## Specialist Group Annual Reports 2014

Reports of 2014 activities from Specialist Groups

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Aerodynamics

In 2014 the Aerodynamics Group has had a busy year.

The Group’s meeting in April was followed by an evening lecture on the subject of train aerodynamics. This lecture was given by Professor Chris Baker, Professor of Environmental Fluid Mechanics at the University of Birmingham. This lecture provided a good overview and appreciation of the challenges of train design from the shape of the front of the train to the design of the pantograph on the roof of the carriages.

In July the Aerodynamics Group held a three day biennial conference in Bristol. The day before the conference the committee met and elected a new Chairman – Rod Irvine. Thanks go to Trevor Birch as the outgoing Chairman for all his efforts over the last few years. The conference was very successful in having a record number of delegates for a RAeS Aerodynamics Group conference. Subjects covered were diverse with both plenary sessions and three streams of presentations filling the three days.

During the Aerodynamics Conference the Aerodynamics Group’s annual named lecture was given. In 2014 the Lanchester Lecture was given by Chris Lee, from BAE Systems Military Air and Information. Chris is the Chief Aerodynamicist on the Taranis project and gave a lecture entitled “Taranis and Beyond: Inspiring Aerodynamic Capability” to a full lecture hall. This lecture reflected on the ability of UK industry to bring an aircraft into production and how these capabilities can be used in the future. Chris used the recent Taranis development programme and test flights as a background to this and as evidence of the UK’s continued capacity for the entire design, manufacture and flight testing of world-leading combat aircraft.

The final Aerodynamics Group meeting of the 2014 was held at the end of September. This was Rodney Irvine’s first meeting as chairman of the committee. A number of new members were elected onto the committee and a few individuals were also co-opted onto the committee. The committee now has full membership as limited by its terms of reference. This puts the Aerodynamics Group in a good position to meet the challenges of 2015.

Rod Irvine MRAeS
Chairman
The Aerospace Medicine Group maintained its outputs in 2014, sponsoring events that are of particular interest to aerospace medicine practitioners. This year’s programme consisted of:

a. **Stewart Memorial Lecture.** This year’s Stewart Memorial Lecture was given by Dr John Roberts, Chief Medical Officer at National Air Traffic Control Occupational Health and Aero-medical Centre. Dr Roberts gave a short history of the development of air traffic control services in the UK, from the earliest flare and lamp systems up to the latest technologies employed in the centre at Swanwick. He then examined the innate skills and training required to hone the competencies of a successful air traffic controller; relatively few minds can assimilate such a complex and dynamic 3-D picture on a 2-D screen. Taking a forward look Dr Roberts described how an ever busier airspace will see increased reliance on technology to avoid human error - bringing with it a need for a revised competency profile for future controllers and simulator and other training to prepare personnel to be able to respond to new high-workload, high-stress situations.

b. **Aviation Medicine Symposium.** This year’s Aerospace Medicine Group Spring Conference took the form of a ‘Grand Round’, taking the opportunity to use case presentations on various clinical conditions both to update on the latest thinking and to provoke debate on fitness to fly. The first session considered clinical factors in aeromedical evacuation, management of eosinophilic pneumonia in aircrew and renal stone disease. This was followed with a comprehensive review of the current thinking with regard to Inflammatory Bowel Disease and aircrew, a series of cardiological cases and a review of the risks and treatment options available for aircrew with patent foramen ovale. In the afternoon session Wg Cdr Timperley presented an overview of the RAF Clinical Aviation Medicine Service. This was followed by a presentation of two contrasting cases of fit young people with air trapped in the meditational cavity and who required aeromedical evacuation. This was followed by a fascinating decision making dilemma with regard to an applicant for cabin crew training who had multiple clinical conditions. The final session covered the latest risks and benefits of anticoagulation and venous thrombo-embolic disease, a resume of the latest opinions with respect to Parkinson’s disease in aircrew, m sought to look at various measures to enhance performance in aviation including:

c. **Summer Visit.** In June the group was hosted on a visit to Kent Surrey and Sussex Air Ambulance. As well as hearing a presentation on the service and view their helicopter on standby, the visitors met the team and spoke to the doctor returning from a call out.

d. **Autumn Lecture.** The Autumn Lecture was held on 27 Oct, at which Dr Volker Damann, Head of Space Medicine at the European Space Agency spoke on healthcare of astronaut’s in space and on earth.

Air Cdre R J M Broadbridge FRAeS
Chairman
Aircraft Maintenance Engineers
Not received at time of report submission.
The Air Law Group (ALG) commenced the years’ activities in January with a half day seminar entitled ‘The Tokyo Convention 1963 Revisited: Responding to the problem of unruly passengers’. The seminar was very well attended and attracted experts from across the field.

On 2nd July 2014, the ALG held a lecture given by Professor Christopher Hodges, of University of Oxford, under the title ‘New EU frameworks for consumer complaints: time for an air ombudsman?’. In a thought provoking talk, the professor explained developments at EU level concerning the provision of alternative dispute resolution in relation to consumer claims and the approaches being taken in various member States on this topic. He then outlined the options available to carriers and the strategies needed to address them.

The lecture was followed immediately by the Group’s annual Summer Reception, which was held in good weather on the terrace at 4 Hamilton Place.

Both events were attended by well over 100 people.

On 19th November 2014, the ALG held its named lecture, the Beaumont Lecture. This was the 12th such lecture and on this occasion the invited speaker was the Hon. Sir Charles Haddon-Cave, a currently serving Judge of the High Court. He providing an engaging and wide ranging presentation entitled ‘Leadership & Culture, Principles & Professionalism, Simplicity & Safety – Lessons from the Nimrod Review’ to a lecture hall filled to capacity.

The lecture was then followed by a drinks reception kindly sponsored by Clyde & Co. LLP.

Earlier in the year, in on 4th June, the Air Law Group’s Middle East Sub-Committee held its inaugural meeting kindly hosted by Holman Fenwick Willan at The Palace Hotel, Downtown, Dubai. This included a presentation by David Bickerton, Director, Middle East for Airclaims, about the future of flight safety, followed by a drinks reception. It was attended by 31 persons – a very commendable attendance.

Robert Lawson QC, FRAeS
Chairman
Air Power

Events

Air Commodore (ret’d) David Best gave a lecture at Hamilton Place in May 2014 on “A Short Tour in the Hindu Kush”. He outlined the incredible breadth of roles which air power has played in the Afghan campaign – and the challenges he faced whilst serving as NATO’s Air Operations Director. In particular, he described his unique experiences gained whilst travelling the country as leader of incident assessment teams.

The Cranwell Branch hosted the annual Trenchard Lecture in December 2014 on the next Strategic Defence and Security Review. This major event took the form of a debate, with the panel comprising: Paul Stoddart, Debate Chairman; Sir Brian Burridge, Vice President Strategic Marketing, Finmeccanica UK Ltd; Dr Peter Gray, Senior Research Fellow in Air Power Studies, Centre for War Studies, University of Birmingham; Lewis Page, Editor The Register

Technical papers

The major piece of written work in 2014 was a discussion paper on “Current and Future Maritime Air Power for the UK”, which was published in July on the Society’s website. This covered every aspect of maritime air power, including carrier strike and the gap in maritime reconnaissance.

Articles for publications

The Group published four articles in Aerospace; the subjects were: the withdrawal from Afghanistan; the uncertain future for Syria’s air force; role sharing; European defence cooperation. Role sharing stimulated some debate with members outside the Air Power Group.

Membership

The membership remains stable, but we are now seeking volunteers willing to join the Committee in its work.

Other services to members/industry

Dr Peter Gray, the Air Power Fellow sponsored by the Society, Industry and the RAF, has had a very successful year. The position is well on course to be self-sustaining (without the need for further sponsorship) in the originally envisaged 10 year time frame (2018). Post graduate numbers continue to grow and the body of academic knowledge increases by the year; the aim of the post is therefore being fully met. As well as his normal University duties, Dr Gray and colleagues ran a Massive Open Online Course (MOOC) on “World War 1 – Aviation Comes of Age” in conjunction with the BBC.

Air Marshal Iain W McNicoll CB CBE FRAeS
Chairman
Air Transport

During this period we delivered 3 events:

1. Civil Aircraft Technology Enabled Services – an industry co-operation day (26 Nov 2013)

   This conference followed a successful ATG conference in November 2011, which addressed the rapidly evolving field of civil airline services and the Integrated Vehicle Health Management (IVHM) technologies behind them (such as sensors and algorithms).

   Building on the outcome the November 2011 conference - this conference aimed to deliver tangible outcomes in a number of key areas, to facilitate more rapid development of Civil Airline Services across the industry. To achieve this outcomes this event aimed to maximize engagement and input from the delegates using provocative presentations, panel discussions and workshops, providing delegates with a unique opportunity to shape the way forward in this rapidly evolving field, allowing them to become part of a community that realizes the aspirations identified by this conference.

   We had an attendance of just under 60 which proved an ideal number to test out the more interactive format used for this conference. This format worked well in creating a high level of engagement and interaction leading to the sharing of many ideas and knowledge, evidenced by the outputs and actions generated by the workshops. As with the first conference we succeeded in having a broad industry involvement (Boeing, EADS, FAA, CAA, QinetiQ, Rolls-Royce, RHA, Gulfstream, TRL) we also made good use of social networking (Twitter and LinkedIn) and very successfully used Skype for a speaker from the FAA in Washington who was later able to join the panel discussion live.

2. Tony Lucking Debate (17th March 2014) - Airport Capacity - Which Way Forward for UK Plc

   We achieved a good attendance of around 100 with Tony’s family represented by Andrew Colthurst. Speakers were:
   - Kyran Hanks, Strategy & Regulation Director, Gatwick Airport Ltd
   - Nigel Milton, Director of Policy & Political Relations, Heathrow Airport Ltd
   - Capt William "Jock" Lowe, Director, Runway Innovations, Heathrow Hub
   - Huw Thomas, Partner, Foster & Partners for Thames Hub Airport
   The debate started with a vote (show of hands) as to which option the audience supports. At the end of debate a similar vote was taken. Gatwick option had lost support, Heathrow options had minimal change, Thames Estuary option had gained support and was now the most popular!

3. Civil Aircraft Technology Enabled Services – a first step towards achieving maintenance credits (24 Oct 2014) - Workshop

   Following the Nov 2013 conference this was 3rd event on Civil Aircraft Technology Enabled Services sought to further build on the outcome of the last conference. This event was run as a workshop in partnership with SAE International - a key industry body that will be involved in realising some of the aspirations and objectives in this area including the achievement of maintenance credits. We had a good industry representation including: EASA, FAA, Etihad, KLM, Lufthansa Technik, Boeing, Airbus, BAE Systems, Meggitt, QinetiQ, Humaware, Rolls-Royce, AgustaWestland with 35 attendees. Sponsorship of £2000 was provided by Boeing and Meggitt.
The workshop was chaired by Richard Greaves (president elect of SAE) who has proposed a follow up event to take place end of April 2015 linked to an SAE Meeting at Cranfield. Output/Actions from workshops have been circulated to attendees and further meetings are taking place to follow up these actions.

This event was held on a Friday afternoon, and while we had good turn out for an interactive workshop format we received a number of request not to hold future events on a Friday in future.

**Responses to Government consultations**

The ATG (represented by Peter Forbes) provided responses via Keith Haywood to the following Government consultations:

- Transport Select Committee Inquiry on Smaller Airports
  We are currently responding to the request for input into the Davis Commission public consultation.

**Membership**

We have completed a review of our membership with the aim of increasing member participation in our meetings, events and consultations.

Jim Angus  
Chairman
Airworthiness & Maintenance

The Specialist Group Committee has met 4 times in the period since the last report, including a visit to the new Monarch Aircraft Engineering Maintenance hangar at Birmingham airport. The committee produced a report on the visit that was published in AEROSPACE magazine (March 2014).

Committee numbers continue to grow and there are now 22 people who are committed to help, with further interest being shown. The annual review of Terms of Reference concluded that more representation was needed from the design airworthiness angle. The committee has sought volunteers through its newly-established LinkedIn social media group; this new communications channel has provided a number of useful contributions from the community and there are already over 200 members.

The SG committee continues to encourage the younger members of the aerospace community and once again wrote to associated companies that provided accredited training schemes to offer support for any nominations for Society Young Persons awards.

No technical papers have been produced; however, the committee did submit a visit report as an article for Aerospace Magazine. The chairman gave a presentation on the work of the Airworthiness and Maintenance Specialist Group to the Cardiff Branch of the Society in November. There has been no interaction with international/external partners. A planned visit to the National Composites Centre in Bristol was postponed because a mutually convenient date could not be found. This visit will now take place in the early 2015.

In October 2014 the committee arranged a workshop at Society HQ to discuss the impact of subcontracting aircraft services on airworthiness accountability. The workshop was well-attended and discussion has continued on LinkedIn.

In 2015 the strategy will be for the committee to continue with its successful engagement with the wider RAeS A&M specialist community in order to elicit feedback about what the committee can do for them moving forward.

Anthony Harris MRAeS
Chairman
Avionics & System
Not received at time of report submission.
Flight Operations

As 2014 comes to a close, it has been a busy and productive year.

Sadly, the beginning of the year saw the loss of 2 of our founder members. Captain Ralph Kohn in January and Captain Dick Hadlow in February. Both of these colleagues were an integral part of the FOG, had been at different times Chairman, had been party to the production of numerous specialist documents and will be very sadly missed. Their obituaries are attached in Appendix 1.

There have been a number of events starting with the FOG Conference entitled - The Commander in the 21st Century – which was the 3rd in a run of 3 following this theme and focused on the subject of “Decision-making, are we on the right path?” It took place at RAeS HQ on the 25/26 March 2014 March and was well attended, with a very good cross section of delegates and an excellent array of Speakers.

I would like to thank Emma, Richard and the Conference team for their support in organising this conference and their continued support throughout 2014.

The recipient of the FOG Silver Medal 2014 was Nick Butcher for his outstanding work on the SAFITA specialist document. It was presented to him on the evening of the Brabazon Lecture on the 5th November.

The Group Dinner was held at the RAF club on the evening of 27th March. I am very grateful to Captain Dick Hadlow for once again organising this event. Sadly Dick died in February, but he was very much there in spirit. Captain Hugh Dibley very kindly stepped in with the last minute organisation of the evening, and has agreed to take over Dick’s organisation of the event.

The Conference planning for 2015 is well under way and will consider – “The Flight Operations Manager of the 21st Century” - the emphasis will be on “How should the transition from cockpit to office be made?”

The Conference is scheduled to take place on the 17/18th March 2015.

The Group received approval from the LSB for the publication of the 2nd part of the SAFITA document entitled ‘Training’, in February and was published in time for presentation at the annual conference in March. The document was further presented to ECAST and to a dedicated group from EASA on different dates in March, and to WATS in April. There has been continued positive support from EASA and ECAST for SAFITA ‘Reference’ and ‘Training’. Part 1 Reference, is now # 6 on the agenda of EASA’s Safety plan for the next 4 years.

After peer review by: Dr B. Burian, NASA Ames Research Centre, Air Cdre. D. Whittingham, CEO UK Flight Safety Committee and Mr. J. Turner, Director of Aviation Affairs, The Honourable Company of Air Pilots, the LSB has approved the updates of SAFITA Reference and Training which will be published in December. The European Aviation Safety Agency have specifically requested the Flight Operations Group to provide a SAFITA briefing at the next European Commercial Aviation Safety Team meeting on 9 December 2014.

This is a great opportunity to promote the paper and the work of the Society.
The FOG is active in LinkedIn and uses this media to open discussions relevant to the purpose of the Group.

The FOG has five meetings each year and has had presentations from:

- UKCAA on the subject of UAV operations and approval requirements in the UK
- Flight Deck Automation by Dr Kathy Abbott of the FAA
- Captain John Cox gave an informative and professional presentation on Lithium batteries
- Captain Chris Roberts gave an informative presentation on LOC I training
- The FOG were guests of the UKAAIB at Farnborough by David Miller - Deputy Chief Inspector of Accidents, and were given an organized tour of the Hangar

The FOG also sponsored evening lecture at the Society:

- Captain Richard de Crespigny - Commander of the QF-32

Additional the FOG supported a Conference on the 3-5 November concerning Research Aircraft Operations.

Capt Pete Terry FRAeS
Chairman
Flight Simulation

A year, in brief

The Flight Simulation Group continues to be one of the most active specialist groups within the Society, which expects much from us both independently, and as supporters of other specialist groups and RAeS led initiatives. This year we have delivered, to expectation, two conferences both attracting over 100 delegates, and two prestigious lectures, all conducted competently and very professionally.

The structure of the FSG Committee with portfolios led by individual Committee members continues to serve us well, the majority of the Committee leading or supplementing a specific office. There were some ‘natural’ changes at our mid-year AGM as individuals moved on for various reasons and we wish those leaving us well for the future. In particular I would like us to thank Peter Tharp for many years of active contribution and dedication.

The future, in brief

In line with Society direction we are making active attempts to attract, new and younger blood with a view to our and their development; in a world of fast moving technologies, not just for our subject of flight simulation, but in the way we work and live, we need to learn new methods to remain relevant. To this end we have attracted two ‘Young Members’ and expect to continue this trend. However we need to remain balanced in our membership profile, since the demands of putting together our events have stretched our resource on occasion; a time when our retired members have brought both their experience and dedication to bear to ensure we meet schedules.

The continued support of key financial supporters has enabled us to fulfil our programme of conferences and lectures and continued support will be essential for future activities. Companies are finding their contributions more onerous at present and we will be reviewing our potential expenditures and likely incomes in some detail over the coming year with a view to raising funds in line with the activities we plan to deliver and offering contributors clarity regarding the ‘value’ we deliver in return.

We intend that the FSG remains a very active Specialist Group within the Society, and our activities in support of international bodies, such as ICAO, IATA, ARINC FSEMC and the national regulatory authorities will continue. We will be addressing how we best engage and offer an effective contribution wherever flight simulation technology and flight training device standards have impact.

The Committee

The Committee has again worked through the year with its full complement of 18 voting members plus six co-opted members and several other special portfolio holders and observers. In addition there are three founder members emeritus.

We are in the process of reviewing the FSG Strategic Plan, with the aim of facilitating greater engagement with those involved in the field of flight simulation. We will continue to keep the Committee Terms of Reference and Constitution under review and recognise the importance of both Aircrew and Maintainer Training in the FSG remit.
I offer my thanks for the outstanding contributions made by Tanja Schliebs, Gordon Woolley and Mike Southworth as FSG Secretary and FSG Business Managers respectively, without whom the FSG could not be run as efficiently as it is.

Conferences and Lectures

FSG Spring 2014 Conference

“The Keeping Simulators Current and Capable”, Chairman, Jim Takats, TRU Simulation + Training

The conference attracted 109 delegates over 2 days with 25 technical presentations and associated written papers, providing a comprehensive update of the current status of the industry and research in flight simulation. The aim of the conference was to discuss the challenges associated with keeping flight simulators current and capable from both a concurrency and technological aspect, with application to military and civil flight simulators across the fixed wing and rotary wing communities and included full flight simulators as well as lower level devices.

Our congratulations go to the Conference team for a very successful event and the prompt follow up and the quality of conference download facility.

FSG Autumn 2014 Conference

“The Future of Flight Training Devices”, Chairman, Tari Kaye, TRU Simulation + Training

The conference attracted over 100 delegates and successfully examined recent advances made in the design and use of Part Task Trainers (PTT) and Flight Training Devices (FTD), identifying areas of simulation design and data provisioning that require future enhancement, in order for further training capabilities and fidelity to be realised.

Significant progress has been made in the development of fixed and rotary wing part task flight training devices and their cost effective contribution to the training of flight crews is being recognised. International qualification standards have been developed in the civil arena defining required levels of simulation fidelity as a function of training tasks.

Notwithstanding these impressive recent advancements, there remain a number of significant and unique challenges that need to be addressed in order to further enhance the training value and promote wider use of these devices in the training of pilots in civil, military and in particular, the general aviation community.

9th Annual RAeS International Flight Crew Training Conference

“International Pilot Training Consortium: Next Steps?”

The 9th Annual Royal Aeronautical Society International Flight Crew Training Conference was held at the Society’s Headquarters in London on 23-25 September 2014. The annual conference is a premier event in the Society’s calendar and its international reputation was maintained by the presence of delegates from 20 different nations. The 2014 Conference focused on the work undertaken by the International Pilot Training Consortium (IPTC). Some 100 subject matter experts, from around the world, are working in partnership through IPTC on pilot training issues confronting the international air transport sector with the aim of improving safety, quality and efficiency, most notably through improving the harmonisation of standards and processes. The Conference sought to help determine
IPTC’s future agenda in light of its initial deliverables and how such work might best be conducted.

The Conference opened with keynote addresses from the five IPTC partners: Capt. Kevin Hiatt, Senior Vice-President Safety & Flight Operations, International Air Transport Association (IATA); Nancy Graham, Director, Air Navigation Bureau, International Civil Aviation Organisation (ICAO); Jan Pie, Chairman, International Coordinating Council of Aerospace Industries’ Associations (ICCAIA); Capt. Donald Wykoff, President, International Federation of Air Line Pilots’ Associations (IFALPA); and Air Cdre Bill Tyack, President, Royal Aeronautical Society. These five keynote addresses provided valuable insights into IPTC.

Delegates were reminded that a number of recent initiatives have sought to address concerns about safety, quality and efficiency in the airline pilot training sector. Safety remains a top priority for the five IPTC partner organisations and considerable effort continues to be invested into reducing further the very low accident rate in fixed-wing commercial aviation. However, quality and efficiency are not yet truly international; standards, recommended practices and qualifications are not adopted worldwide and this has resulted in considerable expenditure through repetitive qualification, most of which is unnecessary.

The IPTC partnership of IATA, ICAO, IFALPA and the RAeS was formed in September 2011 as an outcome of the RAeS International Flight Crew Training Conference held that year. The concept of Associate Members was also proposed at the same time by the FAA Administrator with a view to putting in place a mechanism for the Civil Aviation Authorities (CAAs) and other key safety bodies to participate in IPTC in a way that did not prejudice their national sovereignty nor tie them to outcomes with which they were uncomfortable.

During 2012, a considerable amount of work was undertaken to coalesce the four organisations into a partnership of equals. A unique IPTC identity was developed that took into account strategy; policy; a business model, including finance and communications; a management structure, with a senior partners’ committee, a steering committee and a number of work streams; business processes and practices; an ethos that embraced diversity, inclusiveness and consensus; a culture of openness and transparency; and terms of reference. These factors were embraced in a Letter of Understanding that was signed by the four Principals in September 2012.

Ray Jones Lecture

The 2014 Captain Ray Jones lecture titled “Do Modern Flight Training Devices Address Human Error?” was given by Capt Simon Wood, Senior Standards Captain, Pilot Development from Virgin Atlantic Airways Ltd, on the 23rd September 2014.

Simon presented the challenge; can the flight simulation industry provide a means of ‘engineering’ human error to allow pilots the opportunity to recognise, and recover from human system malfunctions?

This lecture honours Capt Ray Jones, one of the Flight Simulation Groups founding members and celebrates his contribution to the development of the group, the advancement in the art and science of flight simulation and in particular application in the training of civil airline pilots. This was an excellent Ray Jones Memorial Lecture and well complemented the IFCT conference itself.

8th Edwin A. Link Lecture
The Edwin A. Link Lecture was established in 2007 to honour Edwin A. Link, the distinguished pioneer of synthetic training. The 2014 Edwin A. Link Lecture was delivered on the 4th June by Capt Randy Neville, 787 Chief Test Pilot, Boeing and is titled “Simulation – Before, During, and After Flight Test” and focussed on the use of simulation in the development of the B-787 Dreamliner.

2015 FSG Conferences and Lectures

The 2015 Conference and Lecture programme planning is now well underway:

FSG Spring 2015 Conference

“Challenges in Flight Simulation: Addressing Today’s Challenges and Preparing for the Future”, Chairman, Chris Hunter

The Conference aims to identify, discuss, and agree follow-up action on a number of selected challenges – those aspects of flight simulation which continue to be problematic or inadequate, and those which are emerging as a result of changes in the aviation sectors served by flight simulation.

The Call for Papers opened in November 2014.

International Working Groups (IWG)

The Royal Aeronautical Society (RAeS) FSG has been actively leading international working groups for many years with the most recent effort related to simulator standards running since early 2006, and today we are continuing to support working group activity, specifically through the ‘Training Device Workstream’ of the International Pilot Training Consortium (IPTC) whose partners are ICAO/IATA/IFALPA and the RAeS. In addition, Gordon Woolley is the chairman of the IPTC Training Practices Helicopter Task-Specific Training WG, drafting a training manual for ICAO. These initiatives have the support of the Learned Society Board (LSB) and the Council of the RAeS. We will monitor the direction of the IPTC as it progresses and consider where best to provide our inputs.

Website and Networking

The FSG Website is again subject to revision and update, and continues as the prime medium for exchange and dissemination of documentation, leading to more efficient Committee meetings and providing a continuous method of information for the whole FSG. In addition the FSG intends to continue to move into the Social Networking media space via our LinkedIn Group, which has attracted over 540 members to date.

Universities Seminar

The FSG continues its work to foster flight simulation in UK universities, by holding an annual seminar with relevant universities. The aim of the seminar is to exchange information, about the work of the FSG and about simulation activities in universities.

The seminar this year was held at the University of Liverpool, School of Engineering on Tuesday 15 April 2014. Our host was Dr Mark White from the flight simulation team in the School of Engineering. Refreshments and lunch were provided by the Association of Aerospace Universities (AAU). There were 27 people present, from 11 universities (Coventry, Glasgow, Hertfordshire, Kingston, Leeds, Liverpool, Manchester, Salford, Sheffield, Sheffield Hallam and UWE). Liverpool, was particularly well represented, with 2 staff plus 8 students. FSG was represented by David Allerton, Chris Hunter, Mike
Southworth, Mark White and Barry Tomlinson.

The University of the West of England offered to host the 2015 Seminar, out of term time, in April next year.

Medals and Awards

The Flight Simulation Group Award (accompanied by a silver medal) continues to be recognised as one of the prestigious Society’s Specialist Group Awards and we are active in seeking meritorious candidates. The Flight Simulation Medal is awarded for notable achievement in the field of flight simulation. As with all the Society’s medals, it is awarded in recognition of an individual (not a company) whose work has led to advances in specific sectors of aerospace - in this case of course the area of flight simulation, civil, military, fixed wing or rotary wing as appropriate. In 2014, there were no nominations that met the required standard, and consequently no award was made this year.

However, we were delighted that this year, the “International Committee for Aviation Training in Extended Envelopes (ICATEE)” led by Dr Sunjoo Advani, received the Society’s Specialist Team Bronze Award. In the light of air accidents resulting from situations rarely encountered in civil airline operations, ICATEE was formed to bring together operators, regulators, manufacturers and researchers to look into ways to reduce accidents by better understanding the problems and improving upset training for airline flight crews. Some twenty years ago, a similar initiative addressed the problems of wind shear so that now pilots train for such events in the simulator and wind shear events are not the threat they once used to be. Not only has ICATEE been successful in meeting its objectives, it has managed to overcome concerns over industrial competition and IPR to encourage disparate groups to work together on a common problem. Their success is particularly attributable to Sunjoo Advani’s leadership and determination to pursue their objective despite some resistance to implement their recommendations.

One further issue highlighted by ICATEE is the contribution that flight simulation can make, and has made, to aviation safety. It highlights a new trend, away from the R&D of simulation technology towards the effectiveness of simulator technology in flight training. Flight simulation should be a science where it can be used to improve aviation safety and in the future much more emphasis needs to be given to understanding flight training rather than the mature technologies which underpin flight simulation. ICATEE is arguably the first venture in this area and their recognition by the Society and their peers is fully deserved.

Lectures by FSG Members

FSG Committee Members continue to provide specialist lectures on Flight Simulation, both from a historical perspective and the current and future capabilities, and how they contribute to engineering development and aircrew training. During 2014 the FSG delivered a number of Branch Lectures, thanks to Hugh Dibley, Gordon Woolley, Ian Strachan and David Allerton. Hugh continues to liaise with the Branches, co-ordinating our FSG support to their Lecture Programmes.
Merlin Competition Report 2014

Merlin’s IT FLIES competition in the USA was again held at the University of Dayton Ohio. Manchester sent a team, and Coventry a single entry. The Manchester team tied for first place with an entry from Dayton. This year’s UK competition was held on June 10 for the first time at Swansea University, which proved an excellent venue. There were eight entries, of a range of different designs. All were of high quality, inspiring a confidence that our country is still producing capable engineers for the future. The winning team was Manchester University, second were Swansea University’s Ghostrider UAV team and third was Yuwei Luo from the University of Hertfordshire. Best Technical Information Prize went to Kyle Koester from The University of Dayton for his STOL agricultural aircraft and the prize for the Best New Aircraft Design was won by Swansea University. The flying judges were Dave Southwood and Gordon McClymont from The Empire Test Pilot School.

IT FLIES USA will next be held at The University of Dayton, Ohio in April 2015. The UK competition is again expected to be held at Swansea in June 2015.

Media

The FSG continues to achieve broad coverage of our activities in the RAeS publications and those of the aviation press, and our thanks once again go to Ian Strachan for his major contribution.

Newsletter

Our thanks again to David Allerton the production of bi-annual FSG Newsletters.

FSG Technical Visits

Although no site visit took place this year, a visit to the A400M and Tanker Training Facilities is planned for February 2015, thanks to Thales.

Steve Adlem MRAeS
Chairman
Flight Test

The Flight Test Group continues to engage with the military airworthiness authority to support industry’s understanding of on-going regulatory changes. The representation from the MAA continues to be very supportive; however with recent restructuring in CAA/EASA we have unfortunately lost civil regulator representation.

The group membership has now stabilised, and includes far more representatives from a number of smaller flight test organisations. This permits an improved flow of information, and creates a greater knowledge base. The young member’s initiative has been very successful in helping expose up-and-coming flight test personnel to what is an ever decreasing area of industry.

In the last 12 months, the group has held three meetings and lectures. Unfortunately, the fourth planned meeting was cancelled owing to a lack of presenter and high workloads of group members. The lectures in this period have included lectures on: F35 System Testing, Airworthiness Testing of Warbirds and Spinning/High Alpha testing of the F35. The first two lectures for 2015 are already planned and will be the Flight Testing the Textron Airland Scorpion and Flight Testing the AW609.

The group was proud to nominate the Society’s R P Alston award to Peter “Wizzer” Wilson this year and intends to provide a medal nomination in 2015.

Rob Boyle FRAeS
Past Chairman
Greener by Design

Events

The Greener By Design Annual conference held on October 21st 2014 was joint with the Propulsion Group - “Alternative Fuels and Propulsion Systems - reducing aviation’s impact on the environment.” It was well attended and the now established format of tables and adequate time for discussion and questions from the floor was again appreciated. It was not realised until too late that the Institute of Mechanical Engineers were also holding a major two day conference on advanced aviation propulsion systems within a month after the GBD event. This did lead however to the GBD conference being weighted towards fuels and the near clash did not appear to affect the attendance significantly. None the less a clear message here for adequate liaison between the Institutions in future!

Papers

In response to a call for evidence on Advanced Fuels from the Department for Transport, GBD provided information on aviation fuels on behalf of the RAeS to the “Engineering the Future” response led by the Royal Academy of Engineering.

The GBD Annual Report was published in July 2014, with the following articles:

- 2013 “Airports and Airport Noise” Conference report
- Operations Report (The Emirates example of reducing fuel burn by an intermediate stop, etc.)
- Sustainable Aviation (3013 Progress Report etc.)
- Biofuels (Sustainability, EC progress, etc.)
- Regulations, Science and Technology (the results of further research into the atmospheric response to aircraft emissions, EU Clean Sky progress, the case for lower cruise speeds - the Cranfield ultra green aircraft project, etc.)

Support for printing cost was again obtained from the DBIS.

Other Activities

The working group convened last year to consider the ICAO proposal for a regulation on the CO2 output for future aircraft projects has been “on hold” until information was formally issued by ICAO. An official report has finally been received through the RAeS ICAO contact in Montreal, although at this stage it is still incomplete. The basis for the proposed CO2 emissions cap for new aircraft (believed to be a function of Maximum Take-off Weight) has still not been published, but it is confirmed that the proposed metric has inadequate scientific basis. Further GBD work is still to be decided although it is a strongly held view in the Group that there should be an RAeS position issued in due course.

Liaison was maintained with the French “Academie de l’Air et de l’’Espace” regarding possible co-operation on the case for short - intermediate range aircraft designed for slower speed operation to save fuel, but this has not yet come to anything. The GBD 2014 Report and the AAE dossier “Flying in 2050” have been exchanged.

Prof Jeff Jupp FRAeS
Past Chairman
**General Aviation**

The General Aviation Group of the Royal Aeronautical Society has continued to focus on encouragement and support for design engineering and manufacture of light aircraft, particularly sport light aircraft, in the UK.

After ten years of lobbying the CAA and UK Government by the GAG it has now been agreed that an experimental category, known as 'E' Condition, will be introduced. These new rules are going to allow “proof of concept” prototype aircraft up to 2000 kg all up mass to be test flown without the need for approval from the CAA. The test programme will be under the control of one engineer, to be known as the Competent Person. One principal qualification route for this person is to be a Chartered Engineer through the Royal Aeronautical Society.

**Events - Conference**

The GAG ran another very successful Autumn conference on the 17th November 2014. This was the sixth of what has become a regular annual event under the organisation and chairmanship of John Robertson, vice chair of the GAG. There were around ninety delegates and it was entitled "Light Aircraft Design - Methods and Tools 2014". At the conference the intention to introduce an experimental category was announced by the CAA in a joint keynote paper by John Edgley, chairman of the GAG, and Mark Shortman, Manager, General Aviation Policy and Business Delivery, for the CAA. Papers followed on other topics related to light aircraft design and the role of invention in the UK to put forward and encourage undergraduate interest in design for the future. The CAA issued a press release on the day of the conference. The conference was written up by John Robertson for the January 2015 issue of Aerospace. The fifth conference, on the 19th November 2013 had likewise been written up, not but it was not published in Aerospace, and it is hoped to make that unpublished article available on the GAG section of the RAeS website at some stage in the future.

**Events - Lectures**

The last report of the GAG stopped short of the 2013 AGM, and for completeness this report will therefore start from the 9th May 2013 when the Ann Welch lecture which was given by Wing Commander Ken Wallis MBE entitled "103 years of the 'Family Vice' of Aviation". This lecture was given by Ken Wallis at the age of over 90 and was an hour and a half that totally captivated the audience and went from before the Second World War to hair-raising exploits during the Second World War and on to pioneering work in the field of autogiro technology in the 1950s and up to recent time. The talk was recorded and it is hoped that this may become available from the website. A joint trip, with the IMechE, to the Ken Wallis Museum was subsequently organised by Charles Clarke of the GAG Committee. It was to be regretted that while well attended by IMechE members there were only one or two from the RAeS. It was a fortuitous visit because despite maintaining his health and interest in aviation to the end Ken Wallis died that Autumn. His obituary was published in the national press.

On 3rd October 2013 Tomas Broedreskift, founder and manager of Equator Aircraft, delivered a lecture on "the impact of Industrial Design". Tomas trained in industrial design but with an engineering leaning gained in an internship at Airbus in 2008 has demonstrated how industrial design methodology can be used to create a concept aircraft. The Equator P2 aircraft prototype has
yet to be completed, however perhaps the new experimental category will be a way forward for prototype testing.

Following the AGM on 6th May 2014 Roger Dodge Bailey, Chief Pilot of the Shuttleworth Collection, delivered a lecture that gave an interesting insight into all aspects of flying the vintage aeroplane of the collection, together with a description of the process by which modern pilots are trained to fly the Edwardian and other old aeroplanes.

**Design Competition**

The microlight design competition that was launched in 2012 continued through 2013 and into 2014. Four submissions were received by the first cut-off date in 2013. Of these two were considered by the review committee to be significant entries that, while light on technical rigour, attempted to meet the criteria of the competition.

The "ISIS" is an innovative Single Seat Deregulated (SSDR) Flying Wing. The review committee thought it a very interesting, exciting and pretty concept but on the other hand having unconventional aerodynamics with high risk of handling problems. There was little detail of aircraft structure made it difficult to believe a low cost.

The "ULA Cheeky Bandit 136" is a more conventional design. Much thought had gone into making a cheap, cheerful and practical SSDR, and the costs were thought to be realistic with a good marketing position. The design was, however, thought to be technically flawed in a number of respects.

The decision was made to award both entrants a second place which was £500 cash and they were both invited to work further on their designs and re-submit in 2014. In the event neither project appeared to progress, however it is hoped that one or other or both might do so in the future.

At the 2014 conference the GAG announced the intention to launch a new design competition in May 2015, and delegates were invited to submit their own ideas for what would make a good competition. Mike Jump, newly on the GAG, is the lead for this competition, and the intention is to aim specifically at the new ‘E’ Condition Rules. As in the past universities will be encouraged to involve students (in the 2015/16 academic year) as well as encouraging independent individual or groups to make design submissions.

**Committee Membership**

After many years of valuable work on the GAG John Brownlow resigned in February 2014. John had been the GAG representative on GASCo, and on the CAA "Safety Review Working Group". John had been a lead with the experimental category initiative in the early days, and overall a dedicated member of the Committee.

At the May 2014 AGM Charles Clarke, an independent engineering consultant, formally joined the Committee, together with Dr Mike Jump, a lecturer at Liverpool University. Charles Clarke is on the IMechE London Committee, and as such acts as a liaison with the IMechE. Mike Jump had delivered
a paper at the 2013 conference and has a particular interest in innovative forms of aerial transport in the future.

The GAG is actively seeking new members of the Committee. Barry Taylor and Chris Wright attended the September 2014 committee meeting as prospective members.

**Interaction with External Partners**

The GAG continues to have representation with other external committees

1. John Thorpe is the GAG representative on the General Aviation Safety Council (GASCo). The GAG monitor the annual grant (currently £500) that GASCo receive from the Society.

2. Howard Torode sits on various EASA groups, particularly related to questions of GA maintenance, and reports regularly to the GAG.

3. John Edgley sits on the General Aviation Partnership (GAP) of the CAA, formerly the General Aviation Consultative Committee. All of the UK GA interests are represented on the GAP, over 30 bodies in all. Much of this is operational, training, airfield, aerospace etc. The Society is possibly the only body representing UK based design and manufacturing.

4. The Light Aircraft Association (LAG) invited John Edgley to attend the annual LAA Garden Party at the Shuttleworth Collection at Old Warden on the 15th June 2014, as representative of the GAG. Thus was a very good opportunity to meet a wide variety of people engaged in aviation sporting activities, including many from the CAA.

5. Within the Society the GAG is represented on the SBAP and FOG groups.

**Other Services to Members / Industry**

Experimental Category:

Following an informal meeting on the 7th June 2013, the first formal meeting of the Experimental Category Working Group was held at Lasham Airfield on the 11th September 2013. The GAG was represented by John Edgley, John Robertson, Francis Donaldson, Howard Torode and Ben Syson. The CAA was represented by Neil Williams, Mark Shortman and Keith Dodson. From that date the Working Group met on a monthly basis, with this same group of representatives, except for Neil Williams who stood back to a watching brief. The Working Group were later joined by Becky Ellery of the CAA, and at the time of writing the CAA representative have been strengthened with the addition of Alan Carter, Philip Gibbons and Tricia Ward.

Further information can be found in the January edition of Aerospace as already reported.

**Engineering Sciences Data Unit (ESDU)**

Towards the end of 2013 the GAG made contact with ESDU with a view to looking into the possibility
of making ESDU date more available to members of the Society. Charles Clarke has been the lead for the GAG, and some progress has been made with both meeting the London based ESDU technical team, and with Dan Ireland who has the marketing responsibility and is based in the USA. For commercial reasons ESDU are very protective of this data that was originally generated by, and in the ownership of the RAeS, but which ESDU now appears to own the copyright. It is hoped to make further progress on this matter during 2015, and to make at least the older data items more readily available to members of the Society at Hamilton Place.

Next Event

The next event of the GAG is a lecture by Keith Denison, Chief Test Pilot of E-Go Aeroplanes. To be delivered at Hamilton Place on 17th February 2015.

J K Edgley
Chairman
Historical

The Historical Group presented a diverse programme of evening lectures at Hamilton Place, comprising:

- 3 March - Air Cdre Neville Parton Development of Early RAF Doctrine
- 14 April - Phil Jarrett Howard Pixton – Britain’s first Schneider Trophy winner
- 9 June - AVM Graham Skinner The Introduction of RAF Jet Aircraft - Engineering and Supply Issues
- 17 November - Mike Bowyer Farnborough1945: Farewell to the Luftwaffe – pointers to the future

Recordings of a number of lectures to the Group are available as podcasts.

The Group is represented on a Society Committee that awards Heritage Plaques to commemorate people, places or things of significance to the history of British aviation. Contact is also maintained with the British Aviation Preservation Council.

A Specialist Paper by the Historical Group has been published on the Society’s website on claims that Gustave Whitehead successfully flew an aeroplane before the Wright brothers. The online Journal of Aeronautical History http://aerosociety.com/News/Publications/J-Aero-Hist has had a quiet year, but a number of papers are in process of publication.

Finally the Group was delighted to learn that the aviation historian and author Phil Jarrett has been awarded Honorary Companionship of the Society, in recognition of over 40 years’ dedicated work.

Peter Elliott
Chairman
Human Factors

HF: Engineering

Group membership has remained very healthy during 2014 with usually more than half of the 19 members attending each of the 4 Group meetings held through the year. The main focus continued to be progressing the 3 core work streams of the Group Strategy; Communication, Design and Interventions.

Group objectives

At the beginning of the year a set of objectives were agreed for each workstream with group members taking responsibility for progressing actions. For Communication a standard presentation was developed to be used to spread the message on what Human Factors in engineering is about. This will be taken to a number of the RAeS branches as a trial in 2015. Design work remains centred on making best use of the First 11 document that has been developed over a number of years. How best to progress Interventions activity was subject to the most debate; an analysis of the most prevalent problems together with information on what might have been done to resolve such problems drew the most consensus as an approach, which will be carried through into 2015.

Survey

After careful debate, the Group decided to develop a web-based survey to investigate changes, challenges and questions facing the industry that have an impact on Human Factors in engineering and maintenance. The aim would be to help inform any adjustments to the Group strategy and objectives for the future. The survey had undergone considerable internal testing and scrutiny by year end and was sent out in January 2015.

Conference

Although the Group did not organise a conference in 2014, planning commenced for one in 2015. Good progress was made; the Conference will be at Cranfield on 12 May 15, entitled Human Factors in Engineering – the Next Generation. As the title implies, the focus will be firmly upon younger engineers, including apprentices and graduates, with the aim of inspiring interest and commitment to understanding the Human Factors issues in engineering and maintenance that persist into the future

Group positions

Due to a job move to Nigeria, Chris Evans had to stand down as Secretary this year. Dr Sarah Flaherty has kindly taken up the role. Also after more than 8 years as Chairman, Andy Ebdon stood down in October and has been replaced by Stephen Bramfitt-Reid who is Safety Manager (Airworthiness) for the MRO division of Rolls-Royce Derby.

Andy Ebdon FRAeS
Past Chairman HFG:E
HF: Flight Ops and Training Group

2014 continued to prove a slow year for the group but a busy year for the broader world of HF.

Meetings
The HFOT held 3 meetings in 2013. Member attendance occasionally proved problematic but the Chairman considers this to be indicative of the general pace of life and the demands made of the group members rather than a decline in enthusiasm to support the group.

Membership
The membership remains strong but sadly Captain Dave Miller has decided that the pressure of work and the distance from Scotland makes his attendance at meetings too unreliable to continue as a member. Captain David Moriarty is due to join the group for the first time at the December meeting.

Conference support
The group was ready to supply support for the HFG conference for late this year but the conference has been postponed to November 2015. The group remains committed to support this event.

CAP 737
The group provided a review of the new CAP 737 for the HFG and CRMAP with 2 members contributing to the re-issued publication.

General
The group continues to maintain a watchful eye on all developments with in the industry; debating issues as they arise and feeding back to the HFG where appropriate.

Charlie Cantan
Chairman

HF: Cabin Crew Standing Group

Overview
The Group has had one key meeting this year following detailed discussions with Ms Nicole Svatek as to the future objectives and current membership. Ms Kellie White – SEP Manager for Emirates was invited to become Deputy Chair and this position was accepted by Kellie and actively supported by Emirates management. Sarah Skelton remains as Chair and all existing members were asked to review their positions. Ms Elizabeth Albone (Secretary of the Group) has left easyjet and the aviation industry so is no longer with our Group. Mrs Janice Fisher (CAA) has been replaced by Sue Adair. All other Members have remained in the Group.

CCSG Activities and Goals
The Group held a meeting in October. It was felt that a replacement Secretary was not required as Group member will take the Minutes on a rotating basis. Sarah took and provided the Minutes from this meeting.

The Group feel that a quarterly meeting is a difficult commitment to achieve and the main work of the Group is what is done between meetings – therefore we propose a meeting every 4 months with the next one to happen in February 2015.
The Group are working on the production of a DVD to embrace a Threat and Error Management style pre-flight briefing that could be a very useful resource for industry. Sarah is in discussions with CAA International about possible support with this. The CRM Advisory Panel and CAA felt CAAi is the best avenue to go to progress this project. The CCSG feel that, with the recent publication of CAP 737 and the flight crew set of DVD’s, that a cabin crew example would be a timely resource to produce. The popularity and still wide use of the DVD produced in 2008 – ‘Who Needs CRM’ is still widely used with many operators and training providers.

**CAP 737**
The recently published CAP 737 includes a Cabin Crew Chapter and this had huge input from the CCSG – there is a Mention of this in the publication.

Sarah Skelton
Chairman
Propulsion

The “Alternative Fuels and Propulsion systems - reducing aviation’s impact on the environment.” conference held on October 21st 2014 was joint with the Greener by Design Group - “. The attendance was good and the Q&A sessions were popular. It was somewhat surprising that the IMechE also held a major propulsion conference within a month of this event. This indicates that work is needed to build a closer relationship with the IMechE. The committee are planning an IMechE hosted manufacturing conference for 2015.

Jean-Paul Herteman (Safran) was awarded a RAeS Honorary Fellowship for his contribution to the aerospace industry and Bob Saia (Pratt & Whitney) was awarded the RAeS Silver Medal for his leadership of the development of the Pratt & Whitney Geared Turbo-fan engine as a result of the Committee’s nominations

A new chair, Simon Weeks (now of the Aerospace Technology Institute) was elected, following the previous chair’s 2 terms of office. The committee’s main priority is to boost membership as a number of long standing members have stood down recently. The committee has been reviewing its ToRs for update. The committee has also been working with the IET to establish a formal relationship. This should be achieved in 2015.

Dr Simon Weeks FRAeS
Chairman
Rotorcraft

Aim of the Group

The Rotorcraft Specialist Group seeks to promote discussion across the whole range of helicopter and rotorcraft design, manufacture and operations issues worldwide keeping the aeronautical community informed of developments on all important matters and providing the Society with feedback and a voice on these topics.

Events

Lecture Programme

**Alan Bristow Memorial Lecture 9th April 2014.** Fittingly, this year’s lecture was given by Bristow Helicopters on its plans for the delivery of the UK Search and Rescue contract. The lecture was very well delivered to a large audience in which Mrs Heather Bristow and other members of Alan Bristow’s family were present together with senior members of the Bristow Group which kindly sponsored a reception after the lecture.

**Raoul Hafner Memorial Lecture - Defence Helicopter Flying School, RAF Shawbury, 1 May 2014.** This lecture, the 16th since its inception in 1999 is run under the auspices of the Society and has invariably been attended by the President. This year’s presentation was on the CV-22B Osprey given by 7th Special Operations Squadron USAF, RAF Mildenhall. Interestingly, this was the fourth Raoul Hafner lecture to be given on tilt-rotor aircraft reflecting the interest in this technology from serving members of the Armed Forces helicopter community.

**Cierva Lecture - 1 October 2014.** The Cierva Lecture this year was given by Professor Heinrich Bülthoff of the Max Plank Institute for Cybernetics, Tübingen University who spoke about the European project myCopter. This European Framework 7 Research Project was set up to investigate the feasibility of personal air vehicles for transportation. Universities and research establishments from across Europe contributed to the project including the University of Liverpool. The technologies investigated have relevance to current and future rotorcraft and aviation safety. Attendance at the lecture was disappointing although The New Scientist and CNN sent reporters along.

Conferences


The theme chosen for this year’s conference was heavily influenced by the helicopter safety issues arising from North Sea helicopter operations in recent years and by the considerable attention these had received. The conference focussed on automation in modern complex helicopters world-wide with a dominant human factors theme. It proved to be of great interest and drew a large number of delegates from around the world with endorsement by key industry stakeholders including the European Helicopter Operators’ Committee, Oil & Gas UK and the International Association of Oil and Gas Producers. There was no shortage of offers of sponsorship and the conference returned a significant surplus for the Society.
More importantly, the issues raised, the conversations started and the call to action were strident and the Society’s leadership in providing a forum in which they could be discussed was much appreciated by all parties. The Rotorcraft Group will follow-up two of the themes from this Conference. The Conference organiser and rapporteur was Jim Lyons who directed the proceedings and obtained a range of high calibre speakers from across the Industry virtually single-handed. I would like to acknowledge his very significant contribution without which the conference would not have taken place.

The European Rotorcraft Forum (ERF) - Southampton, 2 - 5 September 2014

It was the Society’s turn to host this year’s ERF on behalf of the International Committee of the European Rotorcraft Forum under the Chair of its Programme Committee, Dr Richard Markiewicz of the Rotorcraft Group. Without wishing to appear partisan, it could only be described as a grade one event. Richard and his team produced a complex programme comprising 122 papers and four keynote addresses, the latter given by the President of the Society, Air Commodore Bill Tyack, Dr James Wang of Agusta Westland, Colin James of Airbus Helicopters and Peter Flinn of the Aerospace Technology Institute gave the other keynotes followed by the best paper from the AHS which is described in a little more detail later in the report. The conference was supported by a full and highly successful social and networking programme ably organised and supervised by Richard Nicholl and Rebecca Webb. On the final day there were optional technical tours to the Army Air Corps at Middle Wallop and Vector Aerospace at Gosport. Richard Markiewicz and the Conference and Events team ensured that everything ran smoothly throughout and the supporting materials including the conference book and advertising material that they produced were of the highest standard. I would like to thank the President who attended on both days, Richard Markiewicz, the Conference & Events Team and everyone else involved for ensuring that the RAeS hosting of this international conference was impeccable and worthy of the Society.

Technical papers

The Rotorcraft Group produced a 15,000 word paper recording the salient aspects of presentations and discussions on the matter of harmonised military airworthiness requirements which were the subject of a Rotorcraft Group facilitated Workshop held in October 2013. The paper presented a coherent description of the perceived value of mutually recognised standards applicable to initial, continued and continuing airworthiness across the widest possible range of military aviation products and services. The record is intended to stimulate debate and discussion of best practice in this field, to promote action to further this aim and to help guide the Society’s future involvement in these developments. The Workshop was arranged by the then Chairman of Group, Jeremy Graham who was the author of the technical paper.

Articles for publications

The Group worked with the Editor of Aerospace and Bristow helicopter to produce an article on the Conference based on Captain Tim Rolfe’s keynote speech on the second day. The resultant article Technology: Friend or Foe? The Introduction of Automation to Offshore Operations Safe Operations in an Age of Constant Change - Keeping the Operator/Crew in Control suitably illustrated and with
the addition of callouts and quotations made very good reading inviting follow-up work in many areas. Some of which is planned to form the basis of the 2016 Rotorcraft Group programme.

Liaison with branches

The Group’s Deputy Chairman, Jeremy Graham, is the Joint Chairman of the Yeovil Branch and Prof Tim Cansdale is the Chairman of the Farnborough Branch. Liaison with activities at the DHFS, RAF Shawbury under the auspices of the Society is carried out by the Chairman.

Membership

The membership of the Group during 2014 is shown at Annex A. In January, the chairmanship of the group changed from Jeremy Graham to Mike O’Donoghue. Prof Tim Cansdale and Dr Simon Newman, two long-standing and much respected members retired from the Group at the end of the year after many years of service and, in the case of Tim Cansdale including chairmanship of the Group. Tim MacMahon formerly of Airbus Helicopters gave the Group notice that he intends to withdraw from the Group when a suitable replacement is found. Jeremy Graham also plans to retire from the Group in 2015 when he has been replaced by another representative from AgustaWestland.

Membership and composition of the Group will therefore be a work priority for 2015. Encouragingly, Sqn Ldr Hazel Reed, the Group’s RAF representative, has found suitable representatives from the Military Aviation Agency and the Joint Helicopter Command to join the Group and so the main focus in 2015 will be on recruiting new members from Industry and Academia. Arrangements for the handover of the Chair have been provisionally agreed and it is likely that the chairmanship will rotate following the Cierva Lecture in April 2016.

Interaction with international/external partners

Fédération Aéronautique Internationale (FAI)

A new definition of a helicopter was written by Jeremy Graham which distinguished between those rotary wing aircraft that derive their total rotor thrust from edge-wise rotor systems (helicopters) and those that use tilt-rotor or equivalent designs. Following the necessary staffing within the Society the proposed definition was submitted to the FAI in the summer.

The American Helicopter Society (AHS)

For some years, the Chief Executive of the AHS, Mike Hirschberg, has been actively seeking greater cooperation between the RAeS and the AHS. This culminated in a Heads of Agreement being reached between the two parties. So far, the chief interaction between the Societies has been in the context of the ERF. This year for example, the best paper of the 70th AHS Annual Forum was presented at the European Rotorcraft Forum. It was an excellent and well delivered paper on the story behind AeroVelo’s successful attempt to winning the AHS’s Sikorsky Prize Flight for human powered rotary wing flight in 2013, thirty three years after the competition was established. In December it was announced that the AHS would be establishing a ‘virtual’ chapter in Yeovil. The September/October edition of
the AHS’ s house magazine, *Vertiflite*, carried articles on helicopters at Farnborough written by Ian Frain, a member of the Rotorcraft Group and a report on this year’s Rotorcraft Group conference as well as short news items on the CAA and the newly formed Helioffshore.

**ICAO**

Rotorcraft Group member James (Jim) Lyons has been active as a member of a number of ICAO helicopter panels, working groups and the Helicopter Steering Group for many years representing variously, the CAA, JAA and latterly Industry. Two of his principal areas of activity have been in helicopter performance and the design criteria for helicopter landing sites. ICAO still wishes Jim to continue his work which is internationally recognised and in December, he asked if it would be possible to represent the RAeS rather than the International Helicopter Association. This request was unanimously agreed by the Rotorcraft Group and submitted for further approval by the LSB, Nominations Committee and Council all of which agreed and in parallel advice was taken from Society’s Permanent Representative to ICAO who also supported the proposal. The contact that the Rotorcraft Group and the Society will now have with this area of work will be beneficial and further strengthen the already strong ties between ICAO and a the Society as well as providing an independent, internationally respected voice in the formulation of new regulations which will be widely appreciated.

**Vertical Lift Network**

There was little interaction on a Group level with the newly formed Vertical Lift Network (VLN) formed to create a nationally and internationally recognised world class Vertical Lift Network (VLN) to inspire, to grow and to protect the vertical lift sector. However three of the Group’s members are actively involved with the VLN which recognises the role of the Rotorcraft Group in its roadmap for the future. This is therefore an area of future work for the Group that may need to be taken forward in the future.

**Other services to members/industry**

The Group, on behalf of the Society, prepared a submission on helicopter safety to the House of Commons Transport Committee on 18 December 2013. Further work took place on the submission early in 2014 and the Chairman of the Group was invited to a PACTS Helicopter Safety briefing at Portcullis House on 10 February 2014.

**Specialist Group Awards**

**Alan Marsh Medal** - The Alan Marsh Medal is awarded to a member of a flight test crew in recognition of outstanding achievements in the test, development and operational evaluation of rotorcraft and in 2014 was awarded to Lieutenant Commander Michael Sewed Royal Navy.
Looking Ahead

The Group plans to have a fallow year in 2015 as far as conferences are concerned. This is because of a desire to run two follow-up conferences to the 2014 conference. The first in April 2016 will concentrate on training and the other in October 2016 on airworthiness and design issues. Next year (2015) was deemed too sensitive to tackle these topics on two counts, the first being the anticipated publication of safety reports due in the summer of 2015 which would probably stymie discussion and secondly because a pause to allow the implementation of earlier recommendations might make it easier to spot the lacunae and address any such areas in a conference.

The Alan Bristow Memorial Lecture has been set for Monday 27 April 2015. The title has yet to be confirmed but will probably be based on Naval helicopter operations and training. The date for the 2015 Cierva Lecture has will be 20 October and an interesting topic has already been identified and discussions are well underway with regard to the detail and sponsorship arrangements.

Mike O’Donoghue FRAeS
Chairman
Space
The space group remained very active in 2014 with a full programme of lectures and a major support role to the 2014 President’s conference “The Strategic Choices for Space”. The committee organised four lectures in 2014, all well attended:

- “Small Satellites - Fad or Fantastic?” given by Professor Sir Martin Sweeting, founder and Executive Chairman of Surrey Satellite Technology Ltd. The talk gave a deep insight into the on-going advances being made in the small satellite sector, particularly driven by the tremendous advances in terrestrial technology.

- “The Path to Mars” given by Dr Ellen Stofan, NASA Chief Scientist. In the lecture, she set out the agency's vision for manned space exploration via the asteroids, the possibilities of international co-operation, and the benefits of getting human 'boots on the ground' on Mars to conduct real science.

- “Rosetta: Europe's Comet Chaser” given by Dr Paolo Ferri, Head of the Mission Operations Department at European Space Operations Centre at the European Space Agency. A fascinating insight into the engineering challenges involved in navigating a spacecraft to rendezvous with a comet and, eventually, to land upon it.

- “The TDS - 1 AND UKube - 1 Satellite Programmes” given by Doug Liddle, Head of Science at SSTL and Steve Greenland, Lead Systems Engineer for UKube-1. The talks gave an excellent insight into the aims of the missions and the engineering that led to the on-orbit demonstration of new equipment, instruments and potential future services.

The group already has a number of lectures planned for 2015. The first lecture will be given in February by Martin Agnew of Airbus Defence and Space on the European Data Relay Satellite programme. In May the society will host the Director General of the European Space Agency, Jean-Jacques Dordain who will talk about his 12-year tenure leading ESA and will look forward to the profound changes facing the agency in the coming years. Later in 2015 Mr Dordain will retire giving this talk an added importance at this key point in time for the agency.

Given the theme of the 2014 President’s Conference was “The Strategic Choices for Space”. The committee played a very active role throughout the year in supporting the society’s arrangements for the event. During the highly successful 2-day event committee members hosted plenary and parallel sessions. A summary report of the event is in production and is online.

Committee members have contributed several articles to the society’s publications. For example articles on Space debris, the UK Space Innovation and Growth Strategy, Eavesdropping from Space, NASA’s plans for Mars and the International Astronautical Congress appeared in the "Aerospace" magazine.

The group is considering a 2015 UK Spaceport conference ahead of the Governments announcement of the location of the first site.

The space group has agreed to work with the Weapon Systems and Technology group to organise and promote a conference on the theme of “Asteroid Protection/Space Defence”, most likely to be held in 2016.
The space group nominated Richard Peckham of Airbus Defence and Space for the 2014 Geoffrey Pardoe award for his work supporting the growth of the UK space sector, particularly through the work of the UKSpace trade association, the satellite finance network and the key role he played in the “case4space” and the innovation & growth strategy. The award will be presented in December.

Phil Davies FRAeS
Chairman
Structure & Materials

Events

The major conference of the year was the 4th Aircraft Structural Design Conference which was held in Belfast in the period October 7-9. The event was held at Riddel Hall, which is part of Queen’s University and was co-organised by a local team headed by specialist group member Adrian Murphy.

The attendance at 90+ was slightly up on the previous meeting held in Delft in 2012. Keynote speakers from Bombardier, Saab and the University of Manchester covered topics relating to industrial design and manufacture of advanced structures, structural optimisation in industry and our continuing requirements to advance our knowledge of carbon fibre structures.

Approximately sixty papers were presented covering most aspects of structural and multidisciplinary design. Three technical visits were made on the last afternoon, these being to Bombardier, Thales and NIACE. These were all fully booked. Feedback from those who made a visit was very positive. The conference dinner was held in the Titanic Museum and was very well received by those who attended.

Discussions with a selection of delegates at the conference revealed that they were largely very impressed. The intention to hold a further conference in 2016, this time in Lisbon, was announced at the conference close.

The group also has two additional 1 day conferences in planning for 2015 and 2016.

Technical papers

Although many of the specialist group are active in research and publish papers (and books) on their own behalf, the group has not recently written a technical paper as a whole.

Articles for publications

Several special editions of the Aeronautical Journal have been published with content derived from the conferences organised by the Structures & Materials Specialist Group. The group identified papers suitable for publication from the 2013 IFASD conference and will also be selecting the best papers from the 4th Aircraft Structural Design Conference and forwarding suggestions to the publications team.

Liaison with branches

One of the specialist group members is chairman of the Sheffield Branch. Others are on Branch committees. Two members have identified their willingness to give lectures to other branches based on ones which they have already given at Branch level. However, they have not yet been contacted by other Branches.

Membership

The group has been further strengthened by the appointment of two new members, from Queen Mary University, London and the University of Bath respectively. We regularly receive applications to join the committee.
Interaction with international/external partners

The Chairman is a member of the CEAS Structures and Materials Technical Committee, although this seems to be inactive at the moment. He is considering whether to reactivate it.

The Chairman and Vice Chairman are both members of the IFASD Technical Panel.

Two of the specialist group members are Fellows of the Royal Academy of Engineering, one having been elected this year.

The committee has informal links with the IMechE and AMSTAC through exchange of minutes and joint membership of some members.

Other services to members/industry

Our website page asks members to contact us with ideas for future events. This has once resulted in the development of a 1 day conference. It would be useful to employ this route more if possible.

Dr Malcolm Nash FRAeS
Chairman
The group has an active membership of some 15 experts representing industry (large and small RPAS manufacturers, operators and pilots), regulators, academics, consultants, UK Government officials, the small RPAS Trade association ARPAS UK, lawyers and academics. We have members who are contributing to the ICAO RPAS Panel (and were involved in the drafting of the, soon to be published, ICAO RPAS Manual), EUROCAE RPAS standards works and the JARUS RPAS authorities association which is developing draft regulations.

The group is keen to develop a wider virtual associated group of Society members interested in supporting and contributing to our activities.

The highlight of the year was the very successful conference “RPAS Today - Opportunities and Challenges” which was held in June. This presented material from a wide range of speakers covering a significant number of the critical topics relating to RPAS operational, regulatory and technical issues. These included business and commercial opportunities ranging from border surveillance and operations in UK Airspace under ATC control to new concepts for cargo and air taxi operations. Also provided was an introduction to the use of the key developing issue of autonomy as seen from the perspective of a parallel industry. The developing regulatory requirements and the societal topics of privacy, data protection and liability, which are all of major importance to both the RPAS community and the general public, were also discussed.

Day 2 of the conference was focussed on capability issues including a very positive statement from the Rt Hon David Willets MP, Minister for Universities and Science. This was followed by a summary of the achievements of the UK ASTRAEA programme, recent developments in the USA in the area of air to air collision avoidance and the challenges of controlling small RPAS. Further presentations provided a detailed view on the critical data link communication developments including the use of Satcom for RPAS control. The day ended with a presentation on a recent EU study into Specific RPAS liability issues and an update on surveillance regulations from the UK Information commissioner’s office.

Day 3 was dedicated to specific technology developments with a strong focus on the potential value of autonomous operations and approach to validation of such systems. Also included was a description of a prototype ‘indestructible’ spherical RPAS for use in hostile environments and a very useful explanation of the export restriction that will typically apply to dual use and more capable RPAS.

In addition to the conference the UAS Group ran two well attended workshops.

The first on ‘An Introduction to Professional UAS Operation’ which was aimed at providing potential operators of RPAS and the wider aerospace community with an introduction into the current legislation and business development scenarios in the world of small UAS. Those who attended found the event very informative and it certainly ‘opened some eyes’ as to the challenges to be faced by a start up business using small RPAS.

The second workshop this year was on the topic of, ‘Detect and Avoid – Enabling Safe RPAS Operations Beyond Line of Sight’. This brought together a range of RPAS stakeholders including civil, government and military operators, regulators, manufacturers and technology developers to share
thoughts on the requirements, developing regulations and standards, and experimental solutions to the challenge of ensuring that aircraft without a pilot on board do not collide.

This is a complex area with many different aspects to consider and involves a range of different groups across the UK, Europe and the rest of the world. A follow up to this event is expected in 2015 to identify the specific contribution that a RAeS lead team could make.

Further workshops on topics including Small RPAS airworthiness, Communications and Societal Issues are also planned.

The group has also contributed to a number of enquires including providing contributions to a “Post Note on Civil Drones” prepared for The Parliamentary Office of Science and Technology and, both in support of the RAeS, and through individual member organisations has provided written evidence to the House of Lords inquiry on Civil use of Remotely Piloted Aircraft Systems. An information session with representatives of the Singapore Ministry of Transport was supported in October at Hamilton Place.

The UAS Specialist Group has been asked to assist in the preparation of the 2015 President’s Conference which will focus on RPAS, and work on this has already begun. We also hope to run as many single topics one day and half day workshop as possible to allow the community to share information, identify issues and, where possible, contribute to solutions in the large and rapidly developing activity of unmanned aircraft.

Tony Henley MRAeS
Chairman
The Weapon Systems & Technology specialist committee had an active 2014. In 2014 the committee organised and held 2 successful conferences. Firstly, The Future of Weapon Systems Trials - A Case for European Collaboration was held in May at QinetiQ’s Boscombe Down site. This was followed later on in the by Yesterday’s Weapons for Tomorrow’s Operations, a classified conference held in late October at QinetiQ’s Farnborough site.

We held one lecture in January 2014 on The Challenges to be Faced in Future Air Platform Protection Programmes at RAeS Headquarters, given by Sqn Ldr Gareth Lock MSc RAF, Requirements Manager for Air Platform Protection, DE&S Abbeywood.

The committee remains strong, with active participation from organisations such as QinetiQ, MBDA, BAE Systems, Thales, Selex and Lockheed Martin. This complements a significant presence from our key stakeholders through our RAF and Ministry of Defence participants.

During the year, we combined one of our meetings with a visit and tour around RAF Odiham. The committee found this an enlightening experienced, as it gave tremendous insight into the challenges of deploying and operating at high intensity. I would like to thank Squadron Leader Peter McAdam for arranging the visit despite the many other demands on his time.

Looking forwards, we are looking to improve the understanding the use of Remotely Piloted Air Systems as weapons platforms. As part of this initiative, conference planning is underway for a conference to be held in the 2nd quarter of 2015, entitled Delivering Weapon System Effects: The Contrast between Piloted and Remotely-Piloted Platforms.

In addition we are planning a lecture on Reaper Operations. Other lectures which are earmarked for the future are The Meteor Air to Air Missile and the History of Guidance and Navigation.

Bernard Chan
Chairman
Women in Aviation & Aerospace
Amy Johnson Lecture July 2014

This year the RAeS’ Women in Aviation and Aerospace Committee ran the Amy Johnson Named Lecture at the Farnborough International Air Show as a lunchtime debate.

The debate brought a panel of senior figures working in aviation together to discuss diversity in the industry, with a particular focus on the role of women and the challenges they face developing their career.

The panellists included:

Thierry Baril, Chief HR Officer, Airbus Group
Jenny Body OBE FRAeS, Past President, Royal Aeronautical Society
Marion Broughton, Vice President, Thales Land and Air Systems
Rt Hon Maria Miller, MP for Basingstoke

The debate was well supported by Sponsors and was a sell out in terms of attendance on the day. Carol Vorderman has confirmed as the 2015 Amy Johnson speaker.

Conference 2014

Under the theme of “Flying High in the Aerospace Industry”, the Women in Aviation and Aerospace Committee hosted a special conference at the Royal Aeronautical Society on 21 November 2014 to inspire women to progress their careers in the industry. Seven motivating speakers shared their own experiences of mentoring or being mentored in their respective presentations which formally launched the Committee’s new Mentoring Scheme at the conference. All the presenters focused on the vital role that mentors can play in offering social and career support to women who work in male-dominated organisations. This specialist insight drew on their own research and personal experiences taken from a wide variety of occupations.

Interaction with international/external partners

Women in Aviation Group – USA.

University of West of England – joint venture to develop Mentoring Programme.

Judith Milne FRAeS
Chairman
Dick was born in Catford, a district of South East London on the 20th April 1935 and was educated at Purley County Grammar School.

Dick’s adult life was divided into 3 parts – 60 years in all – 20 years in the RAF, 20 Years in Civil Aviation and in his retirement 20 years Display pilot and membership of the RAeS and Guild of Air Pilots and Navigators.

Upon matriculation he enlisted with the RAF in September 1953 at the age of 18 and gained his Commission on the 20 April 1954. His initial Flying training was on the Tiger Moth and Harvard. After completing his Training at the 229 OCU he served in various bases in the UK and Middle East during which time he flew fighters – namely the Venom, Vampire and Meteor. He saw service during the Egyptian Campaign in 1956. His Middle Eastern travels ended in March 1958 when he entered the Flight Training world. He spent 8 years at the Central Flying School at Little Rissington, instructing on the Jet Provost and ended as an A2 Instructor and Flight Commander of #1 Squadron.

At this point his career made a change – to avoid flying a desk, he converted to helicopters – the Westland Whirlwind Mk 10. He was posted to RAF Selatar in Singapore in 1966 to 103 Sqn and after a short period became the CO of 110 Sqn for the following 2.5 years. 103 and 110 Sqn were primarily used for Insertion and Extraction of the Ghurkas in Indonesia and Borneo and Dick learnt the art of landing on trees and in small clearings. The secondary role for 110 Sqn was VIP Flying.

Dick retired from the RAF in 1973 when a desk job became the only option. Thus started his next 20 years in Civil Aviation. Initially flying business jets and then the Boeing 737 and 757/767 with Britannia Airways. These aircraft he flew worldwide initially as a First Officer and subsequently as Captain. He was selected by Britannia as a Line Training Captain on both the B737 and B757/767. Dick was a total flying enthusiast in all its forms, this even extended to bungee jumping and a floatplane conversion whilst on a layover in Florida. During his free time he flew Chipmunks with the Air Experience Flight [some 22 years on type] Bulldogs and made some 3000 flights – I’m sure there are now some well-established aviators today who benefited from Dick’s time with the AEF.

Pleasure flying was also an enduring pastime – he flew the Dragon Rapide, Chipmunk and Tiger Moth as Chief Training Pilot for Russavia, who had the pleasure flying concession at Duxford.

Display flying figured through out his career. In 1965 he won the CFS aerobatic BRABYN staff trophy displaying the Jet Provost. Later he displayed the Venom, Jet Provost and Meteor for Jet Heritage and the Royal Jordanian Air Forces Vampire and Venom on the airshow circuit. He also found time to be a display evaluator.

As if flying professionally, Instructing with the AEF and display flying was not enough; Dick joined the Guild of Air Pilots and Navigators as an Upper Freeman in 1989 and took Livery in 1994.
Dick retired from professional flying upon reaching the age of 60 in 1995 and thus started the final 20 years of his life with Aviation. His association with Mike Russell, a colleague in Britannia and the owner of Russavia continued when he embarked in the latter stages of his professional life by joining the Royal Aeronautical Society and became a founder member of the Flight Operations Group. He was an Editorial participant in a number of documents produced by the FOG in conjunction with other members. He became Chairman of the group in 1998 for a period of 2 years. He took on the role of Events member and yearly organized the FOG Annual Dinner as well as being the go-between with the CFS with whom he had a long history. As a product of this association the CFS has continued to provide a Hon Secretary for the Group, we continue to be grateful to Dick for this contact.

Dick was integral, with other members of the FOG, in getting the final review of the RAF Chinook accident that took place in June 1994. This resulted in the removal of the original pilot error judgment. As a consequence the Defence Secretary Liam Fox overturned the original ruling and apologised to the pilots' families.

Dick spent years as a trustee of the RAF Benevolent Fund and supported the Wiltshire air ambulance through fund raising.

Dick was a gentleman of the old school, unassuming, loyal, trustworthy and principled. He was an active participant of the FOG to the end, could always be relied upon to provide correction to spelling, punctuation and grammar in the minutes – indeed he proposed acceptance of the minutes at the last meeting in January of this year.

He will be missed.

Captain P.D.J.Terry
Chairman Flight Operations Group

Ralph Kohn 1931-2014

It was in 1965 that I first met Ralph –a Captain, to my eyes a somewhat ‘god-like’ figure with stature. It was immediately apparent that Ralph had no pretensions about himself or his job, he was an enthusiast, for him flying was fun and with his effervescent personality he firstly charmed me by his openness and then further his interest in my ideas as to where I wished to further my career. All of us, when we are at the small beginnings of what we hope to achieve as a career, can only wish for someone like Ralph to take a personal interest.

Where Ralph got his language skills from I don’t know, they were not restricted to the Hallo and Goodbye, maybe it came from his birth place –Alexandria in Egypt -where perhaps he was exposed to other languages other than English.
Ralph learnt to fly in 1950 and progressed as flying Instructor gaining his CPL in 1953. 2 years later landed a job as a F/O with Eagle Airways that subsequently became British Eagle. In 1960 he gained his command on Viking aircraft and progressed onto the Bristol Britannia and subsequently the BAC 1-11. He joined Dan-Air briefly before moving onto the British Aircraft Corporation, who produced the BAC 1-11 and joined other of his British Eagle colleagues who had the same idea. He was part of the team as a Training Captain that went with the aircraft to whomever had bought them to train the pilots to help them set up their operation. From tales I’ve heard, this was sometimes a precarious existence, not without risk.

In 1971 Ralph joined the UKCAA as a Flight Operations Inspector and worked with colleagues of ours in the FOG — Paddy Carver, Maurice Knowles, Nick Butcher and others. During his time with the CAA he converted onto the B707, B747 Classic and subsequently B747-400, and became part of the Civil Aviation Flying Unit at Stansted where he was involved in Training UK Flight Examiners. Amongst the Airlines he was responsible for was British Airways and he used to fly as Captain on these aforementioned aircraft.

Our paths didn’t cross until many years later at the occasional British Eagle reunion, but I knew he was around— I heard him on the Airwaves with his distinctive voice, his Buon Giorno’s and the sound of the joy in his voice—he was flying. It was very comforting to hear his voice and I’d say a quiet thank you for his help and guidance many years before.

Ralph Retired from the UKCAA in 1991 at the age of 60, too young, but those were the regulations in those days. He subsequently went to work with the Bermudan DCA as Principal Director of Operations.

In 1992 Ralph and a small group of similar Pilot enthusiasts set up the Flight Operations Group. He became Chairman of the group during 2003-2006.

During the 20 years of his involvement with the FOG, he had been focal in the production of numerous documents as Publications Gateway of the FOG — The Human Element in Airline Training, All weather Operations, So you want to be a Pilot, So you want to be a Captain, SAFITA and Airplane Upset Recovery Training. In 2002 he introduced and then edited the OOTF articles for the following 10 years, they were the first article that I look for in each new Journal. For me I liken this to the days of the old Flight International Magazine where one started from the back—situations vacant unless perhaps you were with BA ![] and then to the Roger Bacon column.

Ralph was also integral in getting the final review of the RAF Chinook accident that took place in June 1994 and the removal of the original pilot error judgement. As a consequence the Defence Secretary Liam Fox overturned the original ruling and apologised to the pilots' families.

Ralph was a Fellow of the Society and Liveryman of GAPAN and was awarded the GAPAN Master Pilot certificate in 1978 and the FOG Silver Medal in 2009.

What a wonderful career. I valued him as a friend and colleague, he has left his heritage of which, if I could leave just a part of that which he achieved, I would be very proud. Aviation is a small but
international community, our paths cross knowingly and more often unknowingly all over the world and at different times—I’m very happy that mine crossed knowingly with Ralph’s.

Captain P.D.J. Terry

Chairman Flight Operations Group