The Air League Newsletter

Issue 3: May/June 2015

KEY DECISIONS AWAITED

Two outstanding aviation and defence policy decisions await implementation this year by incoming political leaders and although both will have a long-term impact on the future of the United Kingdom for decades ahead, neither has featured in the General Election campaigning. The first decision will result from the completed final report of the Davies Commission on the future of runway capacity for London and the South East, and the second will concern the next Strategic Defence and Security Review, SDSR 2015.

The controversial issue of where London's next runway should be sited – Heathrow or Gatwick – will be addressed within the concluding Davies Report, which has examined future market demand and all the options and permutations for providing extra runway capacity, and which eliminated in the interim report all except the most obvious two locations - London's two major international gateways. Cancelling the previous decision to build a third main runway at Heathrow was one of the first executive actions of the new Coalition government in 2010, and the associated decision to launch a new Inquiry was seen by many primarily as a measure to postpone any definitive and potentially unpopular decision beyond the life of the then new government. Accepting that this course of inaction was popular with local voters in the areas likely to be most affected, it was a move that was widely condemned by the civil aviation community and particularly those tasked with providing acceptable standards of service at Heathrow, which was then the world's busiest international airport, but which has now lost this title to become No 2. However, while tens of £ millions have been spent re-investigating all the alternative new runway sites and competing groups have invested large sums proposing in much detail their own solutions, another half decade has passed by and air traffic growth in London and the South East has continued to grow unchecked by even a severe economic downturn, placing more pressure than ever on Heathrow and Gatwick. Civil aviation policy may have been totally ignored at national

level in the General Election, but it is now back on the agenda and it will be difficult for any further postponement to be justified. Drafting the SDSR 2015 has kept lights burning late into the night throughout MOD as Service Chiefs and senior civil servants battle to protect existing programmes while struggling to see where there is scope for further economies and ways of restoring some critical lost capabilities. With none of the major political parties willing to engage in discussion of, or a commitment to, a 2% of GDP defence policy, the future prospect of yet more cuts in the months ahead seems highly likely. With the UK defence budget one of the few policy areas not ring-fenced for funding protection, even though threats are on the rise and defence is supposed to be government's prime national responsibility, there remains much cause for concern, not the least of which is the long-term threat to Britain's ability to maintain a credible nuclear deterrent.

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Annual General Meeting

Following changes to the Articles of Association and our governance rules, management of the charity is now the responsibility of the Trustees and as such, no formal annual general meeting (AGM) of the type we have had in the past is necessary or appropriate. That said, the Trustees may call a general meeting at any time.

The Trustees are considering how best to replace the AGM with a suitable opportunity for Air League members to learn about the progress of the charity and to discuss matters which impact on aviation and aerospace in the UK. The Trustees would therefore welcome any feedback and suggestions from members as to the format of any such regular meeting. Send any such comments and views to the Director at the Air League office (contact details on Page 8).

JOINT FORCE HELICOPTERS ON SHOW

The last year has seen significant changes to the UK's operational helicopter fleets. While the intensive operations conducted in Afghanistan for over a decade have now drawn down to a very small support element, other demands have once again demonstrated that the UK forces still rely on helicopter capabilities across the world, from the UK to Brunei. Providing suitable helicopters has assumed a more important priority than ever and four new types have entered service in the last twelve months. March saw a demonstration at RAF Benson of these new and upgraded helicopters, with an opportunity to hear from senior officials and squadron aircrew how they were settling into service.

The RAF Chinook fleet will eventually be the biggest outside the US Army, with nearly 60 helicopters. The latest are 14 new-build Mk 6s. The first three entered service in January and joined older Chinooks at RAF Odiham, some of which have served since 1980. All previous deliveries have incorporated modifications and upgrades over the years and modern Thales-equipped cockpits are being retro-fitted to early aircraft.

ABOVE- The latest AW Wildcat helicopter has now entered service with both the Army and Royal Navy and is seen showing off its paces at RAF Benson. (Editor's photo)

The Puma fleet first entered service in the 1970s but recently 24 were subject to a major re-build, cockpit modernisation and re-engine programme bringing them to Mk2 standards to enhance their performance in hot and high conditions.

The RAF's fleet of Merlin Mk3s is in the process of being navalised to become Mk 4s for operation by the Royal Navy to replace the venerable Sea King Mk4s used by the commando squadrons and Royal

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ABOVE - After outstanding service in Afghanistan the Army's AH64 Apache Mk1 helicopters are due for replacement. (Editor's photo)

COMMENTARY *by Aeronautica*

FRENCH LESSONS

With aerospace and defence professionals preparing to assemble soon for this year's biggest air industry showcase at Le Bourget, it might be appropriate to reflect on how our nearest aerospace neighbour is managing its military air programmes and its defence forces in 2015. It seems an enigma to many that while France is in a much more serious financial situation than Britain, it still maintains Europe's most comprehensive aerospace industrial base, and its armed forces have suffered fewer and less drastic cuts than the UK yet are nevertheless equipped with advanced equipment, nearly all supplied from home-based sources. This has seen France retain a sizable domestic defence market from which to develop new products (independently as well as in cooperation with other nations) which can then be exported widely, avoiding the political ITAR restrictions that can be attached to selling equipment co-produced with US companies. In reality, while both France and the USA support competition in aerospace, the governments of both countries are still highly protectionist when it comes to defence procurement, in contrast to the UK MOD's preferred open competition policy of buying defence assets off-the-shelf. The argument that buying American speeds delivery and encourages operational cooperation is perfectly valid (as with UK Chinook and C-17 purchases) but this also leads to greater reliance on US-led programmes with little if any control over technical and production delays and cost rises, and if sovereignty is surrendered over key procurements, then future national options vanish along with design and industrial capabilities. As defence procurement numbers decline in the UK unit costs rise and it becomes increasingly difficult to afford home sourcing, but successive French governments have been fiercely committed to the need to "pump prime" the production of complete aircraft and all the key systems associated with them. Thus the importance of safeguarding the industrial supply chain and future exports is a major factor when deciding defence procurement in France. There is a downside to this of course – by going it alone, or demanding leadership on programmes deemed to be of strategic importance, development costs have to be absorbed head-on. But this is seen in Paris as a price worth paying to safeguard national sovereignty and industrial capability.

The decision to develop independently the all-French Rafale was heavily criticized by the Eurofighter partners and governments, but that decision has safeguarded advanced combat jet capabilities in France, and alongside this has come the development of a host of associated engine, systems and equipment that has provided more technological spin-offs into civil and other military applications than would have been possible had France instead become one of the partners in Eurofighter. Dassault Systemes, for example, has become the global industry standard supplier of advanced 3D computer design modeling and manufacturing tools, and Dassault Aviation has applied this technology, with advanced aerodynamics, fly-by-wire flight controls and cutting-edge cockpit situational awareness systems to its ever-expanding product line of Falcon business jets, which have now sold in their thousands. Without building Rafale it is doubtful if France could have retained its position as a major supplier of advanced aeroplanes, civil and military. While the UK waits in the hope that its next government will fund more than a token handful of F-35Bs which might be fully operational some time after 2020, the French Navy has in service its latest multi-role Rafale, the most advanced carrier-capable combat aircraft anywhere, even out-classing the US Navy's F-18E Super Hornet. The RAF's Typhoon fleet is at last set to be equipped with the new Captor E radar, but its fleet upgrade has lagged years behind its French rival and Eurofighter has lost out on at least two major export competitions in the meantime. The RAF is planning to retain an eventual fleet of only 128 Typhoon aircraft, yet the French intend to operate over 270 Rafales, in air force and naval

ABOVE - The Dassault Rafale and the Falcon business jet family are both sales champions for France's aerospace industry.

configurations, which will provide Europe's single most deployable combat force, a fact that has not gone unnoticed by the rest of NATO.

So how can the French government afford these Rafale numbers alongside modernized nuclear delivery systems, a new fleet of A330 tankers, a modernized MPA fleet and 50 A400Ms? They have a smaller defence budget than the UK yet operate more warships, military aircraft and have a bigger Army than us! This suggests the UK's defence management and support structure is now seriously top heavy in proportion to its greatly reduced front line, even allowing for the high level of outsourcing that has transferred many capabilities and direct support costs across to the private sector. There are two big myths that have been repeated endlessly by British

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POWERING EXP

At a time when global competition in the aerospace and defence sectors is at an all-time high, the continuing success of UK industry in achieving export growth is an indicator of just how essential these hi-tec, high value, sectors are in contributing to a thriving economy. Though the future of the UK defence market is a continuing cause for concern, UK based companies are making increasing inroads into the booming commercial air transport market as well as expanding exports of electronic systems, space solutions and missiles. This is a short review of some recent sales wins and product news highlighting the diversity of the UK's aerospace sector.

BIGGEST ROLLS-ROYCE ORDER EVER

Rolls-Royce has won its largest ever order, worth $9.2bn, to provide Trent 900 engines and TotalCare® service support to Emirates. The engines will power 50 Airbus A380 aircraft that will enter service from 2016.

The decision confirms the Trent 900 as the engine of choice on the four-engine A380 and has now secured more than 50 per cent market share on the aircraft, in addition to being selected by the majority of A380 customers. John Rishton, Rolls-Royce, Chief Executive Officer, said: "The success of Emirates over the last thirty years has been extraordinary; this is in no small part thanks to the exceptional leadership of Sir Tim Clark. Rolls-Royce has been proud to have been part of this success, powering Emirates aircraft since 1996. We are delighted that the airline has again placed its trust in our technology, with the biggest order in our history." Sir Tim Clark, Emirates Airline, President, said: "Rolls-Royce is a key partner for Emirates and we have been impressed with its commitment to continual improvements in the economic and operational performance of the Trent 900. These improvements have been decisive factors in our selection of the product for 50 of our A380s. Today's announcement is significant not only because it cements the partnership between Emirates and Rolls-Royce, but also because of the significant economic impact that this will have on aviation manufacturing in the UK and Europe."

The Trent 900 powered the first commercial A380 in 2007 and is now used by eight operators on more than 70 aircraft, having logged over 4 million in-service flight hours. The engine offers the lowest lifetime fuel burn, with the latest version including technology developed for the Trent XWB and Trent 1000 engines. The order announced today will result in an increase in the Group's order book of $6.1bn. Rolls-Royce has customers in more than 120 countries, comprising more than 380 airlines and leasing customers, 160 armed forces, 4,000 marine customers including 70 navies, and more than 5,000 power and nuclear customers.

Annual underlying revenue was £14.6 billion in 2014, around half of which came from the provision of aftermarket services. The firm and announced order book stood at £73.7 billion at the end of 2014. In 2014, Rolls-Royce invested £1.2 billion on research and development and also supports a global network of 31 University Technology Centres, which positions Rolls-Royce engineers at the forefront of scientific research. The company employs over 54,000 people in more than 50 countries and over 15,500 of these are engineers.

The Group has a strong commitment to apprentice and graduate recruitment and to further developing employee skills. In 2014 it employed 354 graduates and 357 apprentices through worldwide training programmes. Globally there are over 1,000 Rolls-Royce STEM ambassadors who are actively involved in education programmes and activities and the company has set itself a target to reach 6 million people through its STEM outreach activities by 2020.

SELEX ES SUPPLIES NEW RADAR FOR AUSTRALIAN SAR ROLE

Finmeccanica – Selex ES is to provide airborne search and rescue radar for Australia. The company's Seaspray 5000E AESA radar is rapidly becoming known for providing a best-in-class capability for the search and rescue role. Prime contractor Cobham Aviation Services in Australia will use the radar to deliver search and rescue services to the Australian Maritime Safety Authority (AMSA) and will equip Challenger CL-604 special mission jet aircraft which will provide an SAR capability from bases in Cairns, Melbourne and Perth, 24 hours a day, seven days a week.

The contract features the Seaspray 5000E Active Electronically Scanned Array (AESA) surveillance radar. It is ideally suited to search and rescue work and in addition to its high reliability, compact size and ease of use, its unique AESA technology-enabled 'small target detection' capability was a critical discriminator in its selection. This radar has already been delivered to another customer for search and rescue operations on the Bombardier Challenger aircraft and is in service with a third customer on the Sikorsky S-92 SAR helicopter. Its bigger sibling, the Seaspray 7500E, is in service on search and rescue duties with the US Coast Guard's fleet of C-130 long range maritime patrol aircraft.

Seaspray radars are developed and manufactured at Selex ES's Edinburgh plant in Scotland. Cobham was awarded the prime contract by AMSA to provide airborne SAR capability through open industry competition for 12 years from August 2016, when the current contract expires. The company will acquire, modify, commission and then operate and maintain four Challenger CL-604 special mission jet aircraft to provide SAR capability over land and at sea from the three bases. Australia has an internationally respected search and rescue (SAR) service and is responsible for covering one of the largest areas in the world – about one tenth of the earth's surface including some 53 million square miles of ocean. AMSA utilizes aircraft to perform SAR tasks such as searching for missing people, locating activated distress beacons, providing communications support at an incident and dropping survival equipment to people in distress.

THE AM REVOLUTION CONTINUES

GKN Aerospace has entered a strategic partnership with additive manufacturing specialist, Arcam AB, to develop and industrialise one of the most promising of the new 'additive' processes to meet the needs of the expanding

future aerospace market. The joint technology development (JTD) partnership is focused on developing electron beam melting (EBM), a process in which metal components are built up, layer-by-layer, using a metal powder that is melted by a powerful electron beam. EBM is able to produce very precise, complex, small to medium-sized components that require very little finishing. As part of this agreement, GKN Aerospace has ordered two ARCAM Q20 EBM machines to be installed at GKN Aerospace's Bristol, UK additive manufacturing (AM) centre. GKN Aerospace and ARCAM engineers will then work together to create the next generation of EBM equipment, able to manufacture complex titanium structures at the high volumes required to meet future demand.

BELOW - GKN Aerospace and ARCAM engineers will work with Arcam Q20 machines to create the next generation of EBM equipment, able to manufacture complex titanium structures at the high volumes required to meet future demand.

Russ Dunn, Senior Vice President Engineering & Technology, GKN Aerospace explains: "We have been working with ARCAM for some time exploring what we believe to be one of the most promising of the additive processes. Our aim has been to fully understand how EBM can be applied to our future aerostructures and aero engines portfolio. Through this new strategic partnership with ARCAM our combined additive manufacturing teams will now take the next steps towards fully industrialising this AM technology." He adds: "We believe the array of processes that fall under the 'additive' umbrella will revolutionise manufacturing across every industrial sector – particularly in aerospace where cost, weight and performance are critical. Drawing on GKN Powder Metallurgy's experience and our own extensive aerospace expertise we aim to develop a roadmap that will industrialise additive manufacturing for this sector."

Magnus René, CEO, ARCAM comments: "We are now very happy to announce this order and important partnership with GKN Aerospace. We are convinced that the close collaboration with GKN Aerospace will be key for further industrialization of our EBM technology in the aerospace industry" The agreement forms part of the GKN group's major AM research and development initiative. Within the GKN Aerospace business, five dedicated global AM development centres have been established in North America and Europe each clearly focused on progressing specific additive processes and technologies. Additive processes have huge potential for the future aerospace sector where there is a growing demand for more, and more efficient aircraft. In the coming years the industry will need to manufacture at greater speeds and with total consistency – producing components that are lighter and more cost-effective, and that generate less waste during manufacture and lower emissions in operation.

GKN Aerospace is to lead a 3 year, £3.1m, collaborative research programme to develop titanium powder specifically formulated and blended to meet the needs of AM of aerospace components. The programme, called TiPOW (Titanium Powder for net-shape component manufacture) will also commence work developing the techniques and equipment that will produce the powder consistently, in quantity and at a lower price than today's material.

The TiPOW programme is backed by the UK's Aerospace Technology Institute (ATI) and the country's innovation agency, Innovate UK. Consortium partners include UK companies Phoenix Scientific Industries Ltd and Metalysis and the University of Leeds. As programme leader, GKN's aerospace business will also draw on the expertise of the GKN Powder Metallurgy division a world-leading supplier of metal powders and precision engineered components.

Today additive manufacturing uses alloys and powders that have not been developed for these processes and so are not optimised for this environment. Together the partners will investigate developing titanium alloys and powders with the characteristics that are specifically suited to AM. They will then define the production methods that will produce AM-designed materials to ensure cost is minimised whilst production quality, quantity and consistency all meet the rigorous standards required by aerospace. The TiPOW programme will also explore effective re-use and recycling of titanium material, and a study of potential applications for the recycled material.

Russ Dunn explains: "To date research into AM has focused largely on evolving the processes we will require to enter full scale production but if these processes are to make a significant breakthrough, the quality, repeatability and cost of the material we use will be critical. Working with our industrial and academic partners in the TiPOW programme and leveraging expertise from across GKN, we will begin the process of addressing this issue." The TiPOW programme forms one element in a major AM research and development initiative across GKN, and will run alongside another GKN Aerospace-led, ATI supported, programme called 'Horizon (AM)'. This programme aims to take a number of promising AM techniques through to viable production processes.

Gary Elliott, CEO of the UK's Aerospace Technology Institute (ATI) adds: "The UK is already a world leader in aerospace technology and the Aerospace Technology Institute is delighted to be investing in this highly creative project. TIPOW will give us a better understanding and insight into improving airplane performance and will undoubtedly deliver more technological advances to the industry. This programme highlights the capabilities of the UK aerospace, promotes healthy competition and will lay the groundwork for even more innovation."

Russ Dunn concludes: "We believe AM has the potential to revolutionise the design and manufacture of aircraft, unlocking innovations in low drag, high-performance wing designs and lighter, even more efficient engine systems that will dramatically improve airframe performance and reduce noxious emissions and noise."

Joint Force Helicopters - continued from page 2

Marines. They are redeploying from RAF Benson to RNAS Yeovilton. Six Merlin Mk2s from a total of 30 being upgraded have now been delivered to RNAS Culdrose. These helicopters have had very extensive systems upgrades to prolong their effective lives well into the future. Some will later be equipped with new airborne early warning radars under the "Crows Nest" programme to replace the current Sea King Mk7s.

The new AW Wildcat helicopters are Lynx replacements destined for the Army (Mk1s) and

ABOVE - The latest Merlin Mk2s are in RN service as the RAF's Mk3s are handed over to the RN for modification into the MK4 by AgustaWestland at Yeovil. (Editor's photo)

ABOVE - The Puma Mk2 has just entered service after a major upgrade. (Editor's photo)

Royal Navy (Mk2s). First deliveries of the 34 for the Army took place last August and 12 of the 28 for the Royal Navy entered service in January. RNAS Yeovilton will become the joint headquarters for Army as well as RN Wildcat squadrons.

The future of the Army's Apache Mk1 attack helicopters is being discussed at present and it is intended to replace the existing fleet with 50 new generation Apache helicopters. A decision on whether to buy new US-made Apaches or upgraded Apaches from Westland is expected in 2016.

Aeronautica - continued from page 3

politicians in recent years. The first is to imply that because the UK has the fifth biggest defence budget it remains one of the most influential military powers. This was true until a few years ago, but with its critical mass decimated, the RAF no longer even rates in the air power top ten internationally, while the Royal Navy is now one of the smallest modern navies in the world and the Army is also at its smallest size since the pre-Napoleonic years! One reason why France is increasingly seen in American eyes as a more serious partner in countering global instability, even allowing for decades of "Special Relationship" with the UK, and apart from London's weak stance on foreign policy, is because defence is given a much higher political priority in Paris than in London. Continuous defence cutting over three decades has now come home to roost.

The second big myth is that outside the USA the UK has the biggest aerospace industry in the world. It is still a world class leader in advanced design and manufacturing but current revenue is highly dependent on three areas of successful activity-producing Airbus wings, Rolls-Royce large civil engines and exports of Typhoon to Saudi Arabia. The only nation in Europe that still retains a complete aerospace capability of its own producing combat aircraft, commercial and business aircraft, light aircraft, engines, avionics and electronic systems, missiles, helicopters and has a vast space sector is France. And then there is Airbus manufacturing, flight testing, fitting out and final assembly, plus the re-born ATR partnership on regional aircraft with Italy. While Rolls-Royce is enjoying a backlog of over 2,700 engine orders in the high value big-fan engine market, France's joint venture with GE, CFM, has become the world's largest civil jet engine manufacturer with a backlog of over 12,000 CFM-56 and LEAP engines on order dominating the single-aisle jetliner market, the largest in the aerospace sector.

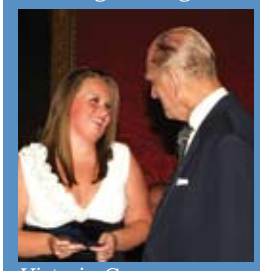
The only potential new aircraft programme being worked on in the UK is a future combat air vehicle that may, or may not, follow on from the Taranis and Neuron technology demonstrators. A similar less complex Anglo-French UAV initiative, Telemos, based on BAE's Mantis, died a quiet death despite much initial fanfare. Unfortunately the decision on whether to fund an all-new Anglo-French combat aircraft is so far into the future, it must be questionable if the UK will be able to retain the assembly facilities and skilled personnel unless significantly more Typhoon exports can be signed up soon. The determination of France to do whatever it takes to remain at the heart of new aircraft programmes underlines the importance of the UK looking towards a more ambitious future aerospace vision for itself if it is to remain in the big league over the long term.

ABOVE - Airbus's HQ and final assembly complex at Toulouse has quadrupled in size reflecting the huge level of industrial activity generated in the region by the completion and flight testing of thousands of Airbus aircraft including A320s, A330s, A350s and A380s.

The Air League LEADING EDGE *Victoria Cope writes*

I am honoured and delighted to have assumed the role of Chair of the Air League Leading Edge Panel during January 2015. For those who are less familiar with the Leading Edge, it encompasses all Air League members under the age of 35. As a group we are committed to raise the awareness of aviation and engineering in our young members and beyond, through a suite of industry visits, networking and flying events, helping to support the aspirations of next generation aviation and aerospace workforce.

I am highly passionate about the work of the Leading Edge and I personally have a great deal to thank the Air League for, having been the recipient of both flying and engineering scholarships and the Marshall Medal since I joined the Air League in 1999. These opportunities, in conjunction with the industry visits and experiences gave me the credibility and knowledge required to take my first steps on the aerospace career ladder. I am now a chartered aeronautical engineer, having worked for Airbus Helicopters and QinetiQ in the past and currently lead the Commercial Function for the Maritime Services business within BAE Systems. I hope to be able to utilise my experience to the benefit of the next generation of the Leading Edge.



Victoria Cope receiving the Marshall Medal in 2012.

The Leading Edge Panel held its first meeting of 2015 and set the vision and strategic objectives for the next 12-18 months. The four key focus areas are:

1. Enhance the profile of engineering
- Raise engineering scholarship awareness
- Engineer case study & profiles
- Leverage university links
- Establish engineering mentoring network

2. Extend Flying experiences to a wider community
- Link to Air, Combined and Naval Cadets
- Add 'Fly-in' Day to flying events

3. Increase interaction with a wider membership
- Q&A & Career Insight interviews
- Establish career mentoring network

4. Maintain an Annual Programme of events

The team and I welcome any support that you may be willing and able to offer to help us realise our objectives and we look forward to sharing a prosperous 2015!

Victoria Cope MEng CEng MRAeS PGCM
Chairman Leading Edge
Air League Advisory Council Member

Young Aviators Dinner *Dipeet Mehta writes*

I would like to thank Lucie Martin for organising a fantastic dinner evening, I really had a good time. The dinner was an eye opener for me; an opportunity to greet and meet aviators with wealth of experience. This gave me a strong boost to continue to work hard towards the lifelong ambition to fly. The dinner was also a perfect opportunity for networking which Air League works hard to ensure members make the most out of by connecting them to the right person. The best part of the evening was the speech from Kate, a very resilient and motivating Airline Pilot who shared her success reaching the 747 flight deck. The atmosphere, food and the location itself were all very amazing with fun evening of laughter and stories something I would definitely want to be part of again in future.

Orla O'Dea adds:

Thank you for such a brilliant evening and for introducing me to so many people. I travelled from Ireland to the Young Aviators Dinner. It was a fantastic night where I met many young people with similar aviation interest as myself. Meeting the special guests and hearing their background and stories was also a highlight. Looking forward to next year's dinner!

ABOVE - Lucie Martin welcoming the young members to the RAF Club and introducing the special guests.

ABOVE - The Leading Edge Panel ready to host the evening.

ABOVE - First Officer Kat Hodge giving an inspirational talk about her career and highlighting the importance of networking.

ABOVE - Leading Edge Vice-Chairman Joe Audcent giving the vote of thanks.

ABOVE - Francesca De Florio, Air League Trustee and Council Member

£10MILLION FUNDING STREAM TO SUPPORT GAME CHANGING AEROSPACE TECHNOLOGIES

TBAT Innovation, one of the UK's leading grant funding business consultancies is encouraging greater collaboration in the UK aerospace industry to help businesses secure grant funding for their R&D projects. The new £10Million finance stream from Innovate UK is to fund collaborative research and development and feasibility studies to accelerate the commercialisation of highly innovative technologies for civil aerospace.The competition opens on 29 June 2015 and closes on 16 September 2015. Proposals must be both business led and collaborative. R&D projects are expected to range in size from £250,000 to £1.5 million, and feasibility studies are expected to have total project costs of up to £100,000.

Simon Parke, Director at TBAT Innovation urged organistations from across the aerospace supply chain to get in touch and commented: "Grant funding applications especially when involving several parties can be complex, our team has a sound understanding of the aerospace industry and expertise in securing funding, so we are in an excellent position to help businesses process applications and ultimately secure the funding required to fast track their innovations." In the last twelve months alone TBAT Innovation has secured over £20m in grant funding for businesses, through schemes such as Clean Skies European Funding, Advanced Manufacturing Supply Chain Initiative and Innovate UK (TSB) Smart Grants. Recent successful applications include; securing over £500K for a leading aerospace manufacturing company for the development of weight reducing technology in engines, and £250K was allocated for a manufacturer of high performance coatings in a project to produce weight saving coatings for fuselage structures and engine components.

For further information contact **01509 670610** or visit **http://www.tbat.co.uk**

Members News

Daniel Goldman, Swire Charitable Trust 2014, I am writing to express my thanks for the 12 hour flying scholarship the Air League & the Swire Charitable Trust awarded me in the summer of 2014. Due to your guidance during the interview stage last spring, I made the decision to cancel my upcoming Air League aptitude tests in order to prepare in more depth for my Royal Navy tests (as you instructed me there was only 1 sitting allowed a year). This resulted in a very high score when I sat for Naval Pilot. I am very pleased to inform you, much thanks to your guidance and confidence the scholarship gave me, that in November I started my career in the Royal Navy as a pilot, my dream job.

Ben Barratt, Mark Philip Jones Memorial Flying Bursary 2014, Thank you for your letter and for awarding me the Mark Philip Jones Memorial Bursary last year. I am pleased to advise that my night rating is now fully complete and has been a very valuable experience as well as an important addition to my licence.

I have written to Mr & Mrs Jones thanking them for their sponsorship and advising them how I have progressed. I have also contacted two local newspapers to ask them if they would be interested in a short article regarding my experience, I am sure other students hoping to develop their aviation experience would be keen to hear about the opportunity for sponsorship, and I will let you know when I hear back from them.

Having completed my A Levels, I have been applying for various training schemes and am thrilled to have been accepted for the new Professional Aviation Pilot Practice cadet programme with Tayside Aviation, which leads to completion of my ATPL alongside a BSc Degree with Honours. There is no doubt that attaining my PPL and the Night Rating were key to being selected for the course and I am very grateful for the fantastic opportunity which you have helped to provide.

New Members

Charlotte Acton, Shakib Ahmadzai, Arslan Ahmed, Mohamed Ahmed, Majd Alwaa, William Au-Yeung, Daniel Beeden, Steven Bennett, Gracheleen Bermas, Abhishek Biswas, Julija Celinska, Michael Chappell, Richard Chusney, Damian Devlin, Alasdair Duncan, Marianne Horden, Christine Houston, Grace Htaike, Harvey Jarman, Robert King, Ahmed Luaibi, John McAloon, Ryan Makotore, Richard Malinowski, Diogo Marujo-Pinheiro, John Michaelson, James Millar, Russell Mounce, Miriam Mulamba, Christopher Pocock, Scott Queen, Mohamed Raies, Dominic Registe, Rebecca Riddleston, Ben Riley, Capri Rodrigues, Alexander Rogers, Samuel Sheppard, Joze Smigoc, Dominika Socha, Pritesh Solanki, Mohini Thakral, Sam Tomline, Callum Tranter, Sophie Tuck, Muhammad Usman, Gary Welsh, Daniel West, Joanna Wolman.

Diary Reminders

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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