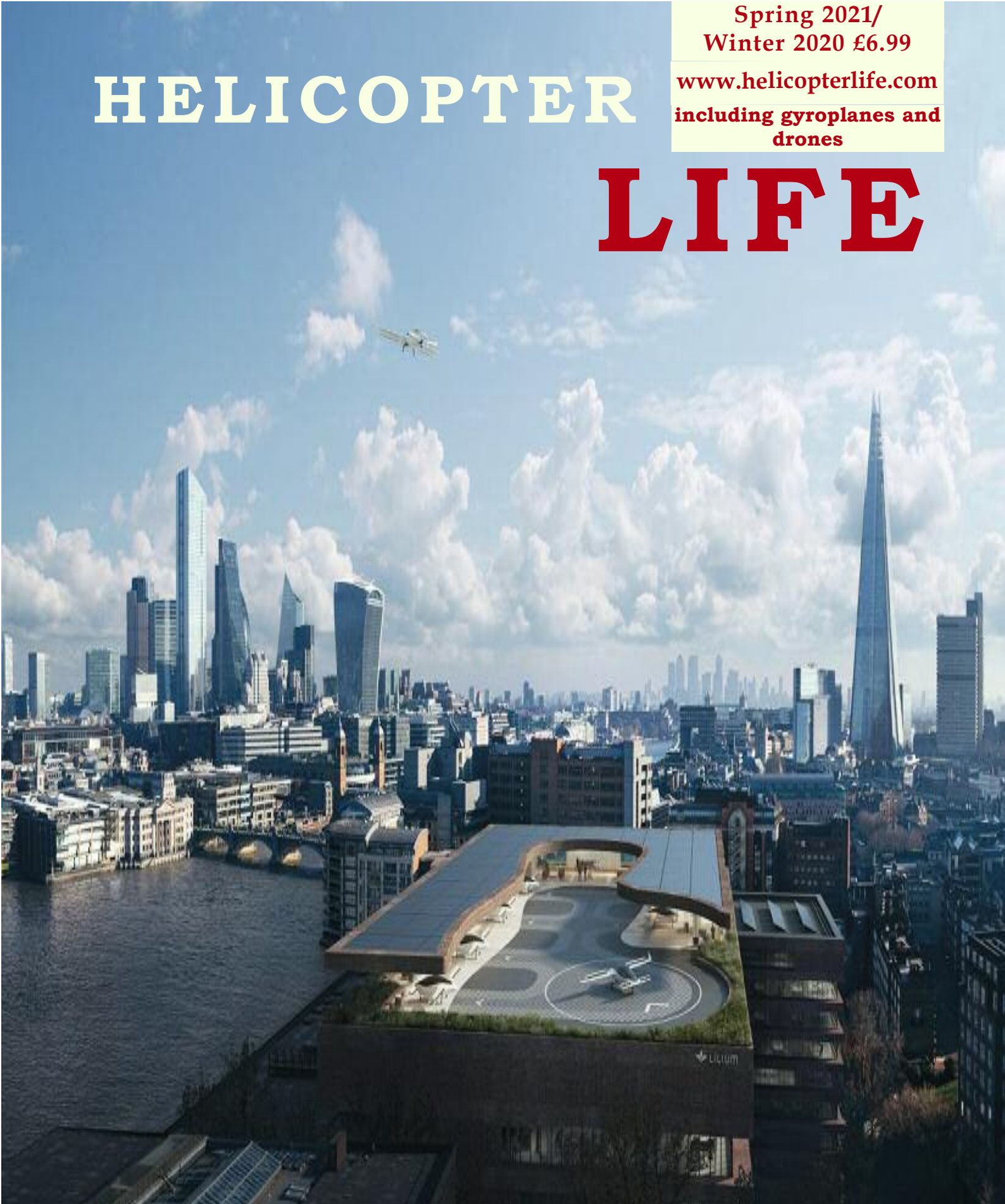


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ROTORTECH UK

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September 2021

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Tianjin Port (Airport Economic Zone), China.
http://www.chinaexhibition.com/trade_events

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WINTER 2020/SPRING 2021

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COVER PHOTOGRAPH

The future of urban aviation and airports
courtesy of Alan Norris

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Owing to COVID and the lockdowns Helicopter Life Winter 2020 and Spring 2021 have been incorporated into one issue, bustling with information from the few places that are still flying.

One of these during the Tier 4 Period was Ifly in Basingstoke. It, like everything else was closed during the lockdowns but hopes to open soon.

Ifly is a way of allowing you to fly without wings or rotors but in a hot air tunnel. Normally used for by divers to practice in the winter months when the weather in the UK is unsuitable for sky diving, it makes the perfect place to relax and enjoy feeling like a bird.

There hasn't been much GA flying in Europe but what of China, which, having had COVID restrictions earlier has now been able to return to a much greater level of normalcy?

Contrary to expectation, GA flying in China is not so buoyant. In fact, and not particularly related to COVID, General Aviation in China has been declining since 2018.

As of August 2020, the GA fleet stood at 2,930 GA aircraft in Mainland China. While the fleet size has increased consistently over the past seven years, the growth rate has been on the decline since 2017, with 2020 registering a growth of just 6% (+156 aircraft), the lowest since 2016. 50% of the fleet are turboprops or piston aircraft.

On the other hand, the 'Made in China' need continues and the Government is investing heavily in GA. This is especially true in airport construction, adding 21% more per year and through its 'Made in China' initiative, replacing imported, foreign aircraft with home-grown, self-developed aircraft. There are now 33 GA OEMs in China with production certificates.

In Norway, the use of drones is increasing and includes their use for keeping reindeer off the train line in the north. The north of Norway has some unusual attributes including a train line built by prisoners in WW2, a station called Hell, and freerange reindeer owned by the indigenous Sami people.

The use of drones is everywhere increasing as is the many things for which they are used. See Alan Norris's article on the future of urban aviation and airports to see how large drones and their infrastructure may change life as we know it, as much as COVID.



HELICOPTER LIFE, Spring 2021



Changing Flying Regulations in the UK

From 29th March:

GA flying will be allowed for non-professional purposes for solo pilots, or individuals flying with a member of their household or bubble.

Training for professional pilots, or those in training to be professional pilots, will be able to continue.

However, training for leisure or recreational purposes should not take place.

GA activities should take place in line with the wider restrictions. Travel should be minimised as far as possible.

No earlier than 12 April:

Flight training for all pilots, and flights with an instructor, can resume.

GA businesses will be able to open following COVID-secure guidance, for example commercial balloon operators. The rules on social contact will apply in these settings. Outdoor gatherings must still be limited to 6 people or 2 households, and no indoor mixing will be allowed.

GA activities should take place in line with the wider restrictions. Travel should be minimised as far as possible.

Keep the faith. We will get flying again, and when we do, enjoy.

Ansats Incubators for Newborns



The Russian Helicopters holding company of the Rostec State Corporation will equip the updated Ansat medical helicopters with complexes for transporting newborns. The device has passed the necessary certification and received approval from the Federal Air Transport Agency.

A new medical module, which is used in Ansat medical helicopters, has been supplemented with incubators for newborns. The module has a modified layout, adapted to unified stretchers, gurneys, and other equipment, thanks to which the patient's transportation has become more convenient: in the process of transferring a person on board, there is no need to shift and reconnect life support systems. Now it's possible to load a patient into a helicopter by one person, the whole process takes less than 20 seconds.

"When it comes to saving patients, including the kids, every minute can cost life. The incubators for newborns, which will now be equipped with the sanitary Ansats, will help to quickly deliver newborns to the hospital. The new version of the helicopter includes a ventilator, a condition monitoring unit, a respirator and an infusion pump. The new design makes it possible not to disconnect the patient from the life support devices during

loading, which increases the speed and safety of transportation" said Oleg Yevtushenko, executive director of the Rostec State Corporation.

"The approval of the Federal Air Transport Agency significantly expands the range of application of the new medical module MS-A for the Ansat helicopter, now it will be possible to transport patients of absolutely any age. The design bureau of Kazan Helicopters continues to work in this direction, in the context of a pandemic, the certification of an infectious box for a new medical module is especially relevant - this issue will also be resolved in the near future" said Andrey Boginsky, Director General of Russian Helicopters.

Ansats helicopters carry out rescue services in various regions of the Russian Federation, the geography of their use is constantly expanding. The modern program for the development of sanitary aviation in Russia has been implemented since 2017 and is now part of the National Healthcare Project.

On December 29, the upgraded Ansat-M helicopter took off for the first time with an increased flight range - up to 800 km with an additional fuel tank, especially important for medical evacuation, as it allows to perform work on a larger area of the region without refueling.

Ansats Satellite Communications



Kazan Helicopters has received approval from the Federal Air Transport Agency (Rosaviatsiya) to equip Ansat helicopter with the Mku30 satellite communication system. This option will provide helicopter passengers with high-speed Internet access during the flight.

This Ku band satellite communication system, created by MOST Satellite Systems, provides up to 2 Mbit/s Internet access at the coverage area of the Yamal satellites. Mku30 allows to provide uninterrupted transmission of large amounts of data during flights, organize on-board video conferences and stream high quality video in real time. Data transfer to passengers' mobile devices is provided using a Wi-Fi access point.

"The satellite communication system will be installed in the Ansat helicopter at the request of the customer. It will be most relevant for passenger and VIP modifications of the helicopter. The ability to use the Internet during flights is another step

towards improving the comfort level of Ansat helicopters," said Managing Director of Kazan Helicopters, Alexey Belykh.

Russian Helicopters and MOST Satellite Systems signed an agreement on cooperation in the field of joint promotion of helicopter technology equipped with satellite communication systems produced by the latter during the International Helicopter Industry Exhibition HeliRussia-2018. The agreement also provides for the development and implementation of after-sales service projects.

An upgraded Ansat-M helicopter with an increased flight range (up to 800 km with an additional fuel tank) took to the skies on December 29, 2020. The updated version comes with static stability, state-of-the-art avionics and modernized heating and ventilation systems. In 2021, the model will also receive 3-channel autopilot.

COVID speeds up Helsinki Airport Renovation

In 2020, a total of 5 million (2019: 21.9) passengers travelled from Helsinki Airport, of which 4 million on international routes. The number of passengers at Helsinki Airport fell by a total of 77 per cent from the previous year. In spite of the COVID-19 crisis, Finavia has



decided to continue Helsinki Airport Development Programme. International transfer travel, which has enabled the airport's rapid growth in recent years, fell by 80 per cent. The number of passengers with connecting international flights was 713,000 (3,571,900). The number of passengers at Finavia's 21 airports remained at a record low in 2020 due to the COVID-19 pandemic. During 2020, airports served a total of 6.4 million passengers, which is almost 20 million less than in the previous year. The number decreased by 75 per cent compared to 2019.

The Problem with Drones

In 2020, the German air navigation service provider DFS logged fewer reports of interference caused by drones at airports in Germany than in previous years. More than half of these occurrences, however, led to traffic disruptions. In total, 92 drone-related occurrences were reported in German airspace in 2020, which was lower

than in previous years (2019: 125; 2018: 158). Proportionally, however, the volume of air traffic, which came in 56 percent below the previous year's level, declined more than the number of such occurrences. Consequently, even with reduced traffic volumes resulting from the pandemic, drones had a massive impact on flight operations.

HeliGlobe's H155

NHV Group, a leading provider of B2B helicopter services, today announced the sale of its remaining H155 aircraft to HeliGlobe (Denmark). The brokerage company entered into the agreement on behalf



of their client Air Greenland. The six aircraft will be delivered over a period of six months starting in the first quarter of next year.

Bell Wins Electric Award

Popular Science recognized Bell's Electrically Distributed Anti-Torque (EDAT) innovation as the winner of its "Best of What's New Award" in the Aerospace category for 2020. This marks the third consecutive year Bell has won Popular Science's "Best of What's New Award" in the Aerospace category. Bell's Autonomous Pod Transport (APT) 70

was awarded in 2019 and the Bell V-280 Valor Joint Multi Role technology demonstrator won in 2018. This continued recognition demonstrates Bell's determined effort to pursue innovative solutions to push the boundaries of vertical lift.



Bell in Mönchengladbach

Located in Mönchengladbach, RAS will be home to the first ever Bell 505 dealership. It was established in 1972 and employs 280 staff in four locations in Germany. "We are pleased to announce RAS as Bell's first authorized 505 dealer-



ship for Germany," said Duncan Van De Velde, Managing Director, Europe & Russia. "This partnership has been highly valued as we continue to expand our footprint in Germany. With the Bell 505 dealership, we can use our customer collaboration to attract new owners and establish a stronger presence in the region."

Aerobility Launches Armchair Aurora

Building on the success of the Armchair Airshow, Aerobility, the UK's leading disabled flying charity, and Impressionist Jon Culshaw and Astronomer Pete Lawrence, are lining up a host of astronomers, scientists, aviators and artists for an hour long, live-streamed Armchair Aurora event on Saturday, March 13th 18:00. The free to attend event will livestream via armchairau-

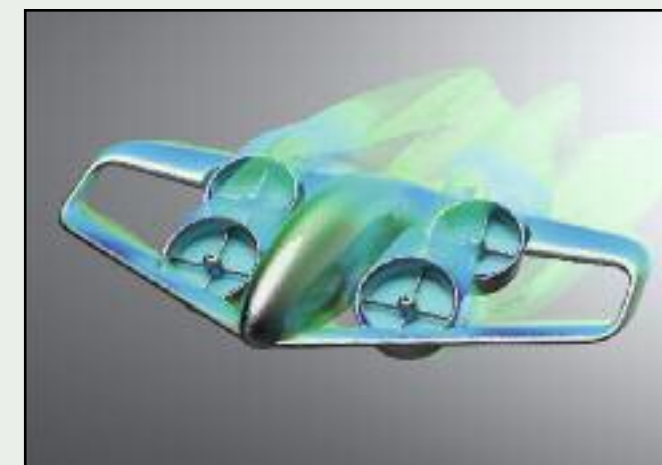


PHOTO COURTESY OF NASA

ra.com and will take viewers on a journey of wonder from their armchairs and into the skies. Bringing together spectacular Aurora footage, interviews and Q&A with scientists, there will be insights on polar aviation and the workings of the Aurora, all beamed to living rooms around the UK and worldwide.

GKN Next Generation Technology

GKN Aerospace is helping develop the next generation of sustainable technology through three groundbreaking collaborative programmes as part of the Future Flight Challenge. GKN Aerospace will take a leading role in the programmes, delivering them "The Future Flight Challenge is a four year, £125m ISCF programme from UK Research and Innovation



to develop more sustainable aviation solutions. The current phase is focused on the development of integrated aviation systems that enable new classes of electric or autonomous air vehicles.

Blue Water Navy

The People's Liberation Army Navy commissioned its last batch of Type 056A corvettes specialized in coastal defense, with the total number of the Type 056 series reaching 72. Having built a substantial green water fleet capable of securing its coastal areas, China will shift its focus to the production of a blue-water navy. This underscores one of the greatest foreign policy issues that President Biden is likely to face in his term, says GlobalData, a leading data and analytics company. GlobalData estimates that US\$3.2bn was put towards procuring maritime platforms, the third largest domain following land platforms (US\$6.26bn) and fixed-wing aircraft (US\$4.27bn).

LETTERS TO THE EDITOR

Dear Georgina

Elbit Systems” or “the Company”) announced today that it was awarded an approximately \$300 million contract by a country in Asia to provide HermesTM 900 Unmanned Aircraft Systems (“UAS”). The contract will be performed over a period of five years.

Under the contract, the Company will provide its Hermes 900 UAS and associated sub-systems, as well as maintenance and support services. The Hermes 900 UAS has been selected to date, by 12 countries, attesting to its competitive edge that combines technological sophistication, reliability, open architecture and a solid growth path.

Roger Savage

Best wishes

Noyman Dana

Dear Georgina,

Just as a matter of heli interest, I have a small airfield at Troutbeck (near to Keswick and Ullswater; see attached pic) and have just invested in an Avgas bowser,so happy to fuel any passing piston-engined helicopters and hope to have JetA1 at some stage too.

Kind regards and best wishes,



MORE LETTERS TO THE EDITOR

Dear Georgina

Horizon Aircraft, the advanced aerospace engineering company that has developed the Cavorite X5, the world’s first eVTOL (electric vertical take-off and landing) aircraft that can fly the majority of its mission exactly like a normal aircraft, says the early eVTOL passenger models that are used in commercial operations should have safety records equal to those in the commercial aviation sector in order to prevent accidents and fatalities.

It says the global spotlight on the first air taxis will be sufficiently intense that any accidents and safety risks would set the industry back years in terms of passenger confidence and regulatory approval.

Brandon Robinson, CEO and Co-Founder of Horizon Aircraft said: “There is much debate around the safety requirements of eVTOL aircraft, with some commentators for example, saying they should be twice as safe as driving a car, or have safety records on a par with helicopters. The safety bar must be set much higher so that potential passengers, regulators, and other stakeholders have the highest possible levels of confidence in the first eVTOL aircraft. This is essential to the sector reaching its full potential.”

The Horizon Aircraft Cavorite X5 is fundamentally a normal aircraft with an additional eVTOL capability that adds safety and operational capability. Flying 98% of its mission in a configuration exactly like a normal aircraft, means discussions surrounding certification can start from a well-understood baseline. This greatly reduces risk during the process.

On 18th February 2021, Astro Aerospace (OTCQB: ASDND), a global leader in eVTOL aerial vehicles and drones, entered a binding agreement to acquire Horizon Aircraft Inc. The transaction is expected to close on or before the beginning of 2nd Quarter pending customary closing conditions.

Astro, a pioneer in the eVTOL market, has developed one of the safest and most efficient eVTOLs in the world. In 2018, the Company’s drone, ‘Elroy’, was one of the first to seamlessly fly with people on board. Astro continually defies traditional aviation design and the acquisition of Horizon will only push the company further, with the ability to reach greater heights working in tandem with Horizon’s exceptional team.

Best wishes

Phil Anderson

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Phillipines Coast Guard H145s



In October the Philippine Coast Guard (PCG) commissioned the second of two H145 helicopters ordered in September 2018, just four months after the official commissioning of its first H145. The Philippine parapublic agency became the first coast guard organisation in the world to operate the multi-purpose H145.

The new four-tonne-class twin-engine helicopters are specially equipped with weather radar, bambi bucket, emergency floatation gears, as well as external loud-speaker, to perform critical missions such as search and rescue, maritime patrol, law enforcement and fire-fighting.

“Having led numerous operations in the country for many years, we are very happy to be the first in the Philippines to introduce the H145 for parapublic missions,” said Captain Philipps Y.Soria, Commander of Coast Guard Aviation Force at the agency’s 119th

anniversary celebrations where the second H145 was commissioned.

“PCG and Airbus go a long way back since the agency’s first BO105 in 1975. We are delighted that the coast guard has chosen the H145 to strengthen their parapublic fleet. The first H145 helicopter already operated by the coast guard, has proven itself and had taken on numerous humanitarian missions, including the delivery of personal protection equipment (PPE) and essential supplies to frontliners in the Coast Guard District in Negros Occidental, a province located in the Southern Visayas, earlier in March in the fight against COVID-19. We are also happy to know that this second H145 has undertaken its first surveillance mission recently,” said Lionel de Maupeou, Managing Director of Airbus Helicopters Philippines.

David Oliver

UK Manned-Unmanned Teaming Trials



On 17th September, Leonardo successfully demonstrated unique integrated capabilities between a manned aircraft and an unmanned aerial vehicle (UAV). This took place in the UK during Manned-Unmanned Teaming (MUMT) trials between an Army Leonardo AW159 Wildcat helicopter and a semi-autonomous UAV.

In this instance, MUMT is when a helicopter crew controls a UAV from the helicopter like it was an onboard sensor being controlled from the cockpit. By integrating control of the UAV into the Wildcat Mission System, Leonardo was able to minimise the pilots’ workload allowing them to focus more on the mission whilst simultaneously controlling the UAV - this is the first time such an integrated capability has been demonstrated in the UK on a military aircraft. A ‘Gateway Processor’ supplied by Callen-Lenz Associates was used to interface with its semi-autonomous Fregata.

The Leonardo solution allows the Wildcat crew to control both the flight path and payload of the UAV, a capability known as Level of Interoperability (LOI) 4, using an efficient and effective task based Human

Machine Interface (HMI), rather than the more operator intensive approaches employed on other systems.

Combining the strengths of manned and unmanned platforms, MUMT has the potential to play a transformative role by increasing the situational awareness, tempo, lethality, survivability and combat mass of aviation forces, significantly reducing crew workload allowing pilots to focus on the mission at hand.

MUMT enhances air support capability in both the Land and Maritime environments. It also enables extended and complex operations to be conducted with a mix of platforms and systems. The demonstration was part of the British Army’s MUMT themed Army Warfighting Experiment (AWE) 19, and was planned and executed by Dstl and took place on Salisbury Plain in September. These trials build on simulation based development conducted under the Dstl funded AMS DE-RISC programme. This successful demonstration is now expected to inform the MUMT capability roadmap for both the UK MoD and Leonardo.

David Oliver

West Midlands Police Deploy UAVs



The West Midlands Police drone programme, working closely with the National Police Air Service (NPAS), provides 24/7 unmanned aerial support to an area of 348 square miles, home to more than 2.8 million people.

With the unit attending more than 2,000 incidents in 2020 alone, West Midlands Police needed a powerful, intuitive system capable of managing the complexities involved in operating 32 pilots and its ten small multi-rotor unmanned aircraft as part of the second largest police force in the UK.

Sgt Keith Bennett, West Midlands Police, says: “When we expanded the drone programme in October 2019 to offer 24/7 support, it quickly became apparent that our existing systems and operational processes were cumbersome, inefficient and time consuming.

The force turned to Centrik to manage its complex drone programme, using the powerful operational management system to improve efficiency and help its officers “spend less time on administration and more time policing”.

Originally developed for civil aviation, Centrik is the only fully ICAO and CAA-compliant solution that also

specifically caters to unmanned aerial system (UAS) operations. The system provides a complete, configurable solution, managing workflows, tasks, equipment and log-books, simplifying internal and external audit processes, as well as tracking pilot training and currency records, among a myriad of additional functionality available to all departments within an organisation.

“The system’s CAA support is truly what sets it apart. To increase safety and ensure compliance we can instantly file occurrence reports directly to the CAA via our Centrik dashboard. The system has even been specifically adapted to cut out the extraneous manned aviation elements that used to make the process so time consuming,” adds Sgt Bennett. The system also accurately tracks all aircraft flight-hours, ensuring important service and maintenance schedules are always met.

To ensure total transparency, West Midlands Police has granted the Policing Crime Commissioner (PCC) access to its Centrik system, which provides complete operational oversight and helps demonstrate compliance as part of any subsequent audit process.

David Oliver

Sulphur-Sniffing Schiebel CAMCOPTER S-100



The service providers for a French deployment covers ship sulphur emission monitoring in one of the world’s busiest shipping lanes in the strait of Pas-de-Calais. The operation started on 23 September and will run for three months.

The rotary-wing unmanned air system (UAS) CAMCOPTER S-100 specifically measures the ships’ sulphur emissions to check compliance with the EU rules governing the sulphur content of marine fuels. Measurements are transmitted in real time through the EMSA RPAS Data Centre to the relevant authorities.

The Remotely Piloted Aircraft System (RPAS) service is offered by the European Maritime Safety Agency

(EMSA). As part of this contract, Schiebel provides various maritime surveillance services for EMSA to several EU member states and EU bodies. Currently, the CAMCOPTER S-100 is also operational in Denmark for emission monitoring purposes, as well as in Finland supporting coast guard functions.

The S-100 has a flight endurance of more than six hours and operates day and night. It is equipped with an Explicit mini-sniffer sensor system, an Electro-Optical / Infra-Red (EO/IR) camera gimbal and an Automatic Identification System (AIS) receiver.

David Oliver

PHI on Taranaki Gas Field



New Plymouth will remain the central transport hub for workers on the offshore Taranaki gas field following the extension of an agreement between PHI International (PHI) and a consortium of global customers.

PHI provides essential helicopter transfer services to the offshore oil and gas industry in New Zealand, Australia, the Philippines, Ghana and Trinidad and Tobago. It is part of PHI Aviation with PHI Americas, which serves the United States.

Under the three-year extension, PHI will use two AW139 aircraft to transport passengers and freight to five offshore facilities operating off the coast of New Plymouth on behalf of OMV, Beach Energy and Jadestone Energy. The extension marks the continuation of a long-standing relationship between PHI and the three oil and gas companies. PHI – under its previous name Helicopters New Zealand – has been flying offshore to the Maui gas field since was first explored in 1969. It began its partnership with OMV in 2003 and with Beach Energy in 2018. Jadestone Energy is expected to join PHI’s client list in 2021 under a purchase agreement for the Maari field. PHI International Chief Operating Officer Mike Price said the renewal is a positive sign for the local economy as it moves into 2021.

PHI has also made its first formal commitment to sustainability across all of the Aviation enterprise, through

which it will focus on achieving more sustainable business practices and better environmental outcomes in five specific areas. These are Health, Safety and Wellbeing, Diversity and Inclusion, Environment, Community and Governance and Business Ethics. Keith Mullett, Managing Director for PHI Aviation, said the business will work alongside experienced industry partners and clients to achieve an ambitious programme that aims to significantly reduce its carbon footprint and other environmental impacts over the next 10 years.

“We believe that how we operate is as important as what we do. We place a high priority on looking after our people, our customers, and our communities,” Mullett said. “We are at the start of our journey to becoming a more responsible partner in the industry and be part of the eventual transition from oil and gas to renewable energy sources. “Alongside plenty of work already underway to enhance sustainability across our business, we are also on the cusp of launching a pilot project to measure carbon emissions at our New Plymouth base in New Zealand that will be used as the model to build other similar programs throughout the rest of PHI.” As part of its sustainability commitment, PHI International has joined the Sustainable Business Council New Zealand and is the first helicopter operator in the country to become a member.

PHOTOGRAPHS COURTESY OF BARCOCK

A New H145 For The Offshore Business



Last month, the brand new H145 D-HTMR from Helicopter Travel Munich arrived in Emden. The BK117 D-2 helicopter is the second H145 that HTM is using for offshore hoist operations; a third H145 in the version D3 will follow in July. This then also has the new five-blade main rotor.

The MR can be flown with either one or two pilots and offers space for up to eight passengers. The H145 has proven itself extremely well over the past few years. It is considered to be extremely reliable and, thanks to its relatively small rotor diameter and its excellent flight characteristics, is ideal for the winch offset on offshore wind turbines. We are pleased to be able to offer our customers a helicopter of this type.

Caterina Jahnke



Kenyas New National Air Support Department

Words and pictures Courtesy of David Oliver



KPAW Bell 206L LongRanger crashed at Wilson Airport in August 2016, and was written off (Twitter)

AgustaWestland AW139 crashed the National Youth Service grounds in the city's Ruaraka area on a training flight with four people on board who suffered serious injuries. Mi-17 5Y-SFA was written-off following a heavy landing at Wilson Airport in November 2019.

In December the Kenya Police Air Wing dissolved and incorporated into a new National Air Support Department (NASD). The Department is a multi-agency

unit that falls under the Ministry of Defence and is charged with coordinating Kenya's national air response services.

The NASD has a fleet of 36 aircraft and incorporates the National Police Air Wing, the Kenya Wildlife Service (KWS), the Kenya Electricity Transmission Company (KETRACO) and the Kenya Forest Service (KFS), among others. The KWS Airwing was established in

On 13 June 2020 a Kenya Police Air Wing AgustaWestland AW119 Mk II Koala 5Y-NPW crashed in the Kaithe-Kithoka area of Meru with six POB, all of whom were injured but survived. Six months later the Kenya Police Air Wing was disbanded.

It was established in 1975 headquartered at Wilson Airport in Nairobi to provide air support to the Police Service; including air supply and tactical, night and visual reconnaissance, general government communication flight facilities and carriage of V.I.Ps, transport air support for the Service, government ministries and other authorised agencies and casualty evacuation

However, the Wing had a long record mismanagement and accidents before the June 2020 crash. More than five police helicopters had crashed and been declared unserviceable since 2009. These includes Mi-17 registration 5Y-UKW, on 11 May 2009 in Kapsabet carrying the

Kenya Police Commissioner and Eurocopter AS 350B3e Ecureuil 5Y-CDT crashed into the Ngong Forest on the outskirts of Nairobi on June 2012 in which six people, including Kenyan Cabinet minister George Saitoti and his assistant minister Orwa Ojode, died. It had flown less than 100 hours since it entered service in January 2012. Bell 406 5Y-RDU crashed at Kwale County with three POB suffering minor injuries on 30 December 2013

On the afternoon of 23 August 2016, Kenya Police Air Wing Bell 206L-4 Long Ranger helicopter, registration 5Y-COP crashed at Wilson Airport while on a training flight with an instructor and a student who suffered minor injuries. No explanation has been given for the crash that wrote-off the helicopter, which had been purchased in 2008.

Sixteen days later, on 8 September 2016, yet another Kenya Police Air Wing helicopter, a newly acquired

Another KPAW helicopter written off after an accident at Wilson Airport was Mi-17 5Y-SFA. (David Oliver)





The Kenya Forest Service's Aerospatiale 350B3e Ecureuil 5Y-FSK now under the operation of the new National Air Support Department. (KFS)

1990 with over 40 pilots to provide air support services to wildlife management across the country. Also based at Wilson Airport in Nairobi, it has a fleet of 15 aircraft, including a Bell 206 and a Bell 409 helicopter. The KETRACO operates an AW109 while the KFS uses a single Aerospatiale 350B3e Ecureuil registered 5Y-FSK.

Speaking to NASD staff at its Wilson Airport headquarters, President Kenyatta said the entity, which brings together all Government air assets, will enhance efficiency in the delivery of aviation services.

“The National Air Support Department is a multi-agency approach to service delivery that we, as a Government have adopted. This reform initiative was necessitated by the compelling need to foster effectiveness in the management of the national aviation assets; with a view to optimize on safety, efficiency and improved availability of aircraft.

“The capabilities and wealth of experience within National Air Support Department will not only benefit Government, but, by providing aircraft and equipment maintenance services to private sector aircraft operators, NASD will promote aviation safety and reliability across Kenya and the region; with the added benefit of generating revenue to supplement public funding,” the President said.

The Head of State regretted that in the past, lack of

proper maintenance of aviation equipment within the National civilian air fleet had brought tragedies to the nation claiming lives of citizens including those of prominent leaders. He said that it was due to such challenges that the Government decided to adopt a coordinated approach in the management of the country's aviation assets.

“In the past, utilization of national air assets, has been managed in an uncoordinated manner, leading to: inefficient training, un-optimal utilization and maintenance of air assets and air related facilities.

“Indeed, the result of this approach has been poor manning, and state of aircraft serviceability in each of the individual government departments. In some cases, departments had more air assets, with less manpower; while others had more manpower; with fewer assets; and others had very low serviceability rates,” the President said.

At the same time as taking responsibility for the operation of the National Air Support Department, the Kenya Air Force is expanding its rotary-wing inventory. Recent acquisitions include three Leonardo AW139s, nine Airbus Helicopters AS350C3 Fennecs and six MD Helicopters MD530F Cayuse Warrior combat helicopters and five Bell UH-1H Huey IIs.



Four police personnel were injured when AW119 Mk II Koala 5Y-NPW crashed in June 2020. (Twitter)

Paramount Group Launches Advanced Training Division

Words and pictures by David Oliver



Paramount Group, the South African-based global technology company, announced the establishment of a new division in January 2021 that will provide advanced training solutions for modern day ‘concept of operations’ and battlefield management to governments experiencing rising security challenges such as terrorism, violent extremism and insurgencies.

The new division, Paramount Advanced Training and Support, will also consolidate the Group’s existing global training, support and skills development capabilities across its air operations.

In order to bolster the capabilities of its new division, Paramount Group further announced that it has taken a strategic ownership stake in Burnham Global, a Dubai-based firm that specialises in providing a range of train-

ing solutions to security services around the world.

By combining the skills development expertise of Burnham Global with Paramount Group’s advanced technologies and training capabilities will enable the new division to offer militaries and police forces an integrated solution for the optimal performance of systems and personnel in an era of rising asymmetrical threats and conflicts.

The wide range of training and support capabilities of the new division will cover modern battlefield strategies and management, the development of ‘concept of operations’, special forces operations support, pilot training and medical training. This will enable governments to implement strategies that will strengthen connected battlefield operations, reduce risk and threats to armed per-

sonnel and minimise collateral damage.

Alison Crooks, CEO of Paramount Industrial Holdings stated added: “For decades, Paramount has been at the forefront of supporting customers combating asymmetrical warfare on the continent and around the world. In recent years, we have seen a growing training and support requirement from governments facing threats from rising insurgencies and terrorism.

“The complex and multi-domain environment of the modern battlefield requires a specialised set of skills that will ensure the effective integration of land, sea and air operations. Our investment in Burnham Global combines complementary skills and experience in equipping armed forces with the required capabilities and highest possible training standards to optimise their success on the modern battlefield.”

Burnham Global has for more than a decade supported a large-scale project in Lebanon that has trained more than 18,000 troops, and it has managed a variety of other skills development programmes in Jordan and across Africa. Utilising both sovereign and external donor funding, these projects have been primarily funded by the UK government, but also by the United States, Canada, and Germany.

Paramount Group has established itself as one of the world’s leaders in the design and manufacturing of advanced technologies and equipment including aircraft. The integration of such equipment into end-user systems and the long-term training, support and maintenance are at the core of the Group’s customer-centric solutions.

Neither Paramount nor Burnham play any role in conducting or assisting combat operations. Only sovereign security services have the legitimacy to conduct operations.

At its facilities at Wonderboom National Airport and Polokwane International Airport, the Group operates rotary and fixed wing training facilities providing pilot and technical training for police and air forces.

Paramount Group, established by Ivor Ichikowitz in 1994, already operates a number of training facilities, including its specialised training facility in the North West which trains special operators, K9 handlers and rapid intervention forces. It also has a long history of training and supporting aerial anti-poaching surveillance operations in Africa. In 2013 a former British Army Air Corps Gazelle AH.1 helicopter was donated to South African National Parks (SANParks) by the Ichikowitz Family Foundation in association with the Paramount



The Paramount Gazelles are used for special forces operations and K9 training



A former British Army Air Corps Gazelle AH.1 was donated to South African National Parks (SANParks) by the Ichikowitz Family Foundation

Group to fight rhino poachers in the Kruger National Park, South Africa's largest game reserve. A second former Royal Navy HT.2 Gazelle was donated in 2015.

The Gazelle was configured for the anti-poaching role by Paramount's Advanced Technology Division. Formerly known as Advanced Technologies and Engineering (ATE), the company acquired a number of Gazelles for upgrade and modification.

Paramount said the Gazelle will bring the advantages of a light attack helicopter to the aid of SANParks Anti-Poaching operations the minute it takes to the air. The helicopter has a maximum airspeed of 310 km/h, a range of 670 km and service ceiling of 5,000 meters.

Ivor Ichikowitz, Chairman of the Ichikowitz Family Foundation and founder of the Paramount Group, said that, "During wartime, the strategic advantage always belongs to the force that has superior airpower. A critical part of these helicopters's capabilities is its speed and the fact that the Gazelle has a night vision capable cockpit - part of our contribution is to the training of the pilots to be able to fly at night thereby fundamentally taking the war directly to the poachers."

The Paramount Group Anti-Poaching and K9 Academy houses one of the largest K9 breeding and training facilities in Africa. It provides combat training courses for park rangers, and rapid response unit training for K9 teams including rappelling from helicopters for fast deployment.

In 2016 the Ichikowitz Family Foundation donated another Gazelle helicopter, pilot training, specialist ranger training and equipment for anti-poaching officers as well as the establishment of a canine training facility, to the Gabon National Parks Agency in West Africa to set up an Anti-Poaching Rapid Response Task Force. This helicopter was one of a number of ex-AAC Gazelle AH.1s acquired by the Paramount Group which refurbished it and equipped it for its new anti-poaching role. Flight training took place at Paramount's flight academy in South Africa with around a dozen pilots being trained to date. Maintenance and technical support is also being carried out by Paramount Aerospace.



The Ichikowitz Family Foundation donated another AH.1 Gazelle to the Gabon National Parks Agency to set up an Anti-Poaching Rapid Response Task Force

High Flying Camcopter S-100s Patrol the Sea

Words and Photographs by David Oliver



The Austrian Schiebel Camcopter S-100 is the world's most successful maritime rotary-wing unmanned aerial vehicle (UAV) in production. It is in service with the Royal Australian Navy and is being delivered to the Royal Thai Navy. In December 2020, France's Naval Group, on behalf of the French Navy, accepted two additional Camcopter S-100 Unmanned

Aerial Systems (UAS) with a total of four Unmanned Air Vehicles (UAVs) for operational use. They will be deployed on the French Navy's Mistral-class amphibious helicopter carriers (Porte- Hélicoptères Amphibie – PHA), Tonnerre and Mistral.

The acquisition comes after the successful integration of the Camcopter S-100 on the French Navy Mistral-



A Nordic Unmanned S-100 'sniffer' flying over the strait of Pas-de-Calais, the world's busiest area for ship movements, contracted by EMSA. (Schiebel)

class vessel, Dixmude, which was finalised in 2019. This was the first time in Europe, that a rotary-wing UAV had been connected to the combat system of an amphibious helicopter carrier. The acceptance tests of the two systems took place in October 2019 with representatives of Naval Group and the French Navy in attendance.

During 2021 the newly acquired S-100 UAVs will be integrated on the two amphibious helicopter carriers to enhance their Intelligence, Surveillance and Reconnaissance (ISR) capabilities.

The Camcopter S-100 VTOL UAV operates day and night and can carry multiple payloads up to a combined weight of 50 kg. Due to its minimal footprint, reliability and airworthiness pedigree, it is ideally suited for maritime operations around the globe. It can operate in adverse weather conditions, with a beyond line-of-sight (BLOS) capability out to 200 km (108 nm), over land and sea.

Its carbon fibre and titanium fuselage provides capacity for a wide range of payload/endurance combinations up to a service ceiling of 5,500 m (18,000 ft). In a typical configuration, the S-100 carries a 34-kg (75-lb) payload up to 10 hours and is powered with AVGas or JP-5 heavy fuel. High-definition payload imagery is transmitted to

the control station in real time. In addition to its standard GPS waypoint or manual navigation, the S-100 can successfully operate in environments where GPS is not available, with missions planned and controlled via a simple point-and-click graphical user interface.

LCDR Serge D, the French Navy's UAS programme officer said: "The S-100 on Mistral-class will be the first operational tactical UAS for the French Navy and this is a major step towards the Mercator plan." The Mercator plan is the strategic vision of the French Navy's Chief of Staff, Admiral Christophe Prazuck in which the Navy will be modernised to face new threats.

Porte Hélicoptère Amphibie Maintenance Architect at Naval Group, Philippe V., said: "We participated in the successful factory acceptance test, which was an important milestone for this acquisition, prior to the global integration onboard conducted by Naval Group."

More recent success for Schiebel came when the first of two Camcopter S-100 UAS on order was delivered to Nordic Unmanned in February 2021. This contract comes after successful sulphur "sniffer" operations in Denmark and France. The S-100 was also recently operated for the world's first full- scale offshore UAV cargo delivery to the active oil and gas platform Troll A in

Norway. These operations were carried out by Nordic Unmanned and Schiebel both of which are under a contract with the European Maritime Safety Agency (EMSA) to fulfill its Remotely Piloted Aircraft System (RPAS) services.

Nordic Unmanned delivers comprehensive data solutions to assist both public and private customers in the transition to unmanned technology. Its focus is to support clients by collecting time-critical data with the use of unmanned technology. Founded in 2014, the company has offices in Sandnes, Oslo, and Frankfurt, and has quickly become one of Europe’s leading providers of unmanned systems and services, with operations across the continent. The company is ISO 9001-2015 certified by DNV-GL as a UAV and sensor operator.

Nordic Unmanned’s S-100s will be used specifically for maritime pollution and emissions monitoring. The UAVs will measure the ships’ sulphur emissions to check compliance with the EU rules governing the sulphur content of marine fuels. Measurements are transmitted in real time through the EMSA RPAS Data Centre to the

relevant authorities.

Knut Roar Wiig, CEO at Nordic Unmanned, said: “It’s with great satisfaction, that we have successfully taken delivery of our first Schiebel Camcopter S-100 system. This is according to our communicated investment plan and we plan to put this first system into operations this spring for EMSA and look forward to the next system delivery.”

With the aim of tightening control over ship emissions in French waters, the French Ministry of the Sea deployed on a trial basis an S-100 ‘sniffer’ UAV in the strait of Pas-de-Calais, the world’s busiest area for ship movements. This S-100 was made available to France by Nordic Unmanned under contract to EMSA.

A three month trial operation started in September 2020 with flights taking off from the Regional Surveillance and Rescue Operational Centre (CROSS) Gris-Nez which served as logistical base. The S-100 flew above the traffic separation scheme of Pas-de-Calais. This area is part of the North Sea Sulphur Emission Control Area (SECA) where tighter pollution monitoring

S-100 UAS are being operated from French Navy Mistral-class amphibious helicopter carriers. (Schiebel)



Nordic Unmanned S-100 sulphur ‘sniffer’ UAVs operate with Schiebel under a contract with the European Maritime Safety Agency (EMSA). (Schiebel)



rules apply. Ships navigating in this area must not use fuel with a sulphur concentration higher than 0,1% whereas in other areas the limitation is set at 0,5%.

The information collected from the S-100, including sulphur concentration, images, flight trajectory and gas measurements, were transmitted live and recorded in EMSA’s data centre which is linked to THETIS-EU, a European database used by authorities around Europe responsible for ship inspections. If the emissions measurement taken by the drone reveals a breach in the con-

centration limit, a subsequent ship inspection may be triggered at the next port of call. EU member states are informed of these breaches to facilitate the coordination of the ship inspections among them.

Other EMSA operations include The deployment of a Nordic Unmanned S-100 from the Danish coast started in July 2020 in support of the Danish Maritime Authority (DMA) and the Danish Environmental Protection Agency (DEPA) and is a continuation of previous services in 2018 and 2019.

The Camcopter S-100 is operated the Royal Australian Navy’s 822X Squadron at Jervis Bay Airfield. (RAN)



Military Helicopter

Operations in Mali

Words and Pictures courtesy of David Oliver





An ALAT Tiger operating in Mali during Operation Barkhane. (ALAT)

On August 1, 2014, France launched Operation Barkhane at the request of Mali's government as extremist groups pushed south and threatened to overrun the capital, Bamako. The mission was simple, to stabilise the country. Not long after the creation of Barkhane, a terror group known as the Islamic State in the Greater Sahara (ISGS) formed. It operated mainly in eastern Mali and neighboring regions of Niger and Burkina Faso.

Barkhane's military aircraft are mostly based at airfields in Niamey and N'Djamena. The fleet includes French Air Force transport and combat jets and 16 French Army (ALAT) 5e Régiment d'Hélicoptères de Combat (RHC) helicopters. These include Tiger and Gazelle combat helicopters and Puma and NH90 Caiman transport helicopters. The mission is also supported by three Royal Air Force (RAF) Chinook HC.5 heavy lift transport helicopters and in 2019, Denmark announced its plan to donate two Royal Danish Air Force EH101 Merlin transport helicopters to the mission. Since reaching full operational capability on 24 December 2019, the

unit logged 250 flight hours by the end of March. During those three months, the Danish detachment completed 120 missions over 250 flight hours. During these operations, the two Merlin helicopters transported nearly 1,800 people and 45 tonnes of cargo.

The operational environment across the Sahel and particularly in northern Mali is daunting. Temperatures reach well above 40 degrees centigrade, sandstorms reduce visibility to almost nothing and, during the rainy season, many roads become impassable. On 25 November 2019 an ALAT Tiger collided with an AS532 Cougar at low-altitude at night while on a sortie near the town of Ménaka in Northern Mali, killing all soldiers and crew. The loss of 13 was the heaviest loss of life for the French military since 1983.

The RAF detachment in Mali is designated as No 1310 Flight and is deployed on Operation Newcombe and flying from Gao Airfield in Mali. The Flight is committed to supporting, in a non-combat role, Operation Barkhane, and is fully integrated into the French Groupement Tactique Désert-Aérocombat (GTD-A).

The deployment of RAF Chinooks began in 2018 and it has been Joint Helicopter Command (JHC) that has sustained this operation for two years now by providing the enabling personnel, together with the planning needed to ensure the operations continue. The RAF Chinook detachment supporting French troops in Mali has so far logged over 2,000 flight hours, including nearly 340 hours so far this year (2020). Between January and May 2020, the Chinooks have lifted 247 tonnes of freight and transported 1,150 passengers. During this time the detachment has operated in temperatures up to 47 degrees centigrade which have been accompanied by frequent dust storms.

A tool being used by RAF Chinook crews deployed to Mali is the beyond-line-of-sight (BLOS) capability of Inpire's GEKO tablet-based mission system. The capability, which was developed in response to an urgent operational requirement (UOR), uses satellite communication enabling users to communicate over great distances from virtually anywhere in the world.

GEKO BLOS is used in the briefing stage of RAF Chinook crews to give a 3D flythrough of a target, alongside other briefing products that allows crews to visualise the assault track and final mile to the landing site. It also allows them to talk through overshoot plans, re-attacks

and factor threats. The use of an electronic bag allows the crews to have large documents to hand rather than having to rely on photocopies or memory.

Ft Lt Rob Town outlined the challenges of the Chinook operations in Mali. "Most of the forward operational bases (FOBs) are 150-180km away and fuel is limited. Weather is changeable with dust storms, thunderstorms and torrential rain. Communications are difficult due to the sheer size of the operations area. The use of Arctic flying techniques in the desert was required. BLOS allowed us to communicate back to base so oncoming crews were fully prepared and read in the weather before they launched."

JHC planners have recently led the work to ensure that equipment, including a Chinook, could be rotated to allow long term maintenance. The complicated planning ensured a RAF C-17 Globemaster from RAF Brize Norton based No 99 Sqn was able to conduct the changeover of Chinook air frames successfully.

JHC personnel are also deployed in Mali at Gao Air base, to support No 1310 Flight which is currently from C Flight, No 18 (B) Sqn RAF and their supporting ground crew. One of the JHC units that is supporting the operation is the Tactical Supply Wing (TSW) which is a key enabling element for the deployment as they carry



An Operation Newcombe RAF Chinook HC.5 at Gao Air Base in Mali. (Crown Copyright)

PHOTOGRAPH COURTESY OF DAVID OLIVER



An RAF Chinook HC.5 carrying an underslung cargo during Operation Newcombe. (Crown Copyright)

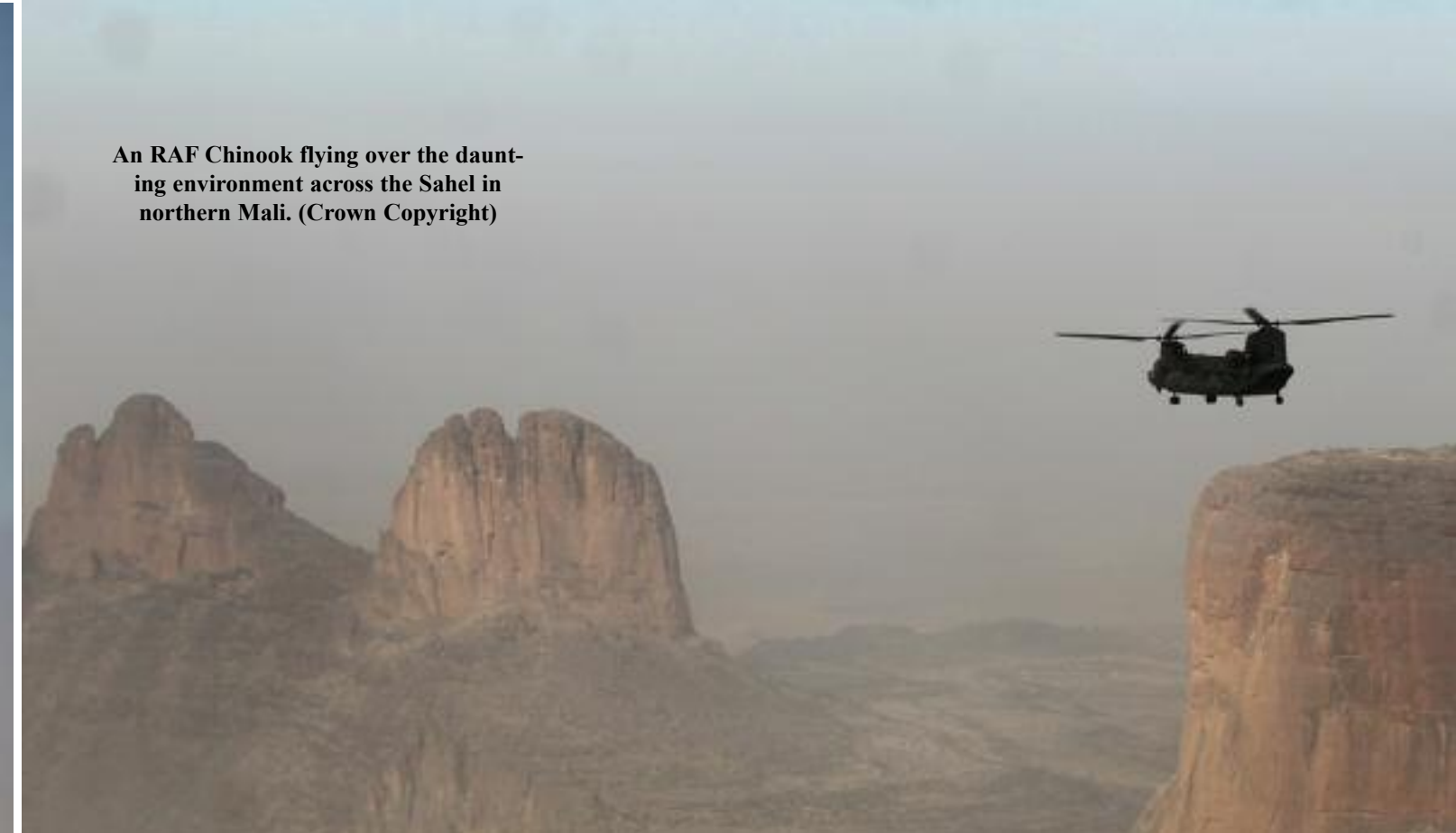
out the fuelling of helicopters and other aircraft. The detachment is equipped with a very large Oshkosh Tactical Aircraft Refueller tanker that can hold 15,000 liters of fuel. The fuel that is used, is drawn from the main French fuel depot based at the airfield where the detachment blend in additives that brings the fuel up to UK military grade specifications.

The TSW detachment has increasingly taken the lead in introducing specialist refuelling activities for all of the helicopters currently based at Gao, including the Danish Merlins and the French Tiger helicopters as well as the RAF Chinooks. The programme of interoperability training has introduced rotors turning refuels. This means the helicopter is refuelled without the engines being shut down and the rotors still turning, a procedure which is a specialist activity requiring additional training and is an activity the UK military refuellers from the RAF and Army Air Corps specialise in.

In June 2020, the UK Ministry of Defence announced that it would extend military support to Mali by continuing Operation Newcombe with three Chinooks.

South Africa's Starlite Aviation is also supplying a Super Puma helicopter to the European Union Training Mission Mali (EUTM) headquartered at Bamako. German personnel deployed to the West African country have been using it for medical evacuation training. Troops from 22 European Union member states and five non-EU states work with both the Armed Forces of Mali (FAMA), and the five countries of the G5 Sahel Joint Force, Burkina Faso, Chad, Mali, Mauritania and Niger.

France has stressed that Barkhane is not an indefinite mission. As soon as possible, it intends to give way to local forces. As often as possible, France wants to partner with national militaries, regional efforts like the G5 Sahel Joint Force and



An RAF Chinook flying over the daunting environment across the Sahel in northern Mali. (Crown Copyright)



RAF Tactical Supply Wing (TSW) crew refuel an ALAT Tiger at Gao Air Base. (Crown Copyright)

Lilium: The Aerial

Transport of the Future

Alan Norris



Five years ago Lilium had a vision of a completely new type of transportation in the form of an eVTOL Jet. The company and concept has moved forward and now have a vision of scalable vertiports to service the Lilium Jet model of regional air mobility.

Lilium is an aviation company developing an emissions-free regional air mobility service.

It was originally founded by Daniel Wiegand, Sebastian Born, Matthias Meiner and Patrick Nathen while they were academics at the Technical University of Munich, when the group shared a vision of a completely new form of transportation. Since then the company has attracted funding from investors such as Atomico, Tencent, LGT, Freigeist and Obvious Ventures.

Baillie Gifford was their newest investor (they have invested in high-impact technology companies such as Amazon, Tesla, Airbnb, Spotify and SpaceX) with an injection of \$35m (€31m) into the company. This came only three months after Lilium confirmed it had received \$240m (€211m) in additional funding from its existing

investors bringing the total investment to more than \$375m (€330m). This will be used to support further development, as well as underpinning preparations for serial production in Lilium's newly-completed manufacturing facilities.

Headquartered in Munich, in less than two years Lilium has grown from the founding team to a company of over 70 world-class engineers, developing and building the world's first five-seat fly by wire fully electric vertical take-off and landing (eVTOL) jet. It currently employs more than 400 people.

Their vision of a world where anyone can fly wherever they want, whenever they want, goes beyond simply providing a new mode of transport. They believe that the technology they are developing should, benefit society as a whole as well as the individual. To this end, they have challenged themselves to ensure they are not just delivering for the customers but also have a meaningful impact in the community. Whether it's reducing the environmental footprint, driving economic growth or connecting

They have challenged themselves to have a meaningful impact of society by reducing the environmental footprint, driving economic growth and connecting communities



Their vision is a world where anyone can fly wherever they want, whenever they want.





Designer Mathis Cosson took inspiration for his design from the manta ray

communities, the company is committed to building on the opportunities new technology presents.

Their ultimate aim is a new type of aircraft that will deliver regional journeys, to and from large and small vertiports. This will be considerably faster than rail or road, and yet competitively priced. Lilium expects to service a sizeable global market demand by connecting communities at a fraction of the cost of conventional high-speed infrastructure, all combined with zero operating emissions.

Unique design

The inspiration behind the distinctive shape of the Lilium Jet design came from designer Mathis Cosson who says that when he sketched the Lilium Jet for the first time, his inspiration came not from the skies, but the oceans.

The designer was fresh from completing his studies at the Institut Supérieur de Design, a school of design management in Valenciennes, France, when he was given the chance to stamp his identity on the future of air transport by leading the design of the Lilium Jet prototype.

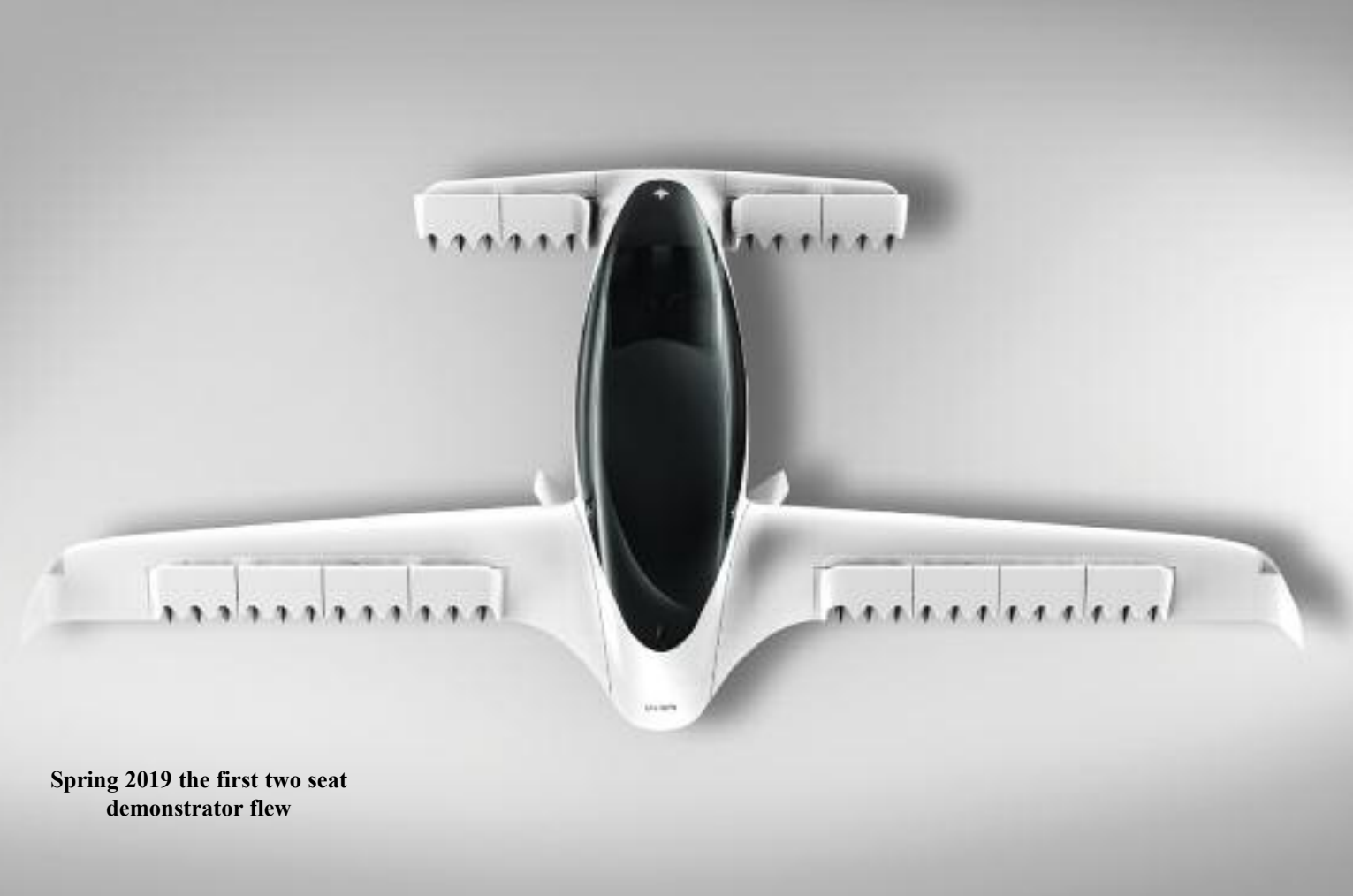
This involved working hand-in-hand with the engineering team responsible for setting the requirements of the aircraft, as well as the founders of Lilium who had

designed an earlier version of the aircraft. He took a completely new direction with his design, drawing inspiration from one of nature's most majestic creatures - the manta ray. "I believe biomimicry has a powerful role to play in design and a great deal of my inspiration came from the manta ray," says Mathis.

"The way it glides almost magically through the water was something we wanted to emulate with the Lilium Jet, delivering a sense of calm elegance and minimalist design. From the initial design direction I received from an external agency to my earliest hand sketches and the casting of the final parts for the aircraft, we kept our focus on delivering something that looked as if it had been sculpted by nature rather than by the human hand."

In 2019, the design was selected as a Red Dot Award winner, one of the most prestigious design awards in the world. It was also selected as a 'Best of the Best' in their Concept category and nominated for Red Dot's highest accolade, the Luminary Award, given to only one of more than 4,200 entries annually.

In the same year, the company continued to build up the engineering team with the appointment of two experienced aeronautical engineers. Dr Luca Benassi, Chief Development engineer, who had previously worked at NASA and Airbus Defence and Space on the Eurofighter Typhoon and UAV aircraft, and will be responsible for



Spring 2019 the first two seat demonstrator flew

the technical execution of the entire aircraft program at Lilium. And Airbus veteran Yves Yemsi, who joined the team as Chief Program Officer, having worked as Head of Program Quality for the highly successful Airbus A350 aircraft.

Concept and Reality

By 2017, Lilium had developed and flown a proof of concept prototype and by the spring of 2019 the first two seat demonstrator aircraft flew.

The Lilium Jet features two fixed wings, one main wing at the rear of the aircraft, which measures about eleven meters tip to tip, and a smaller canard wing at the front of the aircraft. The trailing edges of the main wings have four nacelles each and each canard wing has two nacelles.

Mounted in each of these independently moveable nacelles are three electric jet engines, these 36 engines move together with their nacelles which are integrated into the wings to reduce drag and optimize efficiency while performing the function of aerodynamic control surfaces. Using the principles of thrust vectoring, they direct and move the thrust allowing the Lilium Jet to move both vertically and horizontally.

Lilium refer to their electric motors (electric ducted turbofans) as "jet engines" as they are able to deliver the compression required for lift, which is fundamentally the product of a traditionally recognized jet engine which takes in air, compresses it and then discharges at a higher speed than it entered, but without the use of fossil fuels.

The ducted design of the electric motors means that they provide a significant efficiency advantage over open rotors by blocking the formation of tip vortices. The ducted design also captures and dissipates noise before it leaves the engine which means the aircraft will be up to five times quieter than a conventional helicopter.

The electric engines are capable of running up from zero thrust to a maximum of 2000hp in less than a second but during cruise flight only 10% of this power is required as the lift generated by the rear main and front canard wing contribute significantly to overall lift efficiency.

The Lilium Jet is also built on the principle of ultra-redundancy, with 36 independent engines and a triple redundant flight control computers, meaning the safety of the aircraft would not be compromised by the failure of any one component.

Having a conventional aircraft one main wing would make accessing the Lilium Jet difficult for passengers

and so the design allows for gull-wing doors for passenger access. Combined with large panoramic windows and low vibration levels they ensure a smooth and quiet ride for passengers.

In October 2019, the Lilium Jet demonstrator completed its first unmanned flight at an airfield in southern Germany. During this first testing phase, the aircraft carried out a number of safety tests including engine failures and flap failures. The aircraft completed a number of figure of eight circuits, with left turns during transitional flight being a specific test marker for these flights. In the left turn manoeuvres, the aircraft banked initially at a 20° to achieve a 90° heading change, before slowly increasing the angle of bank to 30° followed by a right turn to reposition for landing.

The flight also demonstrated the aircrafts vertical take-off and landing capability as well as reaching a climb and descent rate of 500 feet per minute and a cruise speed of 35 knots. Since its first flight the Lilium Jet has successfully flown further test flights and recently reached the 100 km/h milestone.

The second phase of testing has now started, this time focusing on completing full transition to wing-borne flight. Transitioning from vertical flight to level flight involved moving the flaps through to the 0° point to achieve forward flight, which is seen a particular challenge as it involves passing through a zone where the air-flow detaches and reattaches to the control surfaces.

A second demonstrator aircraft will be taking to the skies later in 2020 to continue the test campaign with data from this campaign, along with many other factors, will ultimately influence the design of the final serial production aircraft. This second aircraft will use the same technologies and architecture as the current demonstrator but with some minor adjustments to certain dimensions.

All of the demonstrators to date have been flown unmanned; as this is the safest way to undertake any flight test campaigns plus the aircraft does not have a passenger cabin layout but is fitted with test equipment. The final serial aircraft design will eventually see flight with a pilot on board as part of a rigorous testing and certification campaign, with the intention to operate aircraft with a fully qualified pilot in the early years of service.

The company has not released any final firm flight or battery specifications as with each flight they are slowly expanding the flight envelope, but Lilium estimate that the aircraft will have a range of up to 185 miles (300 km), or one hour of flight time, on just one charge. Cruise speeds of up to 300 km/h (161 knots) are also an estimated figure, but in cruising flight Lilium predicts that it will use roughly the same amount of energy as an

electric car would consume over the same distance.

Lilium has been working closely with EASA and the FAA over the past few years and the final production aircraft is being designed to meet the requirements of the current EASA

proposed means of compliance with the Special Condition VTOL (SC-VTOL) guidelines.

This is in accordance with mature aircraft design processes, such as those used by major aerospace companies. The intention is to start commercial operations in 2025 and they will need certification to be in place to allow this to occur.

The first manufacturing facility, a 32,300 Square Feet (3,000 square meter) space located at the company's headquarters will soon be joined by a second, much larger, facility which is already under construction on the same site. Combined, they will support the company's aim of producing "hundreds" of aircraft a year by the time commercial services begins in 2025.

Lilium are working on a digital platform to provide customers a seamless service from booking to flight, not surprisingly using a smartphone app based service for booking and tracking. All with the object of ensuring aircraft are kept fully utilized and are deployed to match customer demand.

Vertiports

Urban air mobility - the aim to connect people and places within a single city - is a term which is becoming increasingly recognized today. But unlike other companies, who are focusing on urban mobility developments, Lilium has taken a different approach aiming to operate a Regional Air Mobility model.

They see regional air mobility as going one step further, not just short trips across a city, by connecting entire regions taking a route from the city to the countryside, or traveling between major metropolitan expanses. To compliment the design and manufacture of the Lilium Jet, the company plans to operate a cost efficient complete regional air mobility service in several regions around the world.

A key part of the infrastructure is the arrival and departure points and Lilium has unveiled its proposal for its vision of scalable vertiport designs, working on a modular design that will help make vertiports accessible to developers at large or small sites. Their vertiport designs cover "Mini" vertiports, with parking for two aircraft, scaling up to a "Standard" vertiport that would have a capacity for eight Lilium Jets.

The design is based around a set of modules which are standardized as much as possible as the company see the possibility of placing vertiports at existing transport ter-



To reduce passenger processing and waiting times to a minimum Lilium do not envisage retail, duty-free shops or hospitality playing a significant role in the design

minals, next to shopping centres, on top of a car park or alongside suburban residential developments. This will allow developers to plan a vertiport for their specific site with module components then prefabricated off site, reducing costs and allowing for rapid on site construction.

If the proposed vertiport location is part of a retrofit to an existing building an underlying load transfer structure may be required, this structure would be set out independently from the functional design of the vertiport but still maintain the same modular approach. Each module would consist of a set of functional components that are

optimized for local regulations.

Recognizing the importance of safety to customers and local communities, Lilium have been working to existing EASA guidelines for VFR heliports. This involves the design of the safety areas, obstacle clearance and Final Approach and Take-Off (FATO) areas.

Whether a vertiport is designed to facilitate 20 flights per day or 20 flights per hour, it will have three common elements:

A. As with current heliports a vertiport would need an area specifically dedicated to FATO operations and would need to be surrounded by a safety zone. This safe-



As with current heliports a vertiport would need an area specifically dedicated to FATO operations and would need to be surrounded by a safety zone



ty zone would have to comply with established guidance including approach slopes and obstacle clearance for the Lilium Jet.

B. Once on the ground, the Lilium Jet would travel under its own power along defined taxiways to and from the parking stands. The parking stand would allow for the aircraft to be cleaned, checked, charged and flight data updated for its next journey. This area would also be where luggage can be loaded and all passengers will board and disembark. This parking stand needs to be of sufficient size to ensure there is no danger to passengers or staff while moving around the aircraft.

C. A terminal area that focuses on delivering a seamless and frictionless experience for the customers. The design of the terminal building is simple but sympathetic to the local area.

To reduce passenger processing and waiting times to a minimum Lilium do not envisage retail, duty-free shops or hospitality playing a significant role in the design.

Lilium has worked hard at offering adaptable and scalable solutions to meet all locations and budgets, and by keeping their designs lean and modular envisage their network of vertiports to grow rapidly. They estimate that vertiports, in their smallest configuration, can be built for

as little as \$1.14 to 2.3m (€1 to 2m). These basic versions of a vertiport are typically ground-based, with small waiting areas and a limited set of gates for charging. Larger, elevated structures require a higher investment of between \$8 to 17m (€7-15m) depending on their location and size.

Currently the focus is purely on passenger use and their intention is not only to design and manufacture the aircraft, but to provide customers with a complete Lilium point to point service. The customer experience is seen as a critical element of their philosophy and they see considerable benefits to a fully joined up experience. But they are realistic enough to recognize that building and managing the aircraft and infrastructure of the vertiports requires a much larger support system and do not see a requirement to do absolutely everything themselves.

By the end of 2020, Lilium partnered with Tavistock development and the City of Orlando to establish its first hub location for a high-speed electric air mobility network in America located at Orlando's Aerotropolis in Lake Nona. Lake Nona's central location provides the opportunity to connect more than 20 million Floridians within a 186-mile radius, serving several major cities including Orlando and Tampa. The Lake Nona vertiport



There are still a number of limitations to overcome but Lilium is committed to doing what they can to ensure a green and sustainable supply chain as the business model develops

will create more than 100 jobs in the Orlando area, with hundreds more to follow across Florida.

Lilium and Tavistock have together created vertiport architecture for its hub location that is both functional and aesthetically unique and resembles the iconic art within Lake Nona. A variety of standardized vertiport designs will allow flexibility so that sites can be uniquely assembled or incorporated into existing transport structures in both urban and suburban developments. These designs provide optionality for metropolitan landscapes with the ability for offsite pre-construction that reduce costs and accelerate development.

At around the same time, they announced an industry-first partnership with Lufthansa Aviation Training. Together, Lilium and Lufthansa Aviation Training will develop a tailor made Pilot Sourcing and Training program to qualify pilots to fly the Lilium Jet. The first phase of this innovative program consists of bespoke Lilium type rating training certification for qualified commercial pilots. It will harness technologies including Mixed and Virtual Reality (MR/VR) opening possibilities to recreate the program worldwide and support the growth of the company and the industry.

Lilium and Lufthansa Aviation Training will also work together with EASA and FAA regulatory authorities on

certification. Remo Gerber, Chief Operating Officer, Lilium said: "Opening a new professional segment for pilots of the future is a challenge we have long been excited to undertake and Lufthansa Aviation Training is the perfect partner. Their insights, experience and dedication to forward-thinking training concepts ensure that our pilots will be selected and trained to the highest calibre, an industry standard which we will establish through this partnership."

It's still early days for point A to point B urban air mobility but just over eighteen months ago Morgan Stanley Research estimated the air taxi market could be worth \$1.5trillion (€1.3 trillion) by 2040.

There are still a number of limitations to overcome, primarily related to batteries and the propulsion technology, the environmental cost and impact of manufacturing batteries and building the vertiports to service air taxi operations is often called into question.

But Lilium is an ethically and environmental centred company who are honest enough to recognize that sustainability is a complex topic and there are no easy answers, but are committed to doing what they can to ensure a green and sustainable supply chain as the business model develops.

Cyprus AW139 Exercise with Royal Marines



Royal Marines rappelled on to the deck of a Cyprus Navy offshore patrol ship (OPV) from Cyprus National Guard AW139 and a RM AW159 Wildcat during a joint exercises with Greek Cypriot Defence Forces in October. The exercises also form part of the overhaul aimed at developing the tactics and determining the equipment needed to turn the Royal Marines into the Future Commando Force.

HMS Albion hosted a Littoral Strike Group capability demonstration to Cyprus armed forces whilst on deployment in the Mediterranean. The Cyprus National Air Service's 460 Squadron operates three Leonardo AW139 whose main role is search and rescue. It is the first time the squadron has exercised with the Royal Marines.

More than one thousand sailors and Royal Marines have sailed on a three-month mission to the

Mediterranean to forge the commando forces of tomorrow. The deployment is intended to test new concepts of the Littoral Strike Group and shapes the Future Commando Force (FCF).

The group will also support NATO's Mediterranean security operation Sea Guardian alongside new patrol ship HMS Trent which has a Merlin capable flight deck and which is now permanently based in the region.

Known as the Littoral Response Group (Experimentation) deployment, the force includes the headquarters and staff of Commodore Rob Pedre, the Commander Littoral Strike Group, flagship HMS Albion, destroyer HMS Dragon and amphibious support ship RFA Lyme Bay.

David Oliver

NHV Allseas Contract



NHV Group announced a new contract with Allseas to provide helicopter services in support of the Energinet Europipe II Branch Pipeline project. The weekly H175 flights will depart from NHV's base in Esbjerg. The state-of-the-art H175 aircraft, an Airbus Helicopter's Super Medium type is specifically designed to meet the evolving mission needs in the oil and gas industry. NHV was the global launching customer of this platform, whose first two aircraft entered into service in December 2014. NHV gradually expanded its H175 operations to bases in the North Sea and West Africa, where the aircraft has accumulated experience and gained maturity. Lars Skov, Managing

Director and Accountable Manager of NHV A/S commented: "We are very pleased with this contract award. Building on the expertise and know-how demonstrated in our other offshore operations, our goal is to deliver a state-of-the-art and safe service to Allseas as they progress with the Europipe II project, the North Sea part of the Baltic Pipe project. NHV may have lost an important contract in Esbjerg last year, but we continue to evolve our services and technology to best meet our customers' needs. This contract win reflects the passion and hard work of our team and encourages us all to give our very best day after day."

New Appointments at Midlands Air Ambulance Charity



As part of Midlands Air Ambulance Charity's commitment to continuous improvement, the service has appointed Dr Adam Low and Dr Ryan O'Leary and reappointed Dr Malcolm Russell MBE as governance leads of the pre-hospital emergency medical service.

Governance leads are selected every two years, and their responsibilities include the provision of clinical and management support to the critical care paramedic and medic-led services, ensuring excellent standards in clinical practice, staff development, education and clinical governance.

Each lead will take on projects and additional responsibilities to further develop Midlands Air Ambulance Charity's pre-hospital care provision, including mentoring, facilitating case reviews, providing senior on call support to pre-hospital colleagues and supporting the appointment of new team members. In addition, they will support with the delivery of the clinical training suite and

simulation room at the charity's new airbase and charity headquarters, which will commence build work this spring in Shropshire.

Dr Malcolm Russell MBE, medical director of the UK's International Search and Rescue team, UK's representative to the United Nations International Search and Rescue Advisory Group Medical Working Group, said: "I've been one of the clinical governance leads for Midlands Air Ambulance Charity for nearly four years now. It's a fantastic organisation and we are privileged to be able to provide life-changing care to our patients. We can always improve though, so I felt compelled to re-apply for the position again and feel greatly honoured that I've been awarded one of the new posts."

Dr Adam Low, consultant anaesthetist at University Hospital Birmingham, Queen Elizabeth, said: "I am looking forward to joining Mark, Malcolm and Ryan as one of the governance leads for Midlands Air Ambulance Charity and MERIT. The role will include leading on



well-established governance streams such as organising our monthly governance and educational meetings, undertaking peer review and appraisal of colleagues to support them achieve their pre-hospital aspirations and develop new and exciting clinical and educational initiatives. I look forward to a busy and undoubtedly productive two years."

Dr Ryan O'Leary, intensive care medicine consultant and anaesthetist at Hereford County Hospital, said: "I am delighted to be appointed as a governance lead for Midlands Air Ambulance Charity. This is a new role for me, and I look forward to playing my part in allowing our exceptionally talented team to grow and reach their



full potential."

Hanna Sebright, chief executive for Midlands Air Ambulance Charity, added: "The collective experience and knowledge of the governance leads puts our organisation in a very strong position. Their support will ensure we remain at the forefront of emergency pre-hospital patient care, offering the very best treatment to patients in critical need of advanced clinical care."

For more information on Midlands Air Ambulance Charity's clinical team, visit midlandsairambulance.com/clinical and follow the organisation on social media.

Bell 505s For Jamaica Defence Force



Bell Textron Inc., a Textron Inc. company, announced today a signed purchase agreement for six Bell 505 aircraft to the Jamaica Defence Force (JDF). The newly acquired Bell 505s will be configured to support Public Safety missions in country and be used by the Force's Caribbean Military Aviation School (CMAS) to train international rotorcraft pilots.

"Bell and JDF share a rich history of more than 55 years, and we are committed to delivering the most advanced and economically viable aircraft on the market," said Nicholas Pepper, Managing Director, Latin America. "The Bell 505 is a proven asset for Public Safety operations around the world. We look forward to growing our long-standing relationship with JDF and sustaining their forces with the highest quality aircraft for many more years to come."

In 1963, JDF began its operations with two Bell 47G aircraft and has expanded their fleet and relationship with Bell throughout the years. This new aircraft delivery will grow JDF's current fleet to 10 Bell helicopters, which serve in search and rescue missions, medical evac-

uations, natural disaster relief, national security and military training operations.

"Expanding our Bell fleet to incorporate the Bell 505 adds more versatility to our capability portfolio and supports our mission to protect and serve the citizens of Jamaica," said Lt. Col. Brian Lundy, commanding officer of the Air Wing, JDF. "Our team of pilots and maintenance technicians are extremely happy with the training, support and customer service from Bell."

With a speed of 125 knots (232 km/h) and useful load of 1,500 pounds (680 kg), the Bell 505 is Bell's newest five-seat aircraft designed for safety, efficiency and reliability using advanced avionics technology. Its similarities with the Bell 429 platform allow for a smooth pilot transition as JDF begins training operations. With a Garmin G1000, the platform shares similar avionics with JDF's Fixed Wing Trainer aircraft and reduces pilot workload, enhancing the students' learning experience.

To read more about the long-standing relationship between Bell and the JDF, visit Bell's newsroom.

Airbus H160 for Shell in Gulf of Mexico



PHI Aviation has been selected to operate four Airbus H160s to service a support contract for Shell Exploration & Production Company (SEPCO) in the Gulf of Mexico. The H160 features ground-breaking new levels of safety, comfort and schedule reliability in offshore operations. This newly executed 10-year contract marks a history entry of the aircraft into the oil and gas industry. PHI, Airbus and Shell are building on decades of partnership and expertise to visualise and implement the H160 operation. The H160 aircraft will be based in Houma, Louisiana. These four H160 aircraft combine with four long standing and successful Sikorsky S92 aircraft to frame this new SEPCO contract. In September 2021, Airbus will provide one H160 ahead of final deliveries to PHI and Shell for a year-long route-proving program to enable PHI and Shell to familiarise themselves with the type's advanced features and mitigate the normal challenges around entry into service. "We are proud to be playing a key role in the entry into service of the highly advanced H160 in the offshore sector in partnership with Shell and Airbus,"

said Keith Mullett, Managing Director, PHI Aviation. "Everything that we do comes back to the safety of our crew and our patients, and this innovative aircraft is not only a testament to all the work we've done with our partners; it ushers in a new era of safety, reliability and performance in offshore operations. We look forward to bringing a step change in operating standards through the H160 and our partners Airbus and Shell." With 68 patents, the H-160 is the world's most technologically advanced helicopter and features an unprecedented suite of pilot aids delivered through its Helionix avionics, which substantially reduces crew workload and cuts the risk of pilot error. They include the world's first ground helipad assisted take-off procedure, a vortex ring state pre-alerting system and a recovery mode to automatically regain steady flight in difficult circumstances. The H160 incorporates an embedded monitoring system and a redundancy of sensors, and can be maintained autonomously far from base. The design emphasises robust corrosion defense specifically envisaging offshore missions.

Motol becomes first hospital in Czech Republic to adopt EGNOS for helicopter emergency medical services

To continue delivering high level healthcare services, Motol University Hospital upgraded its facilities by implementing an EGNOS landing procedure allowing helicopters to land safely and even under bad weather conditions with poor visibility on its rooftop helipad. The European Geostationary Navigation Overlay Service (EGNOS) is the European Satellite-Based Augmentation System. It is improving the performance of Global Navigation Satellite Systems by offering an additional layer of accuracy in landing procedures.

Helicopter Emergency Medical Services (HEMS) are crucial in times of crises such as global pandemics, and are an integral part of many healthcare systems across the globe. They help with emergency evacuations and inter-hospital transports across Europe and also with transporting doctors and medical equipment to remote sites. Often, adverse weather conditions or other factors, such as smoke, cause helicopters to divert or abort landings. In addition, many hospitals lack costly ground-based helicopter navigation equipment to provide guidance in bad weather, which may lead to significant delays when time is of the essence.

Thanks to EGNOS, the European Satellite-Based Augmentation System, pilots can navigate through the clouds and fog, and land safely at the Prague-based hospital. Hospital accessibility around the clock is crucial for the transportation of critically ill patients and also for operations such as the organ transplant transportation

service of Motol Hospital.

"I am delighted that the GSA has been instrumental to the implementation of this procedure and that Motol Hospital now relies on EGNOS to ensure that patients in critical conditions can safely land on its helipad. I am looking forward to making more hospitals accessible across the European Union." says GSA Executive Director, Rodrigo da Costa.

"As the director of the Motol University Hospital, I am pleased that the European GNSS Agency (GSA) helped to create and implement a satellite-based procedure for the hospital's helipad. This will enable using the helipad in adverse weather conditions, while the complicated transfer of patients to emergency will be eliminated. Above all, it will enhance our Transplant Programme as it will allow very quick organ transfer directly from the helicopter to the operating rooms" concludes Motol University Hospital Director, Dr. Miloslav Ludvík.

The implementation of this procedure as first in the Czech Republic on the hospital helipad has been co-funded by GSA within the EGNOS Adoption CZ project under Aviation Grant Programme. The demonstration of this approach procedure took place early in December 2020, with the participation of the Aviation Service of the Police of the Czech Republic where an Airbus EGNOS-enabled helicopter H135 (EC135) landed successfully at Motol's helipad thanks to EGNOS.

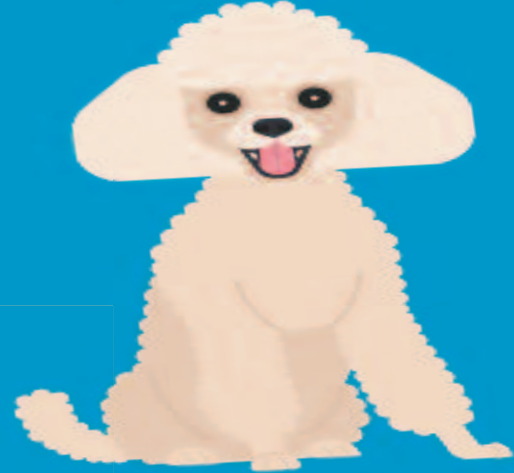


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Dorset & Somerset Blizzard Blanket



Blizzard Protection Systems Limited and Dorset and Somerset Air Ambulance (DSAA), are proud to announce the launch of the 'Air Ambulance Edition' Blizzard blanket; a new version developed for use in the air ambulance environment, which will help to save patients' lives.

DSAA is tasked to a wide variety of pre-hospital emergencies involving critically ill and injured patients. The clinical team's interventions help to prevent further deterioration until patients get to definitive care, which can play a key role in their chances of survival. One of these, is to provide thermal management which involves maintaining the patient's core body temperature, preventing hypothermia and any further heat loss, protecting them from the environment and providing active warming.

In pre-hospital care, heat loss occurs through several mechanisms and evidence suggests that critically ill and injured patients presenting with hypothermia are at high risk of death. Once the patient is hypothermic, it is difficult to reverse this in the pre-hospital environment.

Recognising the advanced benefits that Blizzard's blankets provide to patients in the pre-hospital environment and as part of their ongoing efforts to improve patient care, members of DSAA's clinical team embarked on personal project in their own time, to design a bespoke blanket in collaboration with engineers at Blizzard.

The year-long project involved numerous virtual meetings and extensive collaboration between DSAA's clinicians, pilots and Blizzard's engineers, to create a range of designs which were then trialled for their effectiveness. This culminated in the development of a new Blizzard blanket named 'The Air Ambulance Edition', which will be used to improve the thermal management and treatment provided to critically ill and injured patients.

DSAA will be the first air ambulance client to use the bespoke blanket however, it will also be available for distribution to Blizzard's clients around the world which include other air ambulances, military, ambulance, hazardous area response teams, police, fire and rescue serv-



ices as well as mountain rescue.

The blanket meets the toughest CE and medical device regulations and retains Blizzard's unique Reflexcell™ material which provides the best insulation through its reflective air pocket construction. To facilitate carriage and ongoing clinical care, the blanket has been ergonomically designed so that it can be carried to the scene of an incident with a carry handle and there also is improved access to the patient with side and top openings.

Building upon existing designs, the foot end of the blanket can now be sealed with a hook and loop to create more heat and ensure there are no trailing parts for aviation safety. The blanket is single use to prevent cross infection between patients and it has an integrated hood with a clear viewing section, along with a separate beanie hat to protect patients from the elements.

Further features include four active heat pads with a hook and loop strip that can be moved into any position to provide optimal warming and ensure complete hypothermia management for any sized patient, whilst proactively maintaining their body temperature. With a warmth of 7.5 Togs, the blanket provides protection from the harshest environments of cold air, rain or snow, meaning that it can be used within any operating environment that the air ambulance is tasked to.

Speaking about the partnership and development of the product, Robert McGuffie, Director of Blizzard said:

"As a business, we are constantly looking for ways to improve our products and patient outcomes, so when we started receiving accurate, consistent and useful in-depth feedback from DSAA, it was clear we had a customer

that we could work alongside in developing our products.

"From the outset, DSAA have been exceptional in their level of feedback and willingness to share their considerable expertise with us and to work closely alongside our research and development team, to improve all aspects of the products and services we provide. This has included allowing our team to help them with training on our products and numerous meetings to develop a unique combination to fit their specific needs.

"The result is a tremendously capable package that is easier and safer for them to use, achieves better results and ensures that we are doing all we can to improve their level of care – something we know is at the core of what they do. As a company, it has been a privilege to work with DSAA to improve our product range and we are looking forward to sharing those benefits with others."

Bill Sivewright, Dorset and Somerset Air Ambulance CEO said:

"Everything we do at Dorset and Somerset Air Ambulance is patient focused. We are proud of our clinical team's collaboration with Blizzard to develop this innovative blanket, which will benefit critically ill or injured patients, not only within the UK, but across the world."

'The Air Ambulance Edition' Blizzard blanket, has been developed as a commercial product available for sale and global distribution by Blizzard. DSAA will not benefit financially from the sale of this product. The Blizzard blanket can be purchased direct from Blizzard by calling: 01248 600666 or by visiting their online shop: <https://www.blizzardsurvival.com/shop/>

AreoMobile Flying Car meets Key Milestone



The AeroMobil Company, developer of the new ultra-high-end vehicle equally at home on the road or in the sky, today announced details of the recently completed phase of its AeroMobil flying car flight testing. When commercially introduced in 2023, The AeroMobil will have undergone over a decade of design and development, including flight testing of three functional prototypes and over 300,000 hours of engineering on the latest version.

The flight test program, which began in September 2020, is part of the European Aviation Safety Agency's

(EASA) stringent CS23 requirements governing all critical aspects of flight. The company started the overall EASA certification process for The AeroMobil during 2019.

Through the flight test program, the AeroMobil has successfully met several key EASA CS23 requirements governing airworthiness, including the flight performance in terms of top and stall speeds as well as the impressive ability to take off within 1300 feet and achieve a rate of climb of over 1200 feet per minute.

Babcock 500th SAR Rescue



Babcock's Aberdeen-based North Sea Search and Rescue (SAR) team recently completed their 500th emergency response tasking.

The crew responded to a call from a North Sea platform, safely transporting the patient back to the mainland for hospital treatment.

Paul Walters, SAR Operations Manager, said: "Our teams have been taking expert clinical care to the men and women working in the North Sea for years, and reaching this milestone of 500 emergency taskings is another reminder of how important the service is.

"Every single one of these calls represents someone in desperate need of help and we are proud to provide this vital emergency response. We continually train, develop and improve our service so we can provide the men and women working in the North Sea with the highest level of critical care."

The Babcock SAR team's 500th tasking milestone comes just after a new contract extension was announced that will see them continue delivering their lifesaving service through to spring 2025.



U.S.A. House of Representative Aviation Subcommittee

In testimony before the Aviation Subcommittee to the U.S. House of Representatives Transportation and Infrastructure Committee today, National Business Aviation Association (NBAA) President and CEO Ed Bolen emphasized that while thousands of small general aviation (GA) businesses that support 1.2 million jobs experienced significant disruptions due to the COVID-19 pandemic, the industry is resilient and looking toward the future.

In his testimony before the hearing, titled “COVID-19’s Effects on U.S. Aviation and the Flight Path to Recovery,” Bolen spoke of the pandemic’s profound and lingering toll on general aviation aircraft operators and businesses across the country.

“Beginning in March 2020, the GA industry began to suffer significant impacts due to COVID-19 related travel restrictions and shutdowns,” he said. “This severe and unprecedented reduction in flight activity had devastating consequences from fixed-based operators, to maintenance shops, charter operators and GA airports.”

The U.S. aircraft maintenance industry alone lost 50,000 jobs due to the pandemic, Bolen continued, and more than 80% of companies saw revenue declines compared with 2019. General aviation airports suffered steep drop-offs to traffic and revenue – some by nearly 90% – and thousands of small and mid-size businesses generating \$77 billion in annual labor income faced unprecedented challenges.

“Despite these unrelenting challenges, the GA community continues its commitment to COVID-19 relief efforts,” Bolen said, citing companies such as lab service provider Quest Diagnostics, which utilizes GA aircraft to promptly transport COVID tests for processing, and air charter operators that continued performing missions to transport human organs for transplant.

Watch the House Aviation Subcommittee hearing.

Bolen also thanked lawmakers for quick passage of the CARES Act in March 2020, which contained the Air Carrier Payroll Support Program (PSP) and Payroll Protection Program (PPP), which collectively brought much-needed relief to citizens and companies across the

country. Both programs have since been extended through the Consolidated Appropriations Act of 2021.

In his remarks, Bolen also thanked the Federal Aviation Administration (FAA) and other agencies for rapidly standing up programs that provided much-needed relief for general aviation. For example, the entire GA community worked with the FAA to develop Special Federal Aviation Regulation SFAR 118, which maintained safety while reducing the risk of COVID-19 exposure by providing additional time for operators to meet certain FAA requirements.

However, he cautioned that further relief measures might be needed, even as the nation takes initial steps to emerge from the pandemic. “The ongoing reductions in business travel, and the potential for additional COVID-related [impacts] create significant uncertainty for our community, and we appreciate your consideration of future GA relief needs,” Bolen said.

Despite COVID-19’s detrimental effects, Bolen also emphasized the many ways business aviation continued to innovate and strengthen over the past year, including a major commitment to sustainability, by focusing on the increased production and use of sustainable aviation fuel (SAF).

The industry has also committed to several initiatives to encourage a more diverse, equitable and inclusive business aviation community and witnessed impressive ongoing development of near-future technologies such as advanced air mobility transportation.

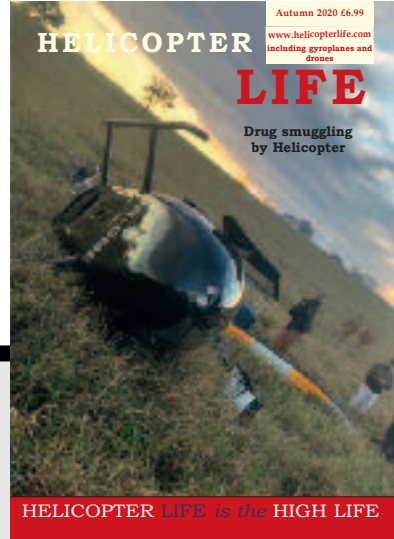
“The pandemic has brought unprecedented challenges to the GA industry; however, it has also demonstrated our resiliency and critical importance to thousands of communities,” Bolen concluded. “While there certainly have challenges on the horizon, we are optimistic about the future and thank this subcommittee for its continuing commitment to all aviation industry sectors.”

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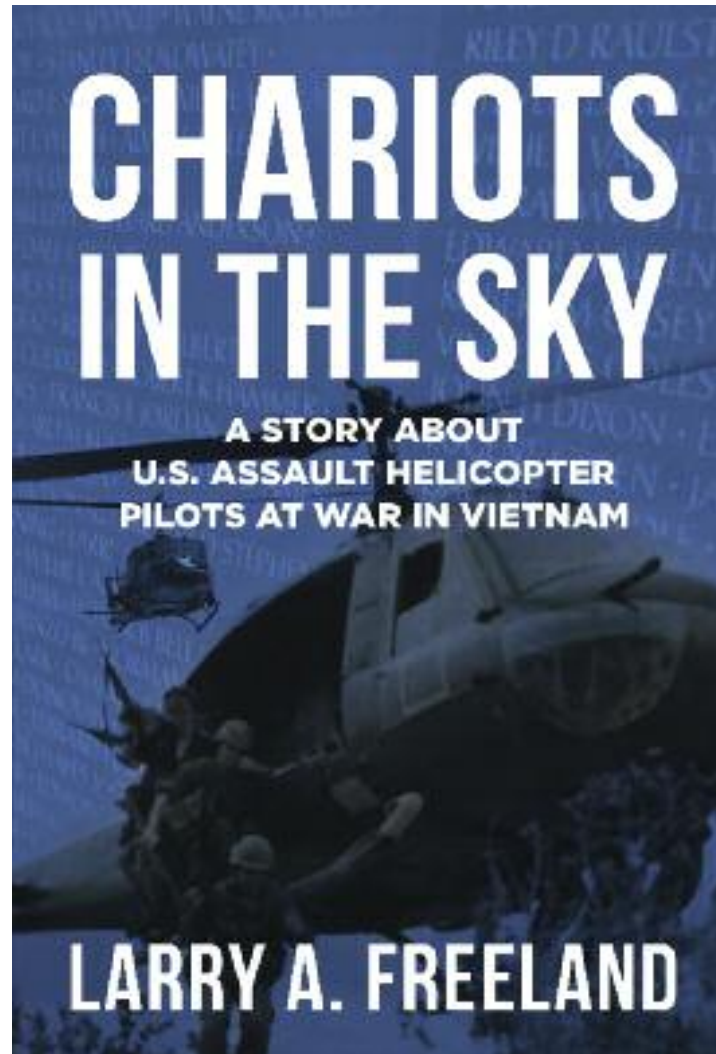
Heli Air

Book Review

Chariots in the sky

Larry A Freeland

Publish Authority



An elderly relation, who spent several years in a Japanese concentration camp during WW2, told me that, “awful though the circumstances were, we were young and could still find things to laugh about”. I was reminded of that when I started reading this book about helicopter pilots flying in Vietnam.

The flying was wonderful, challenging and exciting, except for one thing: if you made a mistake, or even were unlucky, it would probably kill you.

Flying conditions were hot, humid, and extremely testing. There was a high turnover of pilots, hence many new recruits who were inexperienced and in ‘over their heads.’ Worse, sometimes there were commanders who made the situation worse by incompetence or downright nastiness.

In such circumstances, it is not just because you are

young you need to find things to laugh about: without them you would probably go mad.

One particularly nice example of this is the

Helicopter Wisdom,

a list in the Pilots Club which included:

Cover your Buddy, so he can be around to cover for you.

And: Chicken plates are not something you order in a restaurant.

(Chicken plates are body armour).

Chariots in the Sky is seen from the perspective of Captain Taylor St. James “TJ to my friends,” a cocky but extremely likeable Huey pilot. It starts in 1971, with a combat mission.

TJ is leading a formation of Hueys, there are Cobras above. You are immediately there, with him in the sky and living the mission with him, you feel his excitement and trepidation. You empathize with his sorrow over the pilots killed and his relief on returning to base, and his humour.

Sadly, it is not all light-hearted joshing in Vietnam and because Larry has very much pulled us into the story we also suffer the anxiety of the initiation ceremony of the new young lieutenant, his hangover next morning and the sadness of the death of the popular company commander.

After the death of the popular commander, a new man from outside takes his place and, as you might expect, he is not fitting like a glove and our hero gets the brunt of the pain.

Without wanting to give the story away the book then gets extremely exciting and you are wondering whether the hero will return home. This anticipation is increased by weaving into the story his love life with his wife, Sandy, and the information she gives him about how the Vietnam War is now looked at back at home.

As it we know, by 1971 the Vietnam War was no longer popular in the USA and the pilots were not treated as heroes on their return, which led to some sad results.

A nicely written, exciting book. Larry Freeland was in Vietnam himself serving one tour with the 101st Airborne Division as a CH-47 pilot and he replays the feeling of time and place extremely well.

Well worth reading.

HELICOPTER LIFE, Spring 2021



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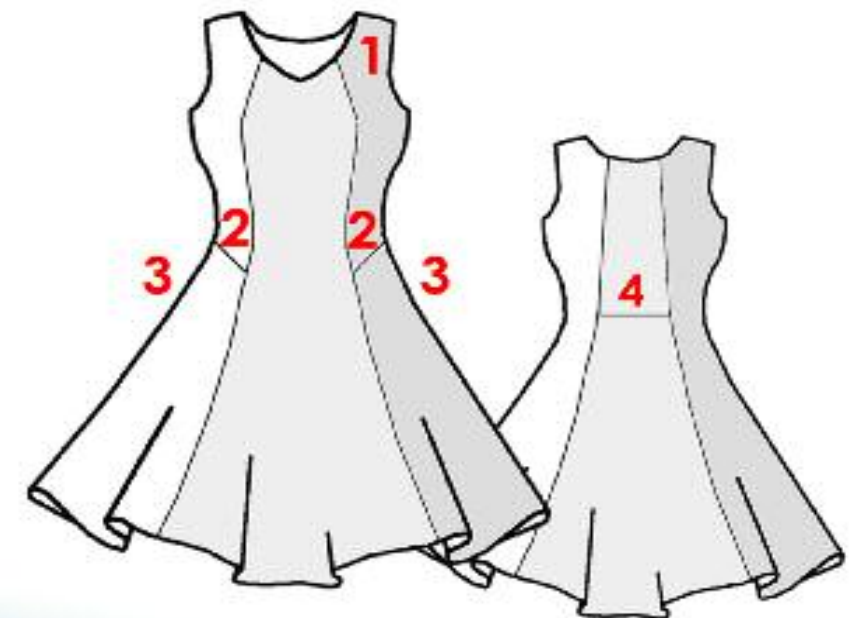


2 SIDE POCKETS
FIT LARGE PHONE



1 SECRET BACK POCKET
FITS PASSPORT/ PHONE

ONE DRESS - SIX POCKETS



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Westland Scout AH1, G-CIBW

The helicopter was flying straight and level at approximately 100 KIAS when the pilot heard a loud bang. It immediately became apparent that the fixed upper window in the left door had fallen out, leaving the rubber retaining grommet in place. The helicopter was above fields at the time of the event and the pilot carried out a brief airborne search of the area but was unable to locate the window. The helicopter returned to Middle Wallop Airfield without further incident. The subsequent examination of the door and window frame found that the rubber window retaining grommet had perished. The grommet incorporates ridges and channels designed to attach and hold the window into its frame. Approximately 200 mm of the central ridge on the grommet had separated allowing the window to be 'loosened by the airflow', causing it to fall out of its frame. No other damage to the helicopter was reported. The pilot was 59 years old, had 4950 hours of which 190 were on type.

Agusta A109E, G-ETPJ

The helicopter landed after a routine flight during which a circuit breaker (CB) tripped. While an engineer was investigating the cause, the next flight crew noted a burning smell in the rear baggage bay during their walk-around checks. The operator's investigation found evidence of a fire in the aft equipment bay, and a chaffed electrical cable. The cable was part of a design change that was made whilst the helicopter was on the UK military register before being approved by a Supplementary Type Certificate (STC) when the helicopter was transferred to the civil register. A protective strip should have been installed as part of the design change, but this was missing when the helicopter was examined after the incident. The strip would have prevented the cable from chaffing against the adjacent structure.

Robinson R44 Raven II, G-WTWT

Shortly after takeoff, the pilot realised that the left front door was not properly closed so decided to make a precautionary landing. During the approach the helicopter developed a high rate of descent which the pilot was not able to arrest. The helicopter stuck the ground and rolled over. Three of the occupants sustained minor injuries. The investigation found the helicopter had made a downwind approach to land and was likely to have entered a vortex ring state. The pilot was not aware he was making a downwind approach. The commander was 53 year old PPL and had 400 hours of which 268 were on type.

MBB-BK 117 D-2, G-SASS

A caravan roof was partly lifted by the downwash from a helicopter taking off from a nearby landing site on an air ambulance flight. The accident demonstrates the potential for downwash to cause damage during helicopter operations. The position of the helicopter at the time it transitioned into forward flight, combined with the associated increase in applied power, resulted in sufficient downwash affecting the caravan roof to partially lift it. It was not possible to ascertain the condition of the roof before the incident and this may have been a contributing factor. The site had previously been used by larger helicopters with no apparent issues. The operator had also surveyed the site as part of its operating procedures and had not identified the caravans as being an issue. As a result of the incident it was however able to adjust the TDP to a lower height in order to reduce the area affected by downwash for future flights. The issue of downdraft has become more significant as operators switch to using larger helicopter types in the air ambulance role. It is important that operators remain aware of the potential for damage that may be caused beyond the landing site and ensure their procedures and choice of location take this into account. The Commander was 53 year old CPL and had 5,865 hours of which 953 were on type.

Bell 429, M-YMCM

Whilst on short final to Edinburgh Airport, at approximately 100 kt, the helicopter suffered a bird strike to the left windscreen. The windscreen shattered and debris entered the cockpit, injuring the occupant in the left seat, who required hospital treatment. The Bell 429 windscreen is not designed to withstand bird strikes and the design certification requirements do not require it to do so. A recent study by the Rotorcraft Bird Strike Working Group has recommended the introduction of bird strike protection requirements for Normal category rotorcraft to minimise the risk of damage or injury. The pilot was a 52 year old CPL who had 3,900 hours of which 800 were on type.

Airbus Helicopters AS 350, VP-CIH

The AS 350 helicopter suffered tail rotor control problems in flight due to a rupture of the tail rotor gearbox (TGB) actuating rod. The pilot carried out a successful run-on landing. On 20 March 2019 the EASA issued Airworthiness Directive 2019-0060, mandating an inspection of TGB actuation rods to check for cracks. The pilot was a CPL and had 19,000 hours of which 10,000 were on type.

Unlocking the Science of Cleaner Air Travel

Improving air travel safety and enhancing climate change models are just two of the benefits to better understanding the mechanics of atmospheric waves, and faculty at Embry-Riddle Aeronautical University are pioneering research to do just that.

The research, recently funded by a \$455,000 grant from the National Science Foundation (NSF), will focus on the "convective gravity waves" (CGWs) created in the lower atmosphere by thunderstorms. Such waves can travel vertically up to space and thousands of miles horizontally.

"Understanding the types of waves that are created by these thunderstorms, and where in the atmosphere they might create turbulence, has important safety and scientific considerations," said Chris Heale, research associate in Embry-Riddle's Department of Physical Sciences.

To conduct the research, the co-principal investigators from Embry-Riddle, University of Miami, University of Colorado and Global Atmospheric Technologies and Sciences (GATS) will use instruments on board the NSF/NCAR Gulfstream-V High-Performance Instrumental Airborne Platform for Environmental Research, generally known as the GV, "G Five."

The crew of the GV will repeatedly fly out of Omaha, Nebraska, during the summer of 2022, taking off at twilight and flying through the formation of the convective gravity waves and their propagation and dissipation throughout the stratosphere. According to Heale, the GV pilots have extensive expertise flying in very turbulent areas.

"We plan to fly routes that get as close as possible to the storms without jeopardizing the safety of the aircraft or crew," Heale said.

As Heale explained, as convective gravity waves travel away from a thunderstorm, they carry energy and heat away, depositing it in other parts of the atmosphere.

"These waves have a significant influence in defining the temperature and wind structure in the Earth's atmosphere," said Heale.

Heale also explained that atmospheric waves break in the atmosphere in the same way that ocean waves break on the shore, creating air turbulence that can be felt on a flight.

"If you are floating in the ocean away from the shore, a wave simply causes you to bob up and down as it passes you," Heale said. "However, if you are standing close to the shore and a breaking wave hits you, it imparts a force on you and can knock you over. This is the wave depositing its energy and momentum onto you. The same thing happens when these atmospheric waves break."

According to the research grant proposal, "no ground-based, airborne or satellite measurements have ever quantified CGWs from their generation by deep convection and their propagation, dissipation and responses throughout the stratosphere."

In addition to providing valuable information about CGWs and their effects on the atmosphere, the research will promote STEM education. The researchers involved will present talks at local schools about the science of thunderstorms and their effects on higher altitudes, and about the project's ultimate benefit to society. The project will also help train three graduate students, a postdoctoral student and two young investigators in data processing and analysis and modeling related to gravity wave dynamics. The graduate students will be involved in running and interpreting the computer models using Embry-Riddle's Vega supercomputer and possibly other supercomputers, Heale said.

"This research will allow us to better predict where these waves can create turbulence, which will help aviation safety," said Heale. "It will also help us determine how these waves can influence the overall temperature, wind and chemical constituent structure of the Earth's atmosphere."



MDHI proudly participated in a special Son Tay Raid reenactment on the 50th anniversary of the fateful raid to free POWs in Vietnam that would inspire countless future successful operations. In partnership with the Silent Warrior Foundation, MDHI provided two MD 500 helicopters to transport surviving raiders and POWs from Scottsdale, Ariz., to the Dillon Aero range in Maricopa, where partial reproduction structures of Son Tay prison camp had been built for the occasion.

On Nov. 21, 1970, a special operations group of nearly 60 soldiers raided the Son Tay prison compound in North Vietnam just outside Hanoi in an attempt to rescue some 61 prisoners of war. Known as Operation Kingpin, the raid included a low and slow-flying C-130 airplane followed by six rescue helicopters, all radio silent with no lights. The coordinated attack aimed to take out the guard tower and communications while simultaneously freeing the POWs. Concurrently, the U.S. sent three Navy carriers as a distraction and to help suppress potential enemy air support. Unfortunately, the prisoners had been moved, leaving no one to rescue, but the mission otherwise went so well it became a basis for future raids and rescue missions.

The reenactment was filmed for the documentary Kingpin: 27 Minutes at Son Tay.

"The support MD Helicopters gave to our event commemorating the 50th Anniversary of the Son Tay Raid was just incredible," says David Hall, President of the Silent Warrior Foundation. "The three-



ship formation of two MD 500s led by a Vietnam era UH-1 and loaded with Son Tay Raiders and former POWs was an amazing sight to behold when they arrived at the Dillon Aero Range. Seeing former POW Doug Burns flying an MD 500 was heartwarming."

To learn more about the Silent Warrior Foundation, visit their website at silentwarrior-foundation.com.



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