



Meeting of the eVTOL Safety Leadership Group (eVSLG)
22 November 2024 14:00-16:00
MINUTES

In attendance:

Simon Meakins	Bristow Helicopters – EVSLG co-chair
Rick Newson	Civil Aviation Authority – EVSLG co-chair
Chris Booth	Civil Aviation Authority – Secretariat
Verity Richardson	Archer
Will Nathan	Vertical Aerospace
Eric Samson	Vertical Aerospace
Simon Davies	Vertical Aerospace
Alison Campbell	Air Accidents Investigation Branch
Tim Rolfe	HeliOffshore
Steve Hazlehurst	HeliOffshore
Mariat James Elizebeth	Warwick University
Mike O'Donoghue	GASCo
Vicki Murdie	Innovate UK UKRI
Shufeng Chen	Warwick University
Oliver Dismore	British Helicopter Association
Tim Fauchon	British Helicopter Association
Akiko Hama	Global Aerospace
Andrew Strachan	Lilium
Marilyn Pearson	CAE
James Gillian	Volocopter
Wg Cdr Alex Brassington	MAA
Rupert Dent	CHIRP
Simon Whalley	Skyports Infrastructure
Ian Fortune	
Siddartha Khastgir	Warwick University
Brian Davey	Joby Aviation
Glenn Bradley	Civil Aviation Authority
Christos Panoutsakopoulos	Civil Aviation Authority
Daren Barrow	Civil Aviation Authority
Tulki Jenkins	Civil Aviation Authority

Oliver Hamlet	Civil Aviation Authority
Michelle Anders	Civil Aviation Authority
Garry Lathey	Civil Aviation Authority
Michael Pryce	Civil Aviation Authority
Mario Ranito	Civil Aviation Authority
Tulki Jenkins	Civil Aviation Authority
Mark Wallis	Civil Aviation Authority
Adrian Harvey	Civil Aviation Authority
Christos Panoutsakopoulos	Civil Aviation Authority
Darius Mikulenas	Civil Aviation Authority

..

TABLE OF ACTIONS

Section	Deadline	Action	Responsible
Risk Sub-Group		eVSLG stakeholders to supply delegates to participate in workshops towards the Risk Sub-Group's STPA	Secretariat
C/STOL and hybrid-electric propulsion		Secretariat to work with members to map stakeholders in the C-STOL and hybrid propulsion spaces.	Secretariat

Introductions, Updates and Matters Arising

The co-chairs welcomed all to this online meeting of the EVSLG.

Introductions were made by all members reflecting the attendance of some new and different representatives.

Members were reminded of the antitrust and competition commitment for participants of the meeting. No objections or comments were raised.

The minutes of the last meeting were approved for publication on the CAA website.

UK Government and Regulatory updates

Design and Certification- Garry Lathey

Garry Lathey is Head of Design and Certification within the CAA's Future Safety and Innovation team. He gave an update on his team's work to certify eVTOLs in the United Kingdom, with a particular emphasis on the work to certify Vertical Aerospace's aircraft, given that the UK is its State of Design. He reflected on the challenges that the UK CAA has faced during the nearly five years since the UK left the European Union, given that prior to 2020, responsibility for certifying aircraft lay with the European Union Aviation Safety Agency (EASA). A team has been rapidly established 'from scratch', now consisting of around 60 employees working on a host of certification projects, such as the A321XLR, innovative rotorcraft, certified category RPAS, and hydrogen aircraft.

Garry informed the EVSLG that an FAA delegation visited the CAA earlier in November to discuss regulation of Advanced Air Mobility, noting that bilateral relations are currently in a very good state. Alongside bilateral relations with the United States, the CAA is an active member of the recently constituted NAA Network, whose membership comprises the United Kingdom, the United States, Australia, Canada and New Zealand. Discussions within this group have proved especially fruitful with respect to eVTOL certification alignment.

A question was posed by Rupert Dent, who asked whether the certification of RPAS sits with Design and Certification. Garry Lathey responded that certified category drones sit within D&C's remit, but specific and open categories are administered and regulated by the CAA's RPAS unit headed by Kevin Woolsey.

Vertiports update - Tulki Jenkins

The vertiports update was provided by Tulki Jenkins, a vertiports specialist within the CAA's AAA division. He informed the group that the new year will see the first full meetings of the Vertiports Working Group, which is being set up as a forum for regulator and industry to work together to agree on appropriate regulations of vertiports (and heliports) for the introduction of eVTOLs.

Flight Operations update - Daren Barrow

Next, Daren Barrow, a Flight Operations Policy Specialist at the CAA gave an update on Flight Operations policymaking. He offered detail on the work he's been doing investigating the regulatory gaps that need to be closed in readiness for eVTOL operations to be safely launched, and the international dialogue with EASA and the FAA that he has led for the UK CAA. To close the regulatory gaps in the most effective way, an Air Operations Working Group is in the process of being stood up, to bring industry and the CAA in a similar vein to the Vertiports Working Group.

AI Strategy update - Christos Panoutsakopoulos

Christos Panoutsakopoulos concluded the regulatory round-ups by providing an insight into the CAA's strategic work to prepare for the integration of artificial intelligence to the aviation system. This includes ensuring the CAA is ready to regulate the use of artificial intelligence by the UK aviation and aerospace sectors, but also to prepare the CAA to fully utilise AI to best execute its role as the aviation regulator.

Discussion of Christos's presentation focussed on the role of the human in an ai augmented system, with Rupert Dent keen to understand more about the human factors challenges that need to be examining when integrating an AI product. Vicki Murdie consolidated this point by adding that when examining human-machine interface issues, international collaboration is an essential part of arriving at a solution. Christos agreed with these points, adding that he is a member of standards making bodies such as EUROCAE WG-114 and SAE G34.

EVSLG Annual Report - Rick Newson

Under the EVSLG's Terms of Reference, the Group is required to issue an Annual Report, to update the wider aviation system on the UK AAM sector's progress in developing a mature safety culture. The group will look to publish a first Report in the first quarter of 2025; Secretariat will have responsibility for drafting this, which will be distributed to members for comment prior to publication on the CAA website.

RISK

Emerging Risks

Rick Newson gave the next presentation, looking at Emerging Risks facing electric vertical aviation. The theme of his presentation was 'complexity is the enemy of systems'.

He presented the Key Risk Areas for rotorcraft, as well as news regarding the Derriford Hospital accident inquest, which had recently concluded. Rick posed the question 'so what?' for eVTOL, suggesting that many of the lessons and recommendations regarding helipad location and configuration apply to vertiports for electric aviation. Tulki Jenkins supported this point, agreeing that there are many relevant lessons for AAM from the Derriford accident and the subsequent inquest. The CAA continues to work with the Onshore Safety Leadership Group and its sub-group working on hospital landing sites (HLS) so that the network of HLS is managed in a safe, systemised manner. It is recognised by the Department for Transport that this task may take up to another two years, but does provide an opportunity to provide parallel activity that enables safe vertiport operations.

The Key Risk Area summary also brought up the issue of AW139 duplex bearing failures. Mark Wallis, Airworthiness Manager at the CAA, gave details regarding the failure, and ameliorative measures that are being taken.

Risk Sub-Group - STPA Update

An update on the progress of the EVSLG's Risk Sub-Group's main exercise, namely a Systems Theoretic Process Analysis of eVTOL operations was provided by Chris Booth, Secretariat of the EVSLG, and Mariat James Elisabeth, Lead Engineer - System Safety at Warwick Manufacturing Group (WMG), Warwick University. WMG are partnering with the EVSLG and the CAA's Future Safety and Innovation division to deliver this project, with the aim of evaluating and controlling the key eVTOL operational hazards.

Mariat gave a technical summary of the findings so far, along with the work still to do. The project is set to be completed in the first quarter of 2025, with findings to be released as a Civil Aviation Publication and academic paper. The research will help inform eVTOL stakeholders' Safety Management Systems, and assist the CAA develop Air Operations and Vertiports regulations that enable safe, scalable eVTOL operations.

A question was raised by Tim Rolfe, CEO of HeliOffshore, who endorsed the analysis, but wondered what could be done to ensure the analysis is maintained as a live document. Chris Booth recognised the point that Tim made, acknowledging that the CAA funding for the project concludes at the end of the 2024-25 financial year. Other funding streams need to be sought to ensure the STPA responds to emergent risks as we approach commercial operations, such as 'hybrid' means of propulsion. Chris reaffirmed that the *best way to ensure the research has wider impact is through members of the EVSLG participating well in the remaining workshops.*

Action: eVSLG stakeholders to supply delegates to participate in workshops towards the Risk Sub-Group's STPA

C/STOL and hybrid-electric propulsion

Simon Meakins led a two-part discussion; the first element looking at short take-off and landing aircraft, and the similarities and differences with eVTOL aircraft. From this, a conversation was had on the potential for joint working between members of the EVSLG and C/STOL (controlled/short take-off and landing) operators and manufacturers. This is an especially relevant consideration for some members (operators) within the EVSLG, considering that the operational models of some aircraft include a short landing element, such as Lilium's aircraft.

Secondly, given the demands from operators and manufacturers alike for higher range from eVTOL aircraft, the potential of hybrid forms of propulsion are being investigated by a number of members of the EVSLG. To that end, attendees suggested there may also be scope for the Terms of Reference to be amended to facilitate more discussions on the topic in future meetings.

Akiko Hama from Global Aviation said that the insurance sector would certainly endorse any fora which enable the sharing of key risks across electric aviation, regardless of the nature of their take-off/landing.

The concluding view of the EVSLG was that whilst it might be logistically difficult for the group to formally change its terms of reference to include STOL/hybrid aircraft, ways of collaborating with the sector should be explored, and a communications channel set up. To do this, the EVSLG needs to have a clear idea of who the key players in the C/STOL and hybrid sectors are. Secretariat was asked to work with the co-chairs to establish a shortlist of the major actors, for engagement to be launched.

ACTION: Secretariat to work with members to map stakeholders in the C/STOL and hybrid propulsion sectors.

AOB

The next meeting of the EVSLG will be held in person, in late February, with the Royal Aeronautical Society being the likely location. Further details will be released in due course.
