistics capability." He added: "C-17s are robust, capable and flexible and have proven their worth on UK Operations in both Iraq and Afghanistan and more widely

when we flew them in support of humanitarian operations following the Tsunami in South East Asia and the earthquake in Pakistan".

ZZ175 is the first C-17 to be owned outright by the RAF, the previous aircraft having been operated under an innovative US/UK leasing arrangement with Boeing, supported by the US Air Force. When this lease ends later this year the four original aircraft will also transfer to full RAF ownership and will be joined by another new C-17, bringing fleet strength up to six.

On arrival ZZ175 was greeted with traditional plumes of spray from Brize Norton's fire tenders and No 99 Squadron's Standard was paraded and inspected by the Reviewing Officer, Air Marshal Sir Barry Thornton, the RAF's Chief of Materiel (Air). Sir Barry said that the US Air Force had agreed for the RAF to "jump the queue" on the C-17 production line thereby making it possible to satisfy an urgent requirement in theatre backed up by a global support contract with Boeing "which is

an example of a modern day partnership that is working extremely well".

C-17s frequently demonstrate their flexibility by carrying loads which can include up to three Warrior vehicles, three Apache attack helicopters, 13 Land Rover vehicles, a Chinook helicopter, or even Tornado F3 fighters. The arrival of the new aircraft marks the beginning of the transformation of RAF Brize Norton into the RAF's only tanker/transport Main Operating Base with new generation aircraft such as the C-17, A400M, and A330 together with the C-130J Hercules, due to move out of RAF Lyneham when it closes.

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The Test Flying Memorial Project

In the 100 years since the first powered heavier-than-air flight in Great Britain took place in 1908, some 500 British pilots and flight-test aircrew have lost their lives in the line of duty — and yet no single, national, publicly-accessible memorial to them exists.

Two years ago *Aeroplane* magazine, in conjunction with the Farnborough Air Sciences Trust (FAST), launched a venture — the Test Flying Memorial Project (TFMP) — to create a Roll of Honour and, if possible, a monument to these unsung heroes. The Roll of Honour is well on the way to completion, and will be housed in the FAST Museum at Farnborough, the cradle of British aviation and flight testing. It is due to be officially unveiled on 16 October, the Centenary of UK Powered Flight. If sufficient funding can be found, a stone monument will also be placed at Farnborough, bearing the apt words of poet Samuel Taylor Coleridge: “... and everywhere the blue sky belongs to them and is their appointed rest and their native country ...”

Funding, however, is crucial. While the readers of *Aeroplane* have so far raised £5,800, the full cost of completing the Roll of Honour and putting it on permanent display in the FAST Museum is expected to be about £16,000, so another £10,000 is needed to secure this phase of the project. Clearly, any help from members of The Air League and beyond will be most welcome.

How is the Roll of Honour being produced? A team of four volunteers is central to the project. First, the information is painstakingly compiled by hand in chronological sections by former de Havilland/BAC man and *Aeroplane* columnist John Maynard. *Aeroplane* editor Michael Oakey and his wife Lynn then convert that information into electronic form, so that *Aeroplane* webmaster David Siddall can post each section on a website (www.davidsiddall.com/testflyingmemorial) for public scrutiny and correction — it is vital that the Roll is as accurate and complete as possible, and

input is sought from anyone with details to contribute.

After the scrutiny period, the information for each section is then edited, page designs are produced, and these are sent to professional calligraphers Sally-Mae Joseph and Angela Swan. This is where the really painstaking work begins again, each page being carefully hand-lettered in its entirety. Both calligraphers have a distinguished track record, having worked on the awe-inspiring Saint John's Bible project.

At time of writing, the two main sections, 1939–45 and 1945–70, are complete, comprising some 400 names. The remaining sections are either in their scrutiny phase or still being checked by the team. Once calligraphy of all the sections is completed, the pages will be bound in leather — and the Test Flying Memorial Roll of Honour will be a reality.

Thinking of the people whom the TFM memorialises, one can only wonder at the courage of men and women who put themselves at great risk in the furtherance of British aviation. Their untimely deaths could hardly have been more lonely, so it is surely fitting that they and their great endeavour are remembered together in one place for all time.

If you would like to make a donation to the Test Flying Memorial Fund please send a cheque (made payable to Farnborough Air Sciences Trust) to: Test Flying Memorial Fund, *Aeroplane*, Blue Fin Building, 110 Southwark St, London SE1 0SU. (Farnborough Air Sciences Trust is Registered Charity No 1040199.)

Many of the fatalities recorded in the TFM Roll of Honour are solo pilots in single-seat aircraft — but lives were often lost in greater numbers. The following instance makes sobering reading: On 7 June 1942, Handley Page Halifax II V9977 of the Telecommunications Flying Unit took off from its home airfield at Defford, in Worcestershire. The aircraft was being used in the most secret trial of a prototype radar ground-mapping and bombing aid

which would help to confer war-winning potential upon Bomber Command's strategic bombing offensive against Germany. On board was an RAF flight crew of five, a senior Bomber Command scientific liaison officer, an officer of the *H₂S* development flight, three vital employees of manufacturer EMI, including the *H₂S* project leader, and a civilian flight test observer. These 11 men shared the Halifax with a valuable prototype radar set and all its associated scanning equipment. Shortly after the aircraft left Defford a tappet locking nut detached in the starboard outer engine and caused a fatigue fracture. This resulted in an outbreak of fire in the flame trap, which ignited the induction charge. In no time at all a fierce blaze occurred in the supercharger induction casing. This spread to adjacent fuel tanks, burning through the outboard wing structure, which soon broke away. The resulting crash at Welsh Bicknor from 500ft, inverted, was not survivable, and all on board were killed instantly.

To get an idea of the sheer scale of the sacrifices made, log on to the Project's website at www.davidsiddall.com/testflyingmemorial and have a look at the drafts for the Roll of Honour.



ABOVE – Test Flying Memorial Project calligraphers Angela Swan (left) and Sally-Mae Joseph with samples of pages for the Roll of Honour.

COMMENTARY *by Aeronautica*

PUBLIC AWARENESS

The Royal Air Force 90th Anniversary fly-past over central London on 1 April received widespread pictorial coverage in the national media, as might be expected - the Red Arrows accompanied by four Typhoons were a great sight - but there was nothing to suggest to newspaper readers that the service was facing its biggest challenge for decades. A few years ago a rather more extensive display of air power might have been thought appropriate for such a historic milestone, but today, with a high proportion of RAF personnel and machines under great operational pressure supporting overseas commitments, it simply wasn't on the cards to mount a more ambitious aerial pageant. This raises the issue of how to enhance public awareness of the role of air power in modern Britain, and the wider issue of defence, when the media often seems more concerned with sport and the antics of celebrities than with more serious matters. Even with daily war reports from Iraq and Afghanistan on television, most of the UK population now has little direct contact with the armed forces and consequently has almost no clear understanding of what is needed to sustain their effectiveness. When programmes do cover military subjects they usually look at past history rather than future developments. As the number of military establishments throughout the land has shrunk so there are now far fewer opportunities for the public to attend open days and see for themselves what goes on behind the base perimeter. This makes events such as the Royal International Air Tattoo even more important, and exhibitions at the major air museums, such as Hendon, Duxford and Cosford, also now provide a valuable educational role in encouraging young people in particular to be air minded.

There is growing evidence that the government, rather late in the day, has started to realise that promoting the services is not only

desirable, but is essential in order to continue to attract a new generation of recruits to replace the exodus of older and more experienced personnel. The retention figures are now quite grim, approaching crisis level in some areas, and so millions of pounds are being spent by MOD on expensive advertising campaigns to draw attention to careers in the services. But what about explaining to a wider audience why we need to invest in defence as the ultimate form of national insurance? This is not necessarily a debate the government is keen to highlight as greater awareness of the true state of Britain's defences might provoke an outcry. So, for the time being at least, we have a government willing to praise the performance and achievements of the services, while at the same time anxious to play down problems that are regularly being exposed through Parliamentary Committee findings, accident investigations and coroners' reports. Recent efforts to change the rules concerning coroners' reporting on military deaths (described in the press as a "gagging attempt") shows only too clearly an underlying desire on the part of the executive to control comment that might otherwise reflect badly on decision-making, the provision of equipment, training and overstretched operations. In an age of personal mobile communications and unofficial service "blogs" these issues cannot be hidden for long, and when they are leaked, the damage to government credibility is that much greater.

One of the less well remembered initiatives of the MOD was the decision to abolish the annual Royal Tournament. This was regarded by those inclined to political correctness as an anachronism, laced with Imperialist jingoism. In reality, of course, it was nothing of the kind. The formula was tried and tested and it was hugely popular. It offered great family entertainment, a memorable spectacle with

important historical and traditional elements and it provided a high-profile platform for all three services to show what they were all about. It attracted massive live audiences and millions of television viewers, and largely covered its costs through sponsorship, ticket sales and advertising and contributed greatly to service charities. It also generated national pride. Abolishing the Royal Tournament is now seen as a recruiting "own goal", as nothing so far has come close to replacing its effectiveness in providing a favourable image of the services. But it might now be difficult to re-instate as the services probably no longer have the resources to put on such a show.

So what can be done to put across key defence messages? Politicians and the media tell us the public demands spending priority on healthcare, education, transport and the environment, and there is no prospect therefore of increased defence spending. But is there any evidence that this is actually what the public wants? Where is the evidence? Opinion polls suggest that a majority of the electorate now believe that the time has come to halt, or slow down, the vast outflow of billions of pounds into public services and initiatives that have brought little improvement. There is massive national goodwill for the armed services but our politicians seem unable to connect a widespread disillusionment with government waste and over-spending, with a need to feel protected from harm, whether from terrorists or other enemies. Does the electorate really feel happy that five times as much tax payers' money is now being spent on benefits as on defence? Maybe if politicians realised that the population might welcome an honest rationale for spending more on defence, attitudes might change. If they don't, then we all face the dangerous prospect of a gradual management of decline within the forces, and which will be very expensive and difficult to reverse.

Edited highlights from Sir Brian Burridge's RAeS Templer Lecture given at Farnborough on 8 April. Sir Brian was formerly C-in-C RAF Strike Command and is now Chairman of The Air League.

On the night of 29 March 1999, NATO aircraft bombed 40 targets in Serbia and Kosovo, out of a potential list of 51. RAF Tornados failed to hit a single target, such then were the limitations of precision attack through cloud. This was to be the beginning of what was planned as a 72 hour air campaign involving 219 targets, aimed at compelling President Milošević to withdraw his forces from Kosovo. Overall, the campaign actually lasted 78 days and involved 720 aircraft flying 36,000 sorties. In terms of Serbian forces, only 14 tanks, 19 armoured personnel carriers and 20 artillery pieces were destroyed.

Operationally, this campaign was of very limited success. While it contributed to Milosevic's eventual withdrawal, it certainly did not work-out as intended, either in terms of duration or effect. Politically, the apparent impotence of air power, the high profile instances of collateral damage and the tensions that it created in the NATO Alliance – bearing in mind that there was no UN Security Council Resolution for this – generated much political concern. Taken together, we cannot ask our politicians to operate in that way and nor would our electorates wish them to.

RELEVANCE

So, air power needs to be shown to be relevant in three ways. First, it needs to be operationally relevant and deliver the necessary military effect to support the Joint campaign. Secondly, air power has to be economically relevant in fighting for its place in ever-shrinking Defence budgets. Thirdly, air power has to be politically relevant in that its employment

must be plausible in a modern political environment where nations are involved in conflicts of choice rather than wars of national survival. Politicians need to be able to explain with conviction why things look as they do on our 24 hour, international media. In addressing this issue I will assume that the current political policy remains in place in that, to quote No 10, we have an expeditionary economy so it is right that we should have an expeditionary defence policy.

Starting then with operational relevance, air power has, both collectively and in terms of individual missions to be capable of achieving the intended effect. The significance is in the Sensor to Effect equation. The holy grail is to shorten the kill chain process - Find Fix Track Target Engage Assess (F2T2EA) to single digit minutes.

Increasingly air power has to be able to achieve the desired effect in ambiguous battle space, against an asymmetric enemy, and with tightly defined Rules of Engagement. This is a tall order. Increasingly in counter-insurgency warfare, it involves the destruction of the enemy's will to act even in tactical situations.

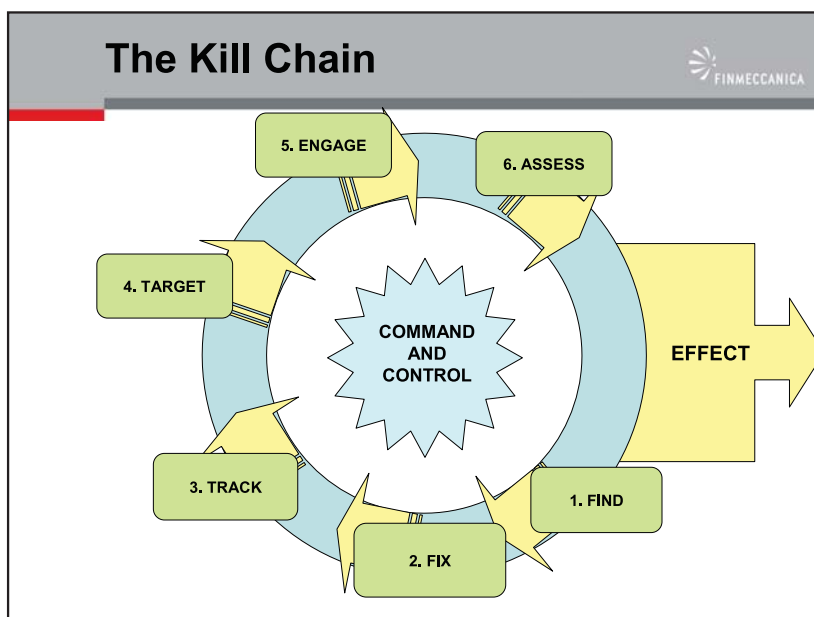
ISTAR

Clearly, ISTAR is vital to operational relevance: the generation of information is the catalyst and enabler for operations that follow. The inherent characteristics of air power in terms of height, speed and reach leverage the laws of physics to great advantage. But I continue to assert that there is still much to be done in the ISTAR information management before resorting to the acquisition of yet bigger networks and more platforms. The quest for operational relevance places a premium on three areas: situational awareness,

self-protection and lethality. These characteristics are important because they provide one of the keys to affordability in terms of commonality of approach. But also, given the nature of future combat aircraft such as Typhoon, JSF and F22, there will be few opportunities to change the engine or airframe through-life but there will be a significant requirement to upgrade sensors, systems and software so as to maintain a capability advantage against the threat and to enhance flexibility of employment. In the case of JSF, capability enhancement will come entirely from changes to software, firmware and sensor internal upgrade in things like the laser technology. The architecture has been designed to cope with both a modern aircraft's insatiable demand for data and the ability to insert additional capability in the shape of noughts and ones.

E-scan Radar and Electro-Optics

In radar, everyone's focus is now on Active Electronically Scanned systems. Because of their fast scanning rates and multiple agile beams, E-scan radars have huge performance advantages in dealing with multiple small contacts in the air-to-air mode and with diffuse surface targets in the air-to-ground mode. They have no moving parts and are inherently reliable and thus have lower through-life costs and they also provide potential capability enhancement in terms of electronic attack and data transfer. The mean-time-between-failures of e-scan radars is at least 4 times and, in some cases, 10 times better than for a conventional analogue radar. The second example of new capabilities focuses on Electro Optics of the type used in targeting pods for target recognition. Many have first hand experience with TIALD on the GR4 and the need to conquer the 'blobology' involved in adhering to tight Rules of Engagement over target recognition. The aspiration then is to achieve automatic target recognition in our 4th generation systems. This is now achievable using UK technology known as burst-illumination lasers. These operate in the 1 to 1.5 micron range and 'gate' the laser returns across small segments of the target. The trick then is in the algorithms to give 3D imaging. Miniaturization of this technology is well advanced thus allowing a growth path to 4th generation EO in JSF (which carries a UK laser) and potentially also in the Lockheed Martin Sniper pod (currently fitted to the Harrier) and the Northrop Grumman Listening AT pod. Both these pods cost about £1 million/copy. There is no such growth path in the Listening 3 pod currently being fitted to Tornado under a UOR and to the Typhoon in the austere air-to-ground upgrade. Both technologies are regarded as UK Sovereign capabilities that, under Defence Industrial Strategy, the UK Governments wants to keep on-shore.



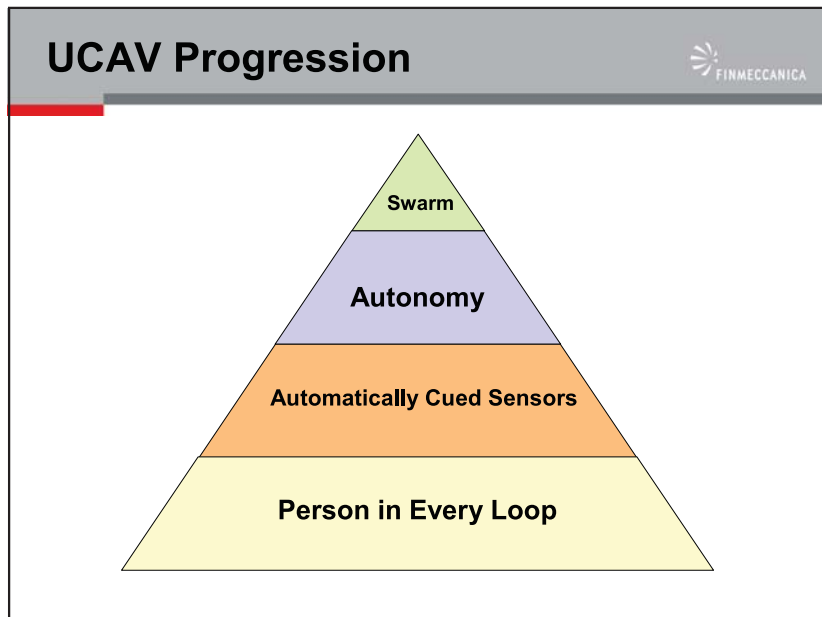
Space and UAVs

We should note that Surrey Satellite Technology, one of our leading space companies, has been bought by Astrium, a subsidiary EADS, for somewhere between £40m to £50m. This is one of the largest cash spin-outs from a British university – in this case Surrey. Secondly, the EU's Transport Ministers have now rubber-stamped plans to build Galileo, the troubled £3bn GPS-type system, entirely from taxpayer funds. Also of significance, last month, the UK published a Civil Space Strategy. In defence terms, at a cost of £2.5 billion Skynet 5 is the world's first PFI satellite venture. But both our willingness to engage in European programmes and the extent to which we are prepared to go it alone have to take account of our relationship with the US and the privileged position we enjoy for space-based intelligence products and communications. The incentive to invest in military applications beyond Skynet is very limited. Turning to UAVs, firstly, I have no doubt that stealthy UCAVs of the X-45, Taranis or nEUron type will form part of the offensive mix for air forces around the next decade. They are not cheap – as I shall outline later - but they do give a 'first-day-of-war' capability at an acceptable level of risk.

The ability of UCAVs to address a wide range of Day One targets without operator intervention is rapidly becoming possible – notwithstanding any legal hurdles - but the key challenge for now is affordability. The place of UAVs in the force mix across most nations is assured and many will exploit the extension to a weapon carrying capability as exemplified by Predator B.

The flyaway price of a Global Hawk with its ground station, support and spares is now \$130 million. Operating costs are about \$26,000 per flying hours similar to a 4th generation fighter. A STOVL JSF will cost a minimum of \$60 million and a Typhoon currently costs about \$100 million with an F-22 Raptor at about \$150 million. And for stand-off weapon enthusiasts, the Through-Life Cost of a single TLAM is \$2.7 million. Bear in mind that, for fast-jets, the through-life cost to flyaway price ratio is about four to one. This is why air forces must work harder at introducing TLMC – Through Life Capability Management into their support solutions. As the NAO has confirmed, we took £1.4 billion pounds over 6 years out of the support cost of Tornado GR4 by adopting lean techniques and the beginnings of a TLMC approach.

Four immediate deductions are apparent: first, airpower is expensive so it needs to prove its cost-effectiveness in achieving effect. Secondly, within this, UCAVs will need to fight for their place in the force mix on capability grounds because the economic case is not compelling on its own. Thirdly, at these prices, most air forces will see themselves with smaller, albeit more capable fleets. Fourthly, only the US could afford to pursue the notion of a new long-range, large payload, stealthy bomber in the 2020 timeframe, until that is, the credit crunch came on the scene. But



future global economics could favour China and Russia given their natural resources so the future starts to look a little less certain.

But what factors influence politicians and the Treasury as to the economic relevance of air power? First, there is the issue of the 'here and now.' Some £4 billion has been spent on Urgent Operational Requirements or UORs since FY 2002/03, many related to Force Protection. But this sum does not include the money to take them into the core programme and thus provide long-term support. In UOR terms, sensors and self protection have benefited but little else, other than the debut of RAF UAVs in terms of the Predator.

The next factor has to be national industrial policy. How important do governments see aerospace design and manufacture? What do we need to do as a nation to encourage young people to become engineers, mathematicians or physicists? Sad to say – and in spite of the Defence Industrial Strategy – our current government seemingly cares little for any of this. But, to me, the most important strategic point is the responsibility governments must accept in economic terms for laying the foundations of defence and security policy 20-30 years hence. Air power is a long-term investment. A decision now, say, to scrap Nimrod MR4 (a hypothetical case) would remove a capability that would subsequently take 10 or more years to regenerate. Equally, failure to add incremental capability to the Tornado GR4 – our national insurance policy in offensive terms – would be very expensive to reverse in one jump and would be very expensive and this at a time of significant capability proliferation.

POLITICAL RELEVANCE

So, this brings us to political relevance. However responsible politicians are in

exercising strategic vision, air power is useless unless it can be employed in a politically relevant way. The legacy of Kosovo and, to a lesser extent, the Bosnia Air Campaign of Autumn 1995, left UK ministers and other politicians clear with the view that, where air power is concerned, they needed to retain control at the highest level. Once planning began for the 2003 Iraq war with the prospect of close to 2,000 coalition sorties each day, it was clear that we needed to change politicians' views on how to discharge their legitimate responsibility by making them comfortable with delegation to commanders in theatre. Our doctrine and its associated vocabulary had evolved to one where it was possible to see a much clearer audit trail on the legality of a particular target: that is, proportionality, distinction, military necessity and humanity and we went to considerable lengths to describe to Ministers what a coalition war of 2,000 sorties per day would look like. But robust targeting requires good intelligence – both imagery and HUMINT. The target of the Chinese Embassy attack during the 1999 Kosovo campaign should have been the Headquarters of the Yugoslav Federal Directorate for Supply and Procurement but the true location of the FDSP headquarters was about 300 meters away from calculated coordinates (the Chinese embassy). Failure to update the intelligence database with the benefit of human intelligence meant that three Chinese nationals were killed and the international political fallout was long-lasting.

In the entire process of generating political confidence, it is important to generate realistic expectations over the results of an air campaign. To ensure the future relevance of air power, airmen should be realistic in their claims for its effectiveness

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Young members visit to the RAF Museum

Lewis Haldenby reports

The Air League RAF Museum Visit on 23 February gave members, both young and old, the chance to meet fellow aviation enthusiasts as well as gain an insight into the planning and flying operations of a military sortie, thanks to Lucie and Steve Purvis booking the Hercules Simulators at the RAF Museum. With a large group in attendance, half the crowd began their mission in the morning while the remaining members had time to explore the RAF Museum's mammoth display of fighters, bombers and transporters. From the wood & fabric Sopwith Camel of World War 1, to the giant Avro Vulcan, there were over 100 aircraft on display to keep any aviation enthusiast intrigued. The museum also holds artefacts, aviation memorabilia, photos and fine art, as well as a number of aircraft that have been

beautifully restored by the museum, showing the dedication to the RAF and aviation as a whole of the staff.

When it was our turn in the simulators, we were given the brief of our assignment. The Mission was to fly a transport aircraft with relief supplies to a future flooded London. While our two pilots got to grips with our chosen aircraft, the Lockheed C-130 Hercules, my partner (who happened to be a military helicopter pilot) and I planned the route we would be taking and what supplies we would need, dependent on our destination. Our planned route was to fly from RAF Benson to RAF Northolt with our first delivery of aid supplies. Using the data pack given to us by the staff at the museum, we calculated our bearing, distance, cruise speed and time on route using the equipment provided. We passed on the flight plan to our two pilots, who by now were

experts at the controls of the aircraft. After a few technical glitches, we were on our way to Northolt to deliver the first of our aid supplies. Upon arrival, our pilots switched seats for the second leg of our sortie, outbound to Biggin Hill Airport for our final drop-off. Our mentor Lucie supported the five crews with her expertise as the second pilot from each group made their landing to help those affected by floods. With our mission complete, we were given a de-brief by the staff and an opportunity to ask questions related to the museum and Air League events.

This visit not only allowed us to meet with other Air League members, but gave us the chance to interact with aviation enthusiasts and to get an understanding of military procedures. I look forward to the next Air League young members meeting and to see you all again soon.



ABOVE – Working out which equipment to load.



ABOVE – A quick trial flight in the Hercules.



ABOVE – Planning the mission to save London.



ABOVE – Deciding which tasks have the highest priority.

INDUSTRY NEWS

- On 18 March the first Airbus A380 arrived at Heathrow's Terminal 3 carrying fare-paying passengers. The Singapore Airlines non-stop flight from Changi marked the beginning of a new era with the start of regular daily scheduled A380 flights in Europe. Flight SQ319 carried 471 passengers in a very spacious three-class layout, with 12 individual "above first" private cabins on the main deck, 60 ultra-wide four-across business seats on the upper deck, and 399 economy class seats on both decks. With wide aisles, larger toilets and extra space for exercise, the interior of the SIA A380s will provide an attractive environment which will be particularly appropriate for ultra-long haul services such as London-Singapore. As deliveries build up, SIA intends to replace all its 747s on the main London Heathrow-Changi services with A380s. Commenting on the first commercial A380 flight into T3, SIA's Marvin Tang said, "This is a proud moment for Singapore Airlines and British aviation. Our A380s have wings made in Britain, the aircraft is powered by Britain and the cabin interiors are designed in Britain. The aircraft is also a significant step towards greener flying with 20% more fuel efficiency and a noise footprint half that of the 747-400. With a capacity one third larger than the 747 we can satisfy growing demand without having to increase the number of flights."
- On 9 April Boeing confirmed that the 787 programme would be delayed further with a first flight moved into the fourth-quarter of this year, with airline deliveries beginning in the third-quarter of 2009. The revised production plan now envisaged up to 25 deliveries by the turn of next year. The delays on achieving a first flight have centered around slower than expected completion of work on sub assemblies sent to Everett for final assembly, unanticipated reworking of assemblies, and more pre-flight testing than envisaged. Regarded by Boeing management as "start-up issues", the difficulties in bringing this advanced aircraft design forward were underestimated but the company has stated that it is now confident that the recovery plan is robust. Pat Shanahan, 787 VP and programme manager said, "The work that remains to be done on Aeroplane No 1 is well defined and we can see our way to, and have confidence in, the new milestones we have set for it". He said that addressing the major challenges before completing the primary structure - which included parts shortages, engineering changes and manufacturing changes-had been tackled and work was well underway on systems installation ready to put power on for the first time. He added, "We will continue to drive improvements in the supply chain and production system performance." Boeing has received nearly 900 firm orders for the 787 and the first four flight tests, and two static tests, aircraft are in production or being prepared. Modifying the wing box on the initial test aircraft with strengtheners has added to the delays but production aircraft will have a re-designed wing box.
- EADS Astrium has signed an agreement to acquire Surrey Satellite Technology Limited from the University of Surrey. SSTL has said that this deal provides the financial and industrial resources required for its expansion and future development. Completion of the acquisition is subject to obtaining the relevant regulatory approval. Colin Paynter, CEO of Astrium in the UK commented, "In the UK we are renowned for our design and manufacture of telecommunications satellites, interplanetary spacecraft and satellite services provision. SSTL is one of the great success stories of the UK space industry and will be a substantial complement to what we can offer customers around the world with its expertise in small and micro satellites and their innovative approach to developing new markets for space." Professor Christopher Snowden, Vice-Chancellor of the University of Surrey commented: "This is a great move for both the University and SSTL. On completion, this will represent one of the largest cash spin-outs from any UK university. It will also allow the Company to realise its full potential as a rapidly growing and leading supplier of small and micro satellites, whilst the University retains the benefit of close interaction with SSTL and its new partner EADS Astrium. By retaining a small stake in SSTL the University shows its commitment to both the future of the Company and space research itself."
- Thales and Advanced Electronics Company (AEC), a Riyadh based Saudi company, have signed a partnership agreement to establish a new company to manufacture simulators in the Kingdom of Saudi Arabia. This partnership agreement includes the design, development and manufacture of different types of simulators in the Kingdom of Saudi Arabia and to provide a training and full technical support, manpower and spare parts. Thales has also been down-selected to deliver two helicopter simulators to the Swiss Air Force. After an exhaustive evaluation process, Armasuisse, the procurement and technology centre of the Swiss Federal Department of Defence, Civil Protection and Sport (DDPS), has down-selected Thales to deliver two (2) Level D helicopter flight simulators. One of the simulators will be for the new Light Transport and Training Helicopter (LTSH) and the other one for the upgraded Super Puma Transport Helicopter (TH89/06). Both simulators will be located at the Swiss Air Force Base Emmen and should be operational by 2010.

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and thus not end up with politicians who are at best disappointed or at worst disenchanted. The post-attack assessment is challenging in a large and dynamic air campaign. This aspect broke down in Iraq in 2003 because the air command and control structure simply could not handle the data required: it became deluged. Re-attack of already destroyed targets and over-optimistic claims of success where none exists are rapidly explored by the media, to the detriment of air power's reputation.

Of particular note, there is a danger that we pay "lip-service" to Control of the Air. In the UK, our politicians have no experience of the need to fight for Control of the Air and the resulting implications for ground and maritime forces. Our last experience in the UK of fighting a Joint

Campaign without Control of the Air was the 1982 Falklands War. Over Iraq and Afghanistan Control of the Air across large areas of the battle space could be taken for granted. Politicians thus do not know how to calibrate their appetite for risk in circumstances other than these.

CONCLUSION

On the basis of our experience since 9/11, some might see our future requirement being driven by counter-insurgency with the prospect of real war-fighting as being remote. This view places a high premium on our ability to predict the future. In 1979 when Typhoon was on the drawing board as the European Combat Fighter (ECF), no-one really expected the UK to be fighting in the Falklands just three years later. Neither could we have predicted that NATO would

have been engaged in two air campaigns in the Balkans during the 1990s, nor that the UK would have been in combat in Iraq on two occasions in 1991 and 2003 nor that, in 2008, NATO would be engaged in a counter-insurgency campaign in Afghanistan. And we now look at Iran through a different prism. So, in a world where security of energy supplies starts to become the most serious strategic challenge, it is wrong to assume what we are currently facing in Afghanistan and Iraq represents the unchanging nature of future warfare. In this uncertain world, air power is a hugely important insurance policy but we all have a part to play in making it operationally, economically and politically relevant.

A full copy of Sir Brian's lecture is available on our website at: <http://www.airleague.co.uk>

MEMBERS' NEWS

Rory Cheyne (Victor Gauntlett - The Coachmakers Livery - Flying Scholarship 2007) having recently completed his scholarship at South Warwickshire Flying School, writes to thank the League and sponsor for their extremely generous sponsorship of his award, and for such a fantastic opportunity. He very much enjoyed the two-week course, which consisted of 12 hours on the Cessna 152 aircraft leading up to first solo, and also undertaking the CAA Air Law examination. He was accommodated with other League scholars for the duration of the course which meant he was able to discuss aspects of the course with others and also get to know other prospective pilots.

Simon Forster (The Air Cadets Scarman Flying Scholarship 2007) thanks the League for the ongoing support in his flying career. The award gave him the encouragement to realise his greatest ambition. He hopes to complete his Solo Cross-Country flight and PPL Skills Test by the end of May. He ends by saying that the Air League Educational Trust is an invaluable organisation, especially for young people who are unable to afford the luxury of flying whilst

others afford it with ease. Whenever he has the opportunity he tries to raise awareness of the League with young people.

Lewis King (Swire Charitable Trust Flying Scholarship 2007) wrote to say a very big thank you for the scholarship awarded to him last year. It was a very enjoyable experience as well as being an important first step in fulfilling his career aim of becoming a pilot. One of his most memorable moments was when he went solo. Despite being extremely nervous he managed to successfully complete a circuit and do one of his best landings. He is going to continue his flying and hopefully obtain an NPPL by the end of this summer. He is very grateful to his sponsor and the Air League for giving him this amazing opportunity.

Alex Strivens-Joyce (Swire Charitable Trust Flying Scholarship 2007) thanks the League and his sponsor for the award. Since receiving the scholarship he has also been awarded an aircrew bursary with the Royal Navy, which will sponsor him through his final year at university and guarantees him a

place at Dartmouth in September. He feels that the award of a scholarship played a major part in his successful selection by the Navy and helped him progress well achieving solo standard and completing his NPPL.

2008 Annual Reception

The President, Chairman and Council are delighted to announce that our Patron, His Royal Highness The Duke of Edinburgh, will be the guest of honour at our Annual Reception to be held at St James's Palace on Wednesday, 4 June 2008. This is the occasion when our major awards for the year are presented, and certificates and badges to scholarship and bursary winners in the presence of sponsors, family and friends.

Members are encouraged to come along to this excellent occasion in the splendour of St James's Palace. Please bring your friends and family along to enjoy our annual family occasion. The Palace sets a limit of 500 people attending but that should not deter members from applying. If you have not applied already then either call Lourdes Hernandez on 020-7222-8463 to book tickets or apply using the downloadable application forms from our website at <http://www.airleague.co.uk>.

This event has the generous support of Thales UK, AgustaWestland, Besso Limited and Boeing UK.

New Members

Corporate Members: R.E. Bath Travel Services and TwinJet Aircraft Sales (UK) Ltd.

Full Members: Mr D J Bennett, Mr D T Bray, Mr J E G Cooling, Mr E Cory, Mr L Forrer, Mr D Griffiths, Mr A Hoskins, Miss M Leslie-Smith, Mr P Mayo, Mr R O'Neil, Mr J R Pengelly, Mr P L Prele, Mr N Pybus, Mr A I Roumat, Mr A P Sweetmore, Mr P M L Thomason, Mr I Watt, Mr R Wheeler and Mr A Yousif.

Student Members: Mr D T Adaway, Mr N Ames, Mr G Anderson, Mr L Barratt, Mr S P Blake, Miss C Carroll, Mr A L Chalmers, Mr T J Checketts, Mr L D Cooper, Miss E Cory, Mr R A Goodman, Mr M Hogan, Miss G Ind, Mr J Miah, Miss A Offley, Mr R Peterkin, Miss E Potticary, Miss A Quinn, Mr R Shanks, Mr O Sleath, Mr P C W Street and Mr R Williamson.

Diary Reminders

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| 2 June 2008 | Associate Parliamentary Aerospace Group Meeting, House of Commons. |
| 4 June 2008 | Annual Reception at St James's Palace |
| 12 June 2008 | Annual General Meeting of The Air League - Millennium Suite, RAF Club at 4pm |
| 11-13 July 2008 | Royal International Air Tattoo, RAF Fairford. |
| 14-20 July 2008 | Farnborough International 2008. |
| 21-25 July 2008 | The Guild of Aviation Artists 38th Summer Exhibition, Mall Galleries. |
| 30 August 2008 | Young Members Flying/Gliding, Bicester |

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.



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