

BRAY AIR DISPLAY



2025



Comhairle Contae Chill Mhantáin
Wicklow County Council

BRAY AIR DISPLAY 2025

SATURDAY AUGUST 2ND

Forward

It's my honour to welcome you back to one of the most thrilling and unique events in Ireland's aviation calendar — the annual Bray Air Display. Each year brings something special, and 2025 is no exception. We are delighted to welcome back some familiar friends and introduce a few new faces to the display line-up.

Our gratitude also extends to Dublin Air Traffic Control for their flexibility and guidance. Special recognition must go to the outstanding team at Weston Airport. The continued development of Weston is an enormous asset to Ireland's aviation community,

This event would simply not be possible without the invaluable partnership of Wicklow County Council, the dedicated personnel of the Irish Defence Forces, and the Bray Summerfest committee. A special thank you to Mick, Wendy, and Paul for their continued leadership and energy.

To our commercial supporters — our sincere thanks

We are also grateful to Bray Sailing Club for their assistance with the marker buoys, a



key element in maintaining the safety of our show over water.

Bray is now firmly established as a highlight of the Irish aviation season. We hope today offers you joy, awe, and inspiration.

Finally, sincere thanks to Brigadier General Rory O'Connor and all in the Irish Air Corps. Their participation is always central to the Bray Air Display — in presence, spirit, and pride.

Enjoy the day.

Sé Pardy
Display Director

Display Director: Sé Pardy
Event Controller: Mick Glynn

Operations Admin:
Andrea, Rebecca, Terry, Maria, Diarmuid,
Jamie, Jerry, Robbie and the Cushnahan
Family

Commentary: Michael Comyn

PR, Digital Media: Paul Carney, Louise
Cassidy

Hospitality: Wendy Walsh and Jen

Programme Design: Martin Brady

Air Traffic Control Support:
ATC teams from Baldonnel, Weston Airport,
and Dublin — with special thanks to Darren
Pollard and colleagues, and to Dave Corboy

Flight Communications & Compliance:
FCC: David O'Riordan, Daragh
Gunning, Pat Lanigan Ryan
Regulatory Liaison: Jason Phelan,
Ruth Bagnell, Maria Sweeney, Capt.
John Murray, Rebecca McKenna

Photographers:
Frank Grealish NTWC, Pat L. Ryan,
Jason Phelan, IAC, IHFF, RJF,
Sonya Cooley, Darren Harbour,
Brian Dempsey, John Fyall

Offshore Operations: Irish Naval
Service, Bray Sailing Club

Transport Coordination:
Michael Coghlan, Finnegan
Transport

Helicopter Operations:
Heli Marshalls: Billy Doyle and
Kieran Cushnahan
Heli Services: Executive
Helicopters

Supporting Airports: Weston,
Baldonnel, Dublin

Air-Ground Communications:
Jerry Dawson,
Robert Daranowski

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Wicklow County Council is delighted once again to host the Bray Air Display.



Soaring Above Bray Seafront – A Day of Thrills, Adventure & Family Fun!

Wicklow County Council is once again delighted and proud to host the iconic Bray Air Display, a spectacular event that has become a highlight of the

summer calendar. Each year, thousands of spectators gather to witness some of the world's most renowned flying acts perform breathtaking aerial displays, thrilling and inspiring audiences of all ages.

In addition to witnessing the stunning performances in the sky, there are plenty of fun activities to enjoy on the ground. Explore everything the Seafront Funfair has to offer, experience the brand new 'Future of Flight' Tech Zone with live drone demonstrations and a virtual reality experience, discover the static display and information hub presented by the Irish Defence Forces, get up close with an impressive collection of model aircraft showcased by the Model Aeronautics Council of Ireland, and enjoy the diverse food and craft offerings in the Food and Craft Village.

This spectacular event would not be possible without the invaluable support of the Irish Aviation Authority, whose continued partnership ensures the highest standards of safety and coordination.

We also extend our gratitude to the many agencies and volunteers who work tirelessly behind the scenes, including An Garda Síochána, Wicklow Civil Defence, Wicklow Fire Service, the Bray Summerfest Committee, the Order of Malta, and Bray Municipal District staff, Clean teams, public transport services, as well as Sé Pardy, Air Display Director, and his dedicated team.

On behalf of the Cathaoirleach, the Elected Members of Wicklow County Council, and the entire Bray Air Display team, we would like to wish you a safe, enjoyable, and unforgettable experience at Bray Air Display 2025.

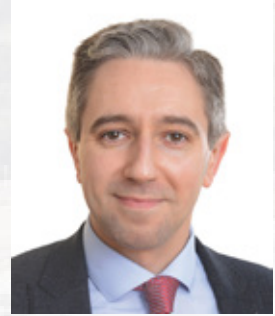
Emer O'Gorman
*Chief Executive,
Wicklow County Council*



Comhairle Contae Chill Mhantáin
Wicklow County Council



I'm really looking forward to the Bray Air Display returning on 2nd August.



This is always such a special day on the calendar for people in Wicklow and across Ireland who come to visit Bray for this unique event.

This event every year brings people of all ages together to enjoy the atmosphere, the buzz, and the incredible skill of the pilots who never fail to put on a cracking display. It's fantastic to see Bray getting the attention it deserves.

The energy this event brings to the town is truly unmatched, from families enjoying the beach to local businesses getting ready for the big day, this is something I'm always proud to see.

I want to thank those behind the scenes for the huge amount of work that goes into making this perfect every year along with the continued backing of Wicklow County Council who never fail to impress.

Their efforts make a real difference not just for the visitors, but for the whole community.

As the local TD and as Tánaiste, events like these make me proud to call Wicklow home.

I encourage everyone to make their way to Bray this year for a memorable day out and enjoy everything this great town has to offer.

Simon Harris

Tánaiste, Minister for Foreign Affairs and Trade, and Minister for Defence.



**Óglaigh
na hÉireann**
IRISH DEFENCE FORCES

Statement by Brigadier General Rory O'Connor, General Officer Commanding Air Corps and Director of Military Aviation.

The Irish Air Corps is delighted once again to be associated with the Bray Air Display, proudly showcasing to the people of Ireland a small glimpse of our varied and dynamic capabilities. It is my great honour to serve the State as General Officer Commanding Air Corps and Director of Military Aviation, continuing a tradition that began over a century ago with the appointment of Comdt General William "Jack" McSweeney as the very first Director of Irish Military Aviation.

The Air Corps has grown significantly since those pioneering days when our early aviators procured a Martinsyde Type MkII to assist in Michael Collins's escape from London should the Treaty negotiations have collapsed. Throughout our history, we have consistently embraced progress and technological advancement, from establishing the Irish Air Traffic Control Service at Shannon Airport to introducing Ireland's first jet-powered aircraft, the Vampire, quickly followed by the iconic Alouette III helicopters.

Aviation innovation has always been at the heart of our mission. Few events symbolize this pioneering spirit more vividly than the historic flight of the Bremen from Baldonnell in 1928, when our own Comdt James Fitzmaurice became part of the first crew to complete an East-to-West Atlantic crossing by air. Such moments remind us of our legacy and inspire us as we look to the future and approach the centenary of that historic flight.

Speaking of the future, we are particularly excited about our upcoming aircraft acquisitions, which represent significant enhancements to our operational capabilities. Foremost among these is the eagerly awaited Falcon 6X, set to arrive later this year. With a range exceeding 5,000 nautical miles, the Falcon 6X will revolutionize our strategic reach, enabling rapid global deployment for critical missions, from medical evacuations to the safe transportation of Irish citizens and Defence Forces personnel from challenging environments. This state-of-the-art aircraft will provide essential support as Ireland prepares for its EU Presidency



in 2026, demonstrating our growing capability and commitment on the international stage.

Looking further ahead, we anticipate with great enthusiasm the arrival of four Airbus H145M Light Attack Helicopters, commencing in early 2027. These advanced military helicopters mark a transformative upgrade for No. 3 Operations Wing, replacing our long-serving EC135s. Purpose-built for military operations, the H145M brings unmatched versatility, equipped for light attack, intelligence gathering, maritime security, and rapid utility response. Featuring advanced electro-optical sensors, secure communication systems, .50 calibre machine guns, aerial rockets, and essential survivability enhancements, these aircraft will significantly enhance our capability to protect and serve both the Irish State, and the people of Ireland.

The flexibility offered by the H145M will allow rapid reconfiguration for diverse missions, from troop transport and search-and-rescue operations to





crucial ISTAR (Intelligence, Surveillance, Target Acquisition, and Reconnaissance) roles. The interoperability with our naval and ground forces will notably improve, reinforcing our integrated approach to defence and security challenges. As we transition towards becoming a fully-fledged Air Force, these helicopters mark a significant step forward in meeting the evolving operational demands faced by Óglaigh na hÉireann.

Investment in our infrastructure continues to support critical operations such as the Emergency Aeromedical Service (EAS), a vital lifeline providing rapid response across the country. The recent €1.4 million upgrade to our helicopter hangar at Custume Barracks, Athlone, highlights the State's commitment to emergency care. These facilities ensure our dedicated crews have the resources necessary to quickly deploy and safely conduct life-saving missions, emphasising our core value of service to the community.

As the Air Component of the Defence Forces, we operate within a vast Air Domain covering extensive land and maritime regions. Continuous investment in personnel, technology, and infrastructure ensures the Air Corps remains responsive and effective. This weekend at Bray, our crews are excited to showcase a diverse range of aircraft, both fixed-wing and rotary, including a special highlight, the impressive Airbus C295 Maritime Patrol Aircraft. With two of these aircraft already operational and a third anticipated shortly, our maritime surveillance and monitoring capabilities continue to represent the cutting edge of technology.

This period of modernisation and strategic growth marks a significant turning point as we transition

from the Irish Air Corps into the Irish Air Force. This transformation is driven by a clear vision to match Ireland's evolving national and international responsibilities, reflecting the expanding range of missions we undertake. The arrival of advanced platforms such as the Falcon 6X and the Airbus H145M helicopters highlights our focus on equipping personnel with the latest technology specifically designed for modern operational demands. As our capabilities expand, so does our ability to deliver rapid and flexible responses across a wide variety of tasks, from strategic airlift and medical evacuation to maritime security and advanced intelligence gathering. Building on our aviation heritage, this move to become an Air Force is a natural step forward, reflecting the adaptability and innovation that have consistently defined our organisation throughout its history, and ensuring we are ready for the operational challenges of today and the future.

I extend my deepest thanks and am extremely proud of the highly trained and dedicated personnel who serve in the Air Corps, whose courage, selflessness, and loyalty continue to ensure the safety, security, and well-being of the people of Ireland, both at home and abroad.

As we spread our wings toward becoming an Air Force, we remain focused and prepared to serve Ireland, ready to respond whenever and wherever we are needed, guided always by our motto: "Forfaire agus Tairiseacht" — "Vigilant and Loyal."

Brigadier General Rory O'Connor,
*General Officer Commanding Air Corps and
Director of Military Aviation.*



So You Want to Be a Pilot?

There is no doubt that the road to becoming a commercial airline pilot is a long and difficult (and expensive!) process but not beyond the reach of the majority of people if they apply themselves.

Mark Dwyer

The first step I would recommend to any aspiring airline pilot is to take a trial lesson. These are available all over the country from the big commercial training schools like the National Flight Centre and Atlantic Flight Training Academy to the smaller flying clubs. A trial lesson will give you a good idea of your suitability towards a flying career. It is also a good opportunity to ask your flying instructor questions about the different routes to obtaining your ultimate goal. I will cover the different routes to obtaining

your commercial licence shortly but there is another crucial step you need to take before commencing your training.

The Medical

There are three types of medical valid in Europe, Class 1, Class 2 and LAPL (Light Aircraft Pilot Licence). I'll focus on the Class 1 as the Class 2 and LAPL are only valid for private flying. The initial examination is quite intense and involves a blood test, hearing test, chest x-ray, spirometry test, ECG, general check-up and eye exam. All

of this can take several hours and is conducted at the Mater Private Aeromedical Centres in Dublin. Initial examinations only take place on certain days so book early! When you pass your medical you'll need to keep it valid by renewing it each year. The renewal is simpler and quicker than the initial. ECG's, Hearing tests and Eye tests are conducted every few years depending on your age. Despite popular belief, pilots can wear glasses and the exact requirements can be found in a document called EASA Part-Med which you should be able to find on the internet. I would strongly advise potential pilots to go get a medical first, there's no point spending all that money training only to find out you don't meet the medical requirements. (www.materprivate.ie/our-services/health-screenings/aeromedical) So you've taken your trial





lesson and you love it, you have your Class 1 medical in your hand, so what do you do now? There are two routes open to you, integrated or modular. I could write an endless list of the pros and cons of each route but ultimately it will come down to your own personal circumstances. Integrated works for some and not for others. Before I discuss the two routes I will outline the constituent parts, no matter which way you choose you will be issued with the same licence at the end of your training.

Private Pilot Licence (PPL)

Whether you go integrated or modular, the first step is your PPL which takes a minimum of 45 hours. I must stress this is a minimum requirement and there are a number of other requirements that must be fulfilled within this minimum. Some of these requirements are 5 hours solo cross country, a qualifying solo cross country flight of at least 150 nautical

miles, simulated instrument time etc. In reality the total figure will be dictated by the frequency of lessons and the great Irish weather! The latter will particularly affect the total length of time it takes you to get your PPL. The route you take will dictate whether you can do this full time or part time. The PPL can be argued as being the most important part of your training, this is where you learn how to fly and pick up all the basic handling skills. After this a heavier reliance will be placed on operational and emergency procedures and your flying should become second nature so it's important to get a good understanding at this stage. A certain amount of theory is also required which takes the form of 9 multiple choice exams in the subjects Air Law, Operational Procedures, Performance, Navigation, Aircraft Technical Knowledge, Principles of Flight, Communications, Meteorology and Human Performance & Limitations. All exams carry a pass mark of 75%. Once your

training is complete you will take a Licence Skill Test (LST) with an IAA Authorised Flight Examiner.

Night Qualification

A night qualification takes 5 hours and must be completed at a controlled airport (Dublin, Cork, Shannon or any of the regional airports) with runway lighting. One of these hours must be solo and must include 5 take offs and landings. The remaining hours must include cross country navigation and dual circuits.

ATPL Theoretical Knowledge

This will probably be the hardest and definitely the longest part of becoming a pilot, you will need real determination here. In order for you to start the commercial part of your training you are expected to have an extensive knowledge of flying. These 14 exams will really test you and cover areas such as instrumentation, airframes, engines, air law, navigation,



aerodynamics and weight & balance to name but a few. You'll find most of the content is not difficult to learn, it's just the sheer quantity of it, and the pass mark is 75% for each subject. A typical distance learning course will take 9-12 months while a full time residential course will take about 4 to 6 months.

Instrument Rating

The instrument rating allows a pilot to fly a suitably equipped aircraft with sole reference to instruments i.e. in clouds. This is the most difficult part of the training process and is generally done in conjunction with the multi-engine rating. The course requires 55 hours of training but up to 40 of these can be done in an approved navigation procedural trainer or simulator. The balance of

these hours are done in the aircraft as well as the flight test. The course will teach you to fly the usual manoeuvres with sole reference to instruments and will then move on to more complex procedures such as instrument approaches and asymmetric flying. As well as being the toughest part of the training it is also the most expensive.

Multi-Engine Rating

The multi engine rating allows a pilot to fly aircraft with more than one engine. It can be completed individually or as part of the CPL or instrument rating. It consists of 8 hours flying mainly involving general handling and asymmetric flying followed by a flight test. 70 hours Pilot in Command (PIC) is required before commencing multi-engine training.

Commercial Pilot Licence – (CPL)

The CPL will enable a pilot to fly for hire or reward, which is not allowed on a PPL. 100 hours PIC is a prerequisite before you can start the CPL and the course takes 25 hours. 5 hours of which may include the night rating. The course is broadly similar to the PPL and just involves flying more accurately. A greater emphasis is placed on navigation and emergency procedures. After all, people will be paying you to fly so they expect to get to their destination quickly and safely.

Upset Prevention and Recovery Training – (UPRT)

Since December 2020, Upset Prevention and Recovery





Training became a mandatory part of the training to become an airline pilot. The course, which takes 5 hours of ground training and 3 hours of flight, requires a student to experience upsets in an aircraft such as nose high, nose low and inverted manoeuvres. The concept is to expose students to the physiological effects of aircraft upsets including positive and negative g. It's slightly different to aerobatics which involves flying intentional manoeuvres – UPRT involves recovering from unintentional aircraft upsets which can be surprising and startling.

Multi Crew Cooperation – (MCC)

The MCC Course is the last qualification you will need before you can apply to an airline. The course is simulator and classroom based and includes no flying. It usually lasts five to seven days. The classroom work focuses on crew cooperation, cross cockpit communication, crew resource management etc. A big emphasis is also placed on operational procedures. The simulator segment is used to demonstrate the skills picked up in the classroom. Most simulators used for the MCC Course are based on the

popular twin jet models such as the Boeing 737 or Airbus A320 but this will vary depending on the training organisation you choose. Simtech Aviation, AFTA and Airline Flight Academy are approved MCC providers in Ireland.

APS MCC

You may see some organisations offering an APS MCC – this is an Airline Pilot Standards MCC. It's not a requirement for airlines at the moment but is certainly viewed favourable and is fast becoming industry standard. The additional hours on this course focus on operating swept wing jet aircraft including handling and high altitude upsets. The APS MCC uses airline orientated Standard Operating Procedures. There is also some additional groundschool which focuses on airline specific operations.

Type Rating – (TR)

The last piece of the puzzle! Modern commercial aircraft are large and have complex systems and no amount of general pilot training will focus on the complexity of a single aircraft type. Consequently a type rating is required for each type of jet you wish to fly. Type ratings generally cost

between €20,000 to €35,000. Sometimes this cost is borne by the applicant, sometimes by an airline. Type rating courses will vary from type to type but the Boeing 737NG Type Rating consists of four weeks ground school followed by six weeks simulator training and finally aircraft training. Most TR's will follow this format. Aircraft training is the only chance you will get to fly the aircraft prior to carrying passengers. You need to be able to demonstrate your proficiency by completing 6 take offs, 6 landings and a go-around. The Type Rating is usually undertaken after you 'provisionally' get a job with an airline. I say provisionally because if you don't pass the course you don't get the job but I'll explain more later on.

Modular Route

The modular route allows you to do all of your training at your own pace and allows you some flexibility within your training. It basically means that each of the elements of your training are treated as separate items and don't necessarily need to be completed in that order or immediately after each other. You don't even need to complete each step at the same school however there are benefits to staying



with the one school, especially in the later stages of training. The first step is to obtain your PPL. This can be done in Ireland, UK, Spain, US, pretty much anywhere although it will make the process easier if you are issued with an EASA PPL (European). As you know this takes 45 hours, so for arguments sake let's say you come out with 55 hours, of which 10 hours are solo. You need a further 90 hours solo if you want to start the CPL or 60 hours to start multi engine flying. Where you build these hours is your choice, remember most countries issue an ICAO PPL which is recognised worldwide (you may need to do some paperwork though!). If you're in no rush you can stay in Ireland and just bring friends and family flying at the weekends.

At this stage it might be a good idea to start thinking about the ATPL theoretical knowledge exams. Most people doing a modular course choose to do the course through distance learning. The school you choose will send you

the books and study material and a schedule to keep to. It's up to the student to keep up to the schedule which usually requires around 15 hours study per week. Regular online tests will help you monitor your progress and a tutor is usually allocated to you who can be contacted through email. Prior to the exams a residential course is run, usually for a week or two. You attend the school and practice mock exams. This also gives you an opportunity to ask questions on concepts you don't understand. A full time residential course is also available from some schools, with lectures every day. Although you'll progress through your exams quicker it often costs two to three times the price of the distance learning course. This decision will also be affected by your discipline to self-study. No matter which type you choose you'll come out with the same piece of paper. When you pass your last exam the clock starts ticking and you will have 36 months to obtain a CPL and Instrument Rating or face

repeating the exams.

The night qualification can be completed anytime between the PPL and commencement of the CPL or IR. Although it's only 5 hours long, it can be difficult in Ireland to get good weather, a suitable aircraft, an instructor and a suitable airport at the same time! The best idea is to get the ball rolling on this as soon as you finish your PPL and expect to take a few months to get your ducks lined up. If you do your PPL abroad I'd highly recommend doing a night qualification either during it or immediately after, it will just make life a bit simpler.

Ok, so a few weeks (or months) later you have your 70 hours solo or Pilot in Command (PIC), all 14 theoretical exams out of the way and a night qualification. Now you have the minimum requirements to start the Instrument Rating. You also have the choice to do an extra 30 hours PIC and start the CPL first if you want. That is the beauty of the modular course, you have control of the process. In this scenario I've picked the IR first as this will

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get you through the licences in fewer hours and hopefully less money.

As you probably intend flying commercially for the airlines, you can jump straight in and do the multi engine instrument rating (MEIR). The regulations do require that you have undertaken training on a multi engine aircraft before you start the instrument segment so you'll need to fly 8 hours in a multi aircraft to satisfy this requirement. This is called the class rating training. You can do the flight test for this part with the instrument flight test later on. You can now complete the instrument training as outlined above.

So let's take a look at where we are. 55 hours for the PPL, 5 hours for the Night Qualification, 60 hours solo, 8 hours multi engine training, 15 hours multi engine instrument training (simulator time doesn't count as flight time!) and maybe two hours for the MEIR flight test. That makes 145 hours, not bad. But you need 200 hours before you can sit a CPL flight test. I did say above that the CPL requires 25 hours,

but as you now have an MEIR, the requirement reduces to 20 hours. This only leaves us with 165 hours, 35 hours short of the minimum, so what can you do? In reality you'll find that your training will run over the minimums here and there. You will also need to complete the new 3 hours of UPRT.

So now you have a shiny new CPL, with MEIR and a shade over 200 hours. Now you need an MCC Course. There's nothing much to add to what I've mentioned already above. Simtech Aviation (www.simtech.ie), AFTA (www.afta.ie) and Airline Flight Academy (www.airline-flightacademy.com) provide MCC Courses in Ireland. If you're training abroad there are a host of options.

Integrated Route

An integrated course is a type of all in one package. A school will take you from ab initio (no previous training) right through the process from PPL to frozen ATPL. Some courses may also offer an MCC course too. The restriction with the integrated option is

that you have to complete all the training with one school. However the advantage is that each part of the courses runs in quick succession allowing you to complete your training in the shortest possible time. Here in Ireland, Atlantic Flight Training Academy in Cork and the National Flight Centre in Weston offer an integrated route. Outside of Ireland, there are many training schools across Europe that offer integrated flight training.

So now for the 64 million dollar question, modular or integrated? I could probably write a book on the pros and cons of each and still not give a definitive answer. Again the choice between the two routes will depend on your personal circumstances. If you want a frozen ATPL as quick as possible, the integrated route will get you there quickly but you'll pay a premium for it. On the other hand if you have time to spare, a modular route may be a better option based purely on expense. Although the cost of training is a huge factor, you should also look at the quality and



reputation of the school. How many pilots have they trained there, what airlines are they flying with, what are current students saying about the school etc. Your aptitude towards learning and flying is another important factor worth taking into consideration. If you have trouble studying on your own and lack self-discipline the structure of an integrated route may suit you better. The freedom of a modular course may suit people interested in starting the training part-time initially. This will allow them to fit flying around their personal / professional life. Consequently the road to a flying licence will be longer. There is a wealth of information already available on Modular vs. Integrated. I would recommend taking a look at the student section of the Flying in Ireland forum (www.flyinginireland.com) for more information and www.pprune.org

Brexit

The UK's exit from the EU has caused lots of licensing issues that new pilots should be aware of. With the exception

of the PPL, trainee pilots should ensure that all of your training is completed at an EASA approved organisation. Some UK schools may have this approval but you need to check. Without a European (EASA) licence, you will not be able to fly for a European airline. Unfortunately this also excludes EASA licence holders from flying with UK airlines. The whole situation is crazy but looks unlikely to be resolved in the near future so beware!

The Job Market

The Covid 19 pandemic disproportionately affected the airline industry with travel restrictions causing many airlines to severely curtail operations and in many cases airlines went bankrupt. Thankfully, the last couple of years have seen an unprecedented bounce back in passenger traffic and this has opened up lots of opportunities for new pilots. The 2022 Boeing Pilot & Technician Outlook, a respected industry forecast of personnel demand, projects that 602,000 new commercial airline pilots,

610,000 new maintenance technicians, and 899,000 new cabin crew will be needed to fly and maintain the world fleet over the next 20 years.

Most airlines operate on an average of 5 crew (10 pilots) per aircraft. This will cover holidays and days off and allow the airline to get maximum utilisation out of their aircraft. As a cadet pilot entering an airline, you must be prepared to be based abroad initially. If you go down the pilot route, remember that there is no guarantee of a job at the end of your training. So keep an eye on how the industry changes throughout your training. In most cases the individuals own approach and determination often plays a large part in achieving the job of their dreams.

Other Flying Occupations

Most people think of flying passenger jets as the only type of commercial flying but there are others. In the past becoming a flight instructor was a natural progression



through your flight training to build hours for that elusive airline job. In the last two decades that trend has changed and most skipped the instructors rating and went straight to the jets. As a result there is a widespread shortage of instructors throughout Europe. In Ireland professional instructor jobs are mainly limited to the bigger flying schools at Weston and Cork. Flight instruction is heavily dependant on weather but an instructor can expect to fly from 500-900 hours per year depending on school, aircraft availability etc. Aerial photography pilot, aerial survey pilot, parachute pilot and corporate jet jobs are also options to be considered for building hours or earning some money. You will need at least CPL to do any of these flying activities.

Irish Air Corps

The Air Corps have advertised for a number of cadet pilots over the last few years. This is certainly an interesting flying job with lots of opportunities but your interest must go beyond flying and into the military as it is primarily a military job. The selection process is gruelling and includes a physical test, technical interviews, aptitude tests and

a final panel interview. The thousands of initial applicants are eventually whittled down to the lucky few. Before you see an aeroplane you will be expected to pass your military training in the Curragh Camp before beginning the 200 hour wings course at Baldonnel. On successful completion of your training you will be commissioned as an officer. www.military.ie/air-corps/ has lots of useful information on the Air Corps.

Cadetships

A question I often get asked is "will the airline not pay for my training?". The answer is maybe! Since September 11th, most airlines have relied on pilots training themselves and then applying for positions once they are qualified. However in the last few years we've seen the return of the sponsored cadetship programmes including Aer Lingus.

The Aer Lingus Future Pilot Programme has been running successfully for the last few years and it's certainly worth considering. Competition is usually very high so it's worth having some aviation experience on your C.V. to demonstrate your interest. That could be some flight training, a related third level qualification

or some aviation industry experience. Aer Lingus train to the MPL – Multi Pilot Licence – which is different to the pathways mentioned above. This will limit you to only flying with that airline until at least the first 1,500 hours of your career.

Ryanair and ASL Airlines Ireland also have mentored programmes. Although the cost is still borne by the candidate the prospect of a job at the end of the training makes the initial investment a bit easier to swallow. While no job is guaranteed, with the mentoring and guidance of the partner airline, you would usually be in a very good position to achieve the standard required.

This article should prepare you with a basic knowledge of the route to becoming a pilot and allow you to do further research into the options open to you. Flying is fantastic fun and the freedom of flying in a light aircraft is something everybody should experience at least once in their life. If you have any further questions about flight training I can be contacted by email at **mark@flyinginireland.com**

Also take a look at **www.flyinginireland.com**

and **www.pilot.ie**

Happy Flying!

Mark Dwyer

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Profits from the sale of this book will go to St. Vincent de Paul. The first edition of Irish Air Spectacular sold out, bringing the total raised by Aviation Fundraiser projects for St Vincent de Paul to over €450,000.



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The Ultimate Biplane for Air Show Entertainment

Popular Aerobatic Display team, Rich Goodwin Airshows, can now confirm that Aerobytes, a world leading Flight Data Monitoring (FDM) company will be their headline sponsor for this year's airshow season.

Rich, an ex-RAF Tornado and commercial pilot, wows crowds throughout the UK and Europe with his unique style of flying where high energy gyroscopic forces blend with aerobatic manoeuvres to produce an exciting dynamic routine.

He flies two aircraft, G-EWIZ, a modified muscle biplane and a recent edition to the fleet; G-JPIT – the Jet Pitts muscle biplane – a unique aircraft, and one of a kind. It has been modified structurally to have two LYNX jet turbine engines mounted on the fuselage sides – a first for such



an aircraft and means it can hover like a Harrier!

This unique innovation turns heads at every airshow because nobody in the audience expects a small, propeller-driven aircraft to suddenly 'let rip' with jet noise and accelerate



vertically. Once those jets power up, all heads are pointing in only one direction!

But it is the story behind those jet engines that has attracted Aerobytes to sponsor Rich Goodwin Airshows, as well as the shared ambition to inspire and excite the next generation in aviation and the STEM subjects (Science, Technology, Engineering and Maths).

Eddie Forrester, MD of Aerobytes commented; "What Rich has achieved with both of his superb, home-built aircraft is an inspiration to future engineers and pilots. You don't know what the limit is on 'possible' until you witness somebody having passed it! If only a handful of would-be pilots or engineers have that creative fire lit in them as a result of seeing Rich then our investment will be repaid a hundred times over."

Aerobytes was established in 2001, supplies flight-safety software globally and has directly supported the UK air-display industry since 2007 when it started sponsoring the much-loved and missed Vulcan XH558. Subsequently, Aerobytes sponsored several air-shows, was title sponsor for The Blades Aerobatic Team, The Blades Air Race Team and is now title sponsor for the disabled flying charity Aerobility.

Rich Goodwin commented, "It's great that Eddie and Aerobytes are sponsoring us this year, and I really understand the importance of their FDM product having spent the last 26 years being monitored by it on the flightdeck of the Boeing 757. It delivers ever increasing flight safety and risk mitigation to the commercial Aviation sector."





AeroSuperBatics - the World's only Professional Formation Wingwalking team

The AeroSuperBatics Wingwalkers were first founded in 1984 by Vic Norman. We have performed in 20 countries and are regular visitors throughout Europe, Asia and the Middle East.

You may have already seen us in action under our former sponsor guises as the Cadbury's Crunchie Flying Circus, the Utterly Butterly Barnstormers, Team Guinot or more recently as the Breitling Wingwalkers.

We are currently looking for a new sponsor to join us. On average we perform around 60 public displays a year, entertaining over 7 million spectators at large live audience events. We are also able to perform at private events on request. Our professional wingwalkers

perform breathtaking acrobatics and handstands whilst strapped to the top wings of our 6 beautiful 1940's Boeing Stearman biplanes, as our pilots fly through a choreographed and energetic routine of dazzling aerobatics and close formation flypasts. These manoeuvres include loops, rolls, stall turns and inverted

flight – all reaching speeds of up to 150 mph and 'G' forces of up to 4G's! AeroSuperBatics also offers the public the chance to wingwalk with the Professional Display team at their own private airfield in the Cotswolds. With 30 years' experience and a venue that's as breath-taking from ground level as well as from above, AeroSuperBatics is the perfect





place to fulfill your dream to fly. Whether you are wing walking for the first time, returning for a loop-the-loop, flying in formation or planning an event, you and your guests will be sure to have the time of your lives! Visit www.gowingwalking.com for more information.

AeroSuperBatics - Aircraft

The team fly original 1940s vintage Boeing Stearman biplanes in a striking orange / red white and blue livery.

Boeing Stearmans were built in America as a trainer during the Second World War. Nearly 10,000 were built and they trained thousands and thousands of pilots. After

the War they were sold off as surplus and the majority were bought by farmers and converted into crop dusters. When more modern agricultural aircraft came along they might have fallen into disrepair but many were restored and enjoyed another new lease of life as private and air display aircraft.

Our aircraft have been modified with extra ailerons and a bigger engine. They are fitted with a huge 450hp Pratt & Whitney R-985 radial engine with a 10-foot diameter propeller. The engine is almost 17 litres, nearly 9 times bigger than the average family car engine. The tips of the propeller reach supersonic speeds which you can hear as

a 'rasping sound' during the Display.

The powerful smoke system works by injecting environmentally friendly smoke oil directly into the exhaust system. Each aircraft uses up to 30 litres per display!

Pilots

David Barrell

Lead Display Pilot

Brian Cornes

Formation Display Pilot

Mike Dentith

Formation Display Pilot

Steve Noujaim

Formation Display Pilot

Our Wingwalkers

Kirsten Pobjoy

Lead Professional Wingwalker

Emma Broadbent

Formation Professional Wingwalker

Libby Dover-Smith

Formation Professional Wingwalker

Team Raven – Formation Aerobatic Display Team



Team Raven is an aerial display team specializing in formation tension. The team is based in the UK and is made up of highly skilled pilots who fly in tight formation to perform impressive air shows at various events and air festivals. Team Raven members typically fly light aircraft such as the Van's RV-4 and Van's RV-8, which are amateur-built aircraft renowned for their agility and ability to perform acrobatic maneuvers. The team is renowned for its intricate aerial formations and precise maneuvers, including loops, rolls, crosses and synchronized aerial stunts.

The original team flew with a Van's RV4 as leader & 4 x Van's RV8s as wingmen until 2018 when the Team adopted an all RV8 line-up. Over the last 8 seasons the Team has gone through a period as a 6-ship display, back to a 5-ship & now for 2022, we are aiming to put on show a 6-ship once again. The last 9 months has seen

some pilot changes & after working up 2 new pilots (Pete Wells & Russ Eatwell) to fly in the Team, a recent illness of an original member has meant the recruitment of a replacement who comes in the form of Chris Heames. The pilot biographies speak for themselves in terms of the vast experience of the Team as a whole. The routine changes little this year from the sequence of 2019, albeit the addition of a 6th aircraft adds another element to our display. The display is a mix of formation aerobatics involving elements of 6, 4, 3 & 2 aircraft as well as some opposition & tailchase-type manoeuvres, aiming to keep elements of the formation in front of the crowd at all times in a well-timed & at times, balletic routine. After a very quiet 2020 & a reasonably quiet 2021, in this our 9th season, we are once again aiming to display throughout the UK & wider afield in Europe & we cannot wait! 2022 also sees the Team adopting a new livery which has at pride of place on the nose, the logo of our MT Propeller sponsor.

Pilot Biographies

Raven 1 – Simon "Sid" Shirley

Sid, now in his 10th season as a display pilot, is a former RAF fast jet pilot with around 5,500 hours flying time having done multiple tours on the Tornado F3 (flying missions over the Balkans in 1995) as well as QFI tours on the Hawk, the Grob Tutor in the University Air Squadron & Elementary Flying Training roles & on the Grob 120TP Prefect. He now serves as a full-time Reservist QFI & AEF Flight Commander on the Universities of Wales Air Squadron at St Athan flying the Grob Tutor once more. He joined the RAF straight from school (he is NOT academic!), could fly jets before he could drive & was a front-line F3 pilot at 22, although by current Raven Team member's standards he is a 'late starter' having only gone first solo at 17. Unlike the other ex-military pilots in the Team, Sid was too slow when it came to dodging ground tours & has served as Staff in HQ Air Command & in Kabul Afghanistan. 2003



saw an invitation from Chris Heames to instruct on the Yak 52 formation school at North Weald where he went on to meet some of the current members of the Team. The opportunity to display is a dream-come-true for him. A keen motorcyclist, Sid has been known to tour Europe (mainly the Pyrenees) with other bikers & is also a passionate skier. He lives in Cardiff & when not teaching University Air Squadron students to fly or displaying with the Team, he enjoys travelling, cooking & amateur astronomy.

Raven 2 – Patrick Willson

The newest and youngest member of the team, Patrick grew up in the backseat of aerobatic aircraft, following his father around the airshow circuit from a young age. Initially going solo in gliders, he was looping, rolling and stalling the same day his PPL arrived.

Patrick started his career in aviation as an engineer on corporate jets, before cutting his teeth flying Saab 340s through the demanding and

stereotypical weather of the Scottish Highlands and Islands.

With over 3,500 hours he is now a full-time airline captain operating two types, the Airbus A320 and Embraer Phenom 300 (which he flies single-pilot). Working for the family business, he operates charter, cargo and ultra VIP round-the-world tours to exotic destinations like Easter Island, Laos, Botswana and Fiji to name a few. Patrick has flown across the international date line three times in his career already.

An Essex boy at heart, he lives in Saffron Walden and spends his time off with lightweight track cars in the summer, and off-piste snowboards in winter.

Having flown in a two-ship display team for three seasons, Patrick trades in a Decathlon and Xtremeair XA42, to join big formation aerobatics and fly for Team Raven as No. 2.

Raven 3 – Pete Wells

Pete has been flying all his life and is a self-confessed air junkie having amassed over 6000 hours, all of which

on tail-draggers. He went solo on his 16th birthday in a glider & retains a keen interest in gliding. After trying for selection as an RAF pilot, Pete specialised as an aircraft engineer & he now owns & is Director of Zulu Glasstek Ltd, a composite aircraft maintenance/sales company based in Oxfordshire. He started power flying as a glider tow plane pilot on Piper Cubs & Pawnees after which he progressed onto aerobatic types amassing hrs in RV8, Sbach XA42, Cap 10 & the RF4D amongst others. He built one of the first ever RV8s in the UK in 2002 but sadly could not get it back to fly in the team so he has acquired another. He built a Silence Twister aircraft & started a solo display act 2007 which progressed into the Twister Duo; a Team he led for 10 years displaying all over the world. In 2009 he was the first to perform an aircraft pyro display in the UK & he went on to lead the first team to perform pyro displays, which he has done in most of Europe, China, the UAE & Bahrain. His interests include



motorcycling; he has ridden a monkey bike (small motorcycle) 1000km across the Andes into the rainforests of Peru, & again a similar trip from the Sahara to Marrakech across the Atlas mountains! Pete is very happy to join Team Raven in 2022 which he did on the premise he didn't have to lead – he feels he has done plenty of that!

Raven 4 – Paul Farmer

Paul flies professionally as the Chief Pilot and SAR Commander of the search and rescue base at St Athan in South Wales.

Prior to flying for the Coast Guard Paul spent a decade flying the Chinook for the Royal Air Force. During this time he completed seven tours of Afghanistan, displayed the Chinook during the 2012 and 2013 display seasons. He went on to supervise the 2014 Chinook display season. Qualified as A2 instructor, Paul held the positions of Chinook Force Standards Officer and Training Officer prior to leaving the Royal Air Force.

Prior to displaying as Raven 4, Paul spent three years flying for the Yakovlevs display team in the wonderful Yak 50 aircraft. He also thoroughly enjoys

displaying Stearman, Cubs and whatever other vintage aircraft he can get his hands on!

Paul is a Display Authority Evaluator and has worked on flying control committees for the past nine years in addition to display flying.

“It's a real pleasure to be asked to join the team as Raven 4, I'm thoroughly looking forward to a superb season.

Raven 5 – Mark Southern

Mark by trade is an airline pilot with significant experience over the last 30 years on both Boeing & Airbus ranges of aircraft & is an ex-RAF fast jet pilot having flown the Tornado GR1 & the Jet Provost in the instructional role. Also an experienced display pilot, all of Mark's previous display experience has been on ex-military jets having owned & displayed his own Hunter GA11 with Team Viper with Gerald & Chris. Mark, being from the North has a naturally laid-back approach to all he does. However, this relaxed attitude is actually a veneer for a wealth of aviation knowledge and a quick, dry wit. Mark lives outside Manchester & in his spare time enjoys high speed downhill skiing & house building; the latter being a skill

he practices in order to stay grounded with 'earthy' people..

Raven 6 – Gerald Williams

Gerald, originally a professional rugby player in Wales, New Zealand & South Africa is now a successful businessman in the Swansea area. A keen PPL pilot for 25 years with more than 2000 hours he is arguably one of the most experienced military jet pilots on the civilian scene having flown (& owned) many ex-military jets including (but not limited to) L29, L39, Jet Provost, Strikemaster, Vampire, Venom & Hunter T7 and FGA9. Gerald is also an experienced piston fixed wing pilot & helicopter pilot having owned a couple of Yak 52s & a Wasp. A very experienced display pilot, he has displayed all of his ex-military jets & the Wasp, the former with Team Viper. He Also displayed with a Yak 52 team in South Africa.

With unquenchable enthusiasm & drive, Gerald is the fuel to the momentum of the Team & with his extensive networking links in the display arena is the Team's display schedule organiser & communications into the Team. In his precious little spare time Gerald enjoys spending time with his family and holidaying in warmer

RV-8	
Engine	Lycoming Superior IO-360
Max Speed	2200mph
Length	21 ft 0 in (6.40 m)
Wingspan	24 ft 0 in (7.32 m)
Height	5 ft 7 in (1.70 m)
Wing Area	116 sq ft (10.8 m ²)



climates. Another natural wit, he is always at the centre of any social event & is the archetypal life and soul of the party.

Raven 7 – Russ Eatwell

Russ is moving to Raven #7 on this his 4th season with the Team. He sits outside left when flying with the full team and is teamed with Gerald (#6) during the synchro-pair manoeuvres. His passion for aviation was seeded at the age of 11 when his father taught him to fly gliders. In the 48 years since then he has accumulated over 15,000 hours flight time on 70 different types of aircraft & helicopters. Joining the Royal Navy's Fleet Air Arm straight from school, Russ went on to fly Sea King Helicopters in the Anti-Submarine & Search & Rescue roles before being selected to fly Fast Jets. After re-training onto the Sea Harrier, he joined 800 Naval Air Squadron in 1993, just as the Balkan crisis flared up. Leaving the front line with 67 combat missions under his belt, he instructed on the Hawk & Sea Harrier before taking up his final flying role in uniform as the Boss of the Royal Navy's Fixed Wing Standards Organisation. Russ displayed the Sea Harrier for 2 years,

then the Swordfish & Sea Hawk for the Navy's Historic Flight (Now called Navy Wings) as well as the Rolls-Royce Spitfire Mk 19 at air shows throughout the UK & Europe. He became the Chief Pilot of what is now Spitfires.com in 2010 flying the TR9 Spitfire, G-ILDA. A career change to the airlines flying for Monarch, Etihad & Emirates on Airbus A319/20/21 & A380 respectively, meant a temporary hiatus from display flying. He returned to the UK in 2020 after widespread Covid related redundancies in the Industry. Russ has now returned to his military roots & is once again training the next generation of Naval & RAF fighter pilots at RAF Valley on the Hawk T2.

Team Manager – Barry Gwynnett

Barry is an experienced GA pilot having had a PPL for 36 years and around 2,300 hours. An experienced display pilot having flown in Team Osprey displaying his Yak 52, also in the Number 3 slot Barry is now in his 9th season with Team Raven and is one of the founder Team pilots. Now retired from the Building Services Industry and living in Swansea, Barry was the first to get hold of an RV8

after a dozen years of owning and displaying a Yak 52 with Team Osprey. Prior to that he spent a decade flying the farm strips of Wales and further afield as well as learning to fly gliders. More recently he has re-acquainting himself with the gliding fraternity, Barry now flies the Pawnee and Eurofox tow planes at Talgarth gliding site. To keep him out of mischief, one of his current projects includes re-building a Starduster open cockpit biplane which will be flying again this Summer.

The Aircraft – The RV-8

The RV-8 retains the fighter-like feel of centreline seating making it perfect for formation flying. The RV8 has a fuel capacity of around 170 litres – and with its efficient airframe provide long range and high cruise speeds, so long distances can be covered easily. The speed and the excellent climb rate provide options for dealing with weather and terrain that simply aren't available to most pilots. With a single occupant, it would take off in 250' and climb out at 2600 fpm. All the aircraft have subtle changes within as they are home built but generally follow the same design.



Eddie Goggins CAP 232 G-IIAI

The Make-A-Wish CAP 232 aircraft will be flown by Eddie Goggins. Eddie has been flying aerobatics for more than 27 years and has been doing public air shows for 20 years.

This AVIONS MUDRY CAP 232 aircraft is a French designed single seat unlimited aerobatic wonder plane. The French National team have won several World Aerobatic titles since the late 1990s with CAP aircraft. Eddie Goggins competes for Ireland at international competitions. He has had previous success at World competition winning a Bronze medal for Ireland flying an Extra 300 but he says this CAP is more capable and he hopes for even greater success.

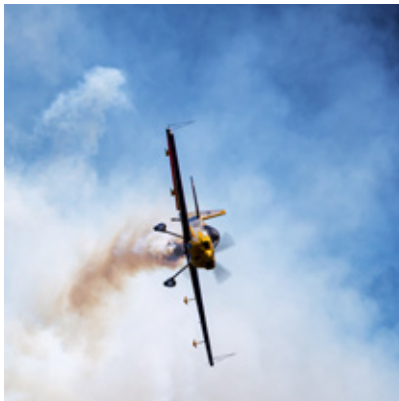
The CAP 232 is light (615kg) and very agile! It has a 304 horse power, 9 litre, 6 cylinder engine. During a display, it guzzles about 1½ litres of fuel

every minute! This CAP 232 has a large 4 Blade Propeller spinning at 2700 rpm. The big spinning MT propeller is a powerful gyroscope. The large rudder and elevator can create sudden rapid yawing and pitching movements. Moving the propeller disc so dramatically, will unveil the often misunderstood gyroscopic forces necessary to make modern aerobatic aircraft tumble in seemingly unnatural and impossible looking ways.

Surprisingly, when you push

the stick forward and the nose yaws left / Pull and yaw right. A boot full of left rudder and the nose pitches up / Right rudder and expect a pitch down. When flying at more than 100 knots, the longitudinal and directional stability of the aircraft will largely mask and overpower the gyroscopic forces of the propeller. But at lower speeds, a pilot can exploit these forces and supplement them with control inputs that result in a new dimension of flight making impossible-looking-tumbles... Possible!





Today's flying display will involve G FORCES of plus 9 and minus 7G. That means that at times Eddie will weigh as much as 127 Stone... that's nearly a Metric Tonne! On the other hand when he pushes the control stick forward curving through the air upside-down, the centrifugal forces

try to throw him out of the cockpit with up to 7 times the force of gravity. That's why he has 7 Seat Belt Straps! The SMOKE that you see is from Warter Aviation. It is very similar to baby oil, and Eddie uses it as it is cleaner and more environmentally friendly than using old fashion diesel to produce smoke.

The smoke is created by injecting the Warter Aviation smoke oil directly into the exhaust stack where it vaporizes. It has a pleasant odour and Eddie says it keeps his skin SOFT! Eddie has developed this routine after years of training and you are watching manoeuvres such as:

- **The Towering Spiral Cravat**
- **The Salmon Leap**
- **The Knife Edge spin**
- **Vertical Negative Flick Rolls**
- **Reversing Torque Rolls**
- **The Vertical Lomcevak**
- **Nose over Tail Ruade Tumbles**
- **The Tail slide**
- **Knife Edge and Inverted**
- **Upside-Down fly pasts.**

Eddie lives in Dublin, and he works weekdays as a dentist in Cabinteely Village in Dublin. He has been nick named "THE FLYING FANG FIXER!!!!!!!"

On weekends Eddie also works as a flying instructor teaching advanced flying techniques. Eddie had his first flying lesson at the age of 18 in Dublin Weston Aerodrome. It took him 5 years to save the money to get a private pilots licence. Since then he has accumulated over 2500 hours in aeroplanes and 400 hours in helicopters.

He is qualified on over 40 different types of aircraft and has flown everything from hang-gliders to Citation Jets.



Make-A-Wish®

Aer Lingus Airbus A321neo XLR



The Airbus A321neo XLR is the newest member of the Aer Lingus long-haul fleet. Aer Lingus is the second airline in the world to operate the A321XLR as well as the second in the International Airlines Group (IAG). Aer Lingus will take delivery of six A321XLR aircraft. .

Based on the popular A321neo, the A321XLR is designed to operate longer routes with a maximum range of 4,700 nautical miles (8,700 km). This fuel-efficient single-aisle aircraft is optimised for transatlantic long-haul routes. Integrating the latest Airspace cabin, it offers a full long-haul passenger experience including widest single-aisle cabin in our fleet, configured with 184 seats (14 full lie flat business class and 168 economy seats), latest generation inflight

entertainment and WIFI connectivity.

Aer Lingus is the second airline in the world to operate the A321XLR as well as the second in the International Airlines Group (IAG). Aer Lingus will take delivery of six A321XLR aircraft.

The A321XLR's increased fuel capacity, primarily through a rear centre tank, allows it to fly significantly further than the standard A321neo, enabling

airlines to open new long-haul routes. This has allowed Aer Lingus to operate new routes to Nashville, Indianapolis and expand our service to Minneapolis.

The A321XLR has a higher maximum take-off weight (101,000kg) compared to the standard A321neo. This increase is necessary to carry the additional fuel required for its extended range. The use of the Enhanced Take-Off

Airbus A321neo XLR (A321-253)

Max Take-off Weight (MTOW)	101,000kg
Max Landing Weight (MLW)	79,200kg
Max Usable Fuel Load	36491 litres/ 28645 kg
Max Flight Level	FL 390
Max Operating Limit Speed (Vmo/ Mmo)	VMO: 350 kt IAS/ MMO: 0.82
Aircraft Length	44.51m/ 146 ft
Wingspan	35.8 m/ 118 ft



Configurations (ETOC), coupled with modifications to the high-lift system (slats and flap) allows the A321XLR achieve its extended range while still maintaining efficient take-off capabilities.

The aircraft is powered by CFM International's LEAP-1A engines, which provide outstanding operational, economic, and environmental performance. Also included on the A321XLR are Airbus' Sharklets, the 2.4-metre-tall wingtip devices provide a 4% reduced fuel burn over longer sectors. The XLR offers a 15%

increase in range compared to the A321LR and up to 20% lower fuel burn per seat than previous generation aircraft.

Airbus has refined the flight control software to maintain performance and ensure the system's overall reliability, with the XLR utilising an electronically driven rudder, which offers a lighter and more efficient solution compared to traditional mechanical systems.

Similar to other Airbus aircraft the A321XLR features fly-by-wire technology, which use computers to process the flight control inputs

made by the pilot/ autopilot, by sending corresponding electrical signals to the flight control surface actuators. This technology replaces direct mechanical linkage such as cables, pulleys and rods.

Fly-by-wire technology improves safety, reliability and aircraft manoeuvrability. The technology was first developed on military aircraft and Concorde, with the technology fitted on all Airbus aircraft and on most modern aircraft, such as the Boeing 777 and 787.

Airbus A320neo (320-251N)
Max Take-off Weight (MTOW) 73500 kg
Max Landing Weight (MLW) 67400 kg
Max Usable Fuel Load 23724 litres/ 18622 kg
Max Operating Limit Speed.

Executive Helicopters



Executive Helicopters entered the Irish aviation market in 1998, The company was established by Capt. Chris Shiel, a Galway native.

A recently qualified flight instructor he initially started with a single passenger Robinson R22 helicopter operating out of a Portacabin in Oranmore, co. Galway he began steadily building the business. A very much a hands-on situation based on drive and determination.

When the economic boom of the early to mid-2000's hit, a market opened for those who wished not only to learn to fly but to buy their own helicopters, have them maintained and hangared. At this time Executive Helicopters were a registered training facility (RTF), an authorised Robinson Helicopter distributor and a European Aviation Safety Agency (EASA) part 145 maintenance facility, therefore a complete Turnkey operation

was possible. Ireland was reputed to have the highest ratio of helicopters per head in Europe during this period!

From there the company continued to branch out, investing in 4 passenger Eurocopter EC120's, a 5 passenger twin engine AS335N and more recently an 8 passenger AS365N2 Dauphin, as well as highly specialist equipment, HD Filming, Infra Red and Thermal Imaging cameras, Aerial Fertilising and Firefighting Bambi buckets.

The company won the National ESB powerline contract, the National Gas Pipeline patrol, as well as firefighting and fertilizing services for Coillte and private individuals. Aerial filming also another strong specialty for large screen films, prime example being listed on the credits for the recent Star Wars films.

The company continues to see Phenomenal growth, most notably in the niche high-end

luxury sector with business continuously growing year on year.

The high standard of service, quality of Pilots and level of aircraft has seen a strong loyal repeat client base which is now also expanding to Heli Golfing in Scotland. The company has won numerous awards such as the 2018 & 2017 Winner Luxury Tour Guide European Awards, "Republic of Ireland Aviation Company of the Year 2018", "Best Helicopter Company Republic of Ireland – Air Transport Awards 2018" and also listed in Ireland the Best, the insider's guide to Ireland, published by Collins. Summing up the company's future and Approach, Executive Helicopters will continue to explore new opportunities with the same drive and entrepreneurial gusto, the Sky is literally the limit!

Skip the queues

Flying from Dublin between 05:30 and 08:00?

Check in and drop off your bags at the airport
between 16:00 and 22:00 the evening before you fly





The Black Knights are the official parachute display team of the Irish Defence Forces.

The team's role is to promote and enhance the positive image of the Defence Forces this is achieved by carrying out several spectacular parachute displays at public events each year.

The team is manned by serving members and reservists from the Defence Forces three branches, the Army, the Air Corp and the naval Service. Every member of the



team continues to serve with their parent unit and their participation with the parachute team is an additional commitment to their normal duties. Many members of the team have participated in operational tours of duty in mission locations such as Kosovo, Lebanon, East Timor, Liberia, etc.



Replica Spitfire



The aircraft was first registered in 2014, bought by Paul in 2020 as a project and over three years all of the various snags and issues were fixed, in addition

- New Landing Gear
- Modification of the Propellor Speed Reduction System
- Modification of the Cooling system
- Modification of the Braking system,
- Bell Crank System fitted for the Rudder Pedals
- Specification
- Engine 3.5 Litre 260 BHP ISUZU V6
- Wingspan 27.5 feet
- 2 Seats
- Fuel -120 litre capacity - Burn - 40 Litre PH
- All metal construction
- All up weight 810 kgs





Wicklow Passport



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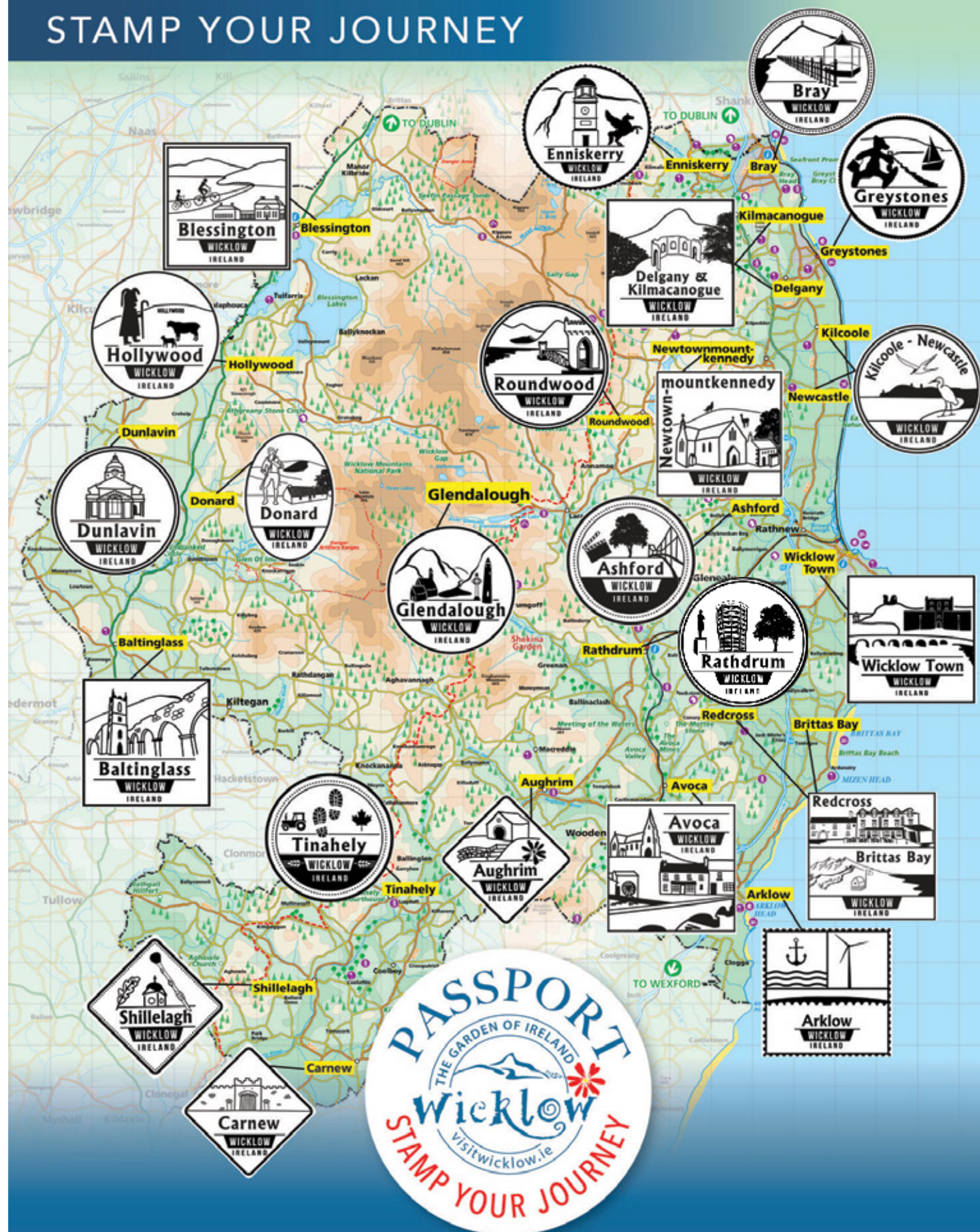
Drive, cycle or walk the length and breadth of Wicklow collecting Wicklow Stamps at participating Stamping Locations around the County and discover the many activities, attractions and flavours of Wicklow!

www.visitwicklow.ie/passport



WICKLOW PASSPORT

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BAC167 Strikemaster



The BAC167 Strikemaster was built at BAe Warton from 1969 to the last example in 1986. Sold as a light ground attack aircraft to many countries including, Botswana, Ecuador, Kenya, Kuwait, New Zealand, Saudi Arabia, Singapore, Sudan and Oman.

The last aircraft in service are at Muscat in Oman and are used for ground training the country's aircraft engineers. With a top speed of 450 knots and a service ceiling of 35,000 feet it is a very capable aircraft.

They carried two machine guns internally, up to four 500 pound bombs, or 32 SURF rockets. With the ability to fit four under wing fuel tanks the range can be about 1000 nautical miles. Fitted with a single but robust Rolls Royce Viper 535 engine, delivering 3700 pounds of thrust in this example.

The Strikemaster from SFC was imported by Mark Petrie in 2004 from Oman, and it retains the immaculate grey training colour scheme from its service there. The aircraft is actually the youngest of all the

Strikemasters ever produced built in 1986.

Pictured is Mk 82A Strikemaster equipped with full smoke system for the display season. The aircraft's standard four hard points provide easy location for the pair of smoke oil tanks and the smoke system adds visual drama to its displays.

Owned by Strikemaster Flying Club, based with North Wales Military Aviation Services Ltd aircraft maintenance facility at Hawarden.



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Óglaigh
na hÉireann
IRISH DEFENCE FORCES



IRISH AIR CORPS 104 SQUADRON

“Hawkeyes” Pilatus PC-12 NG

The Pilatus PC-12 NG “Spectre”: 104 Squadron Operations, Irish Air Corps

Over the last four years since the delivery of the Pilatus PC-12 NG “Spectre,” to 104 Squadron, it has completed a remarkable array of flight operations, showcasing the versatility and capability of this modern aircraft. The transition from the Cessna FR172 Reims Rocket to the high-performance, pressurised turbine PC-12 NG has marked a new era for the Irish Air Corps, enabling the squadron to undertake a broader range of missions with greater efficiency and reliability.

From Reims Rocket to Spectre: A New Chapter

The Cessna FR172 Reims Rocket, a familiar sight in Irish skies and at events like the Bray Air Display, served faithfully for decades. However, the leap to the Pilatus PC-

12 NG brought significant improvements: a multi-pilot cockpit, all-weather and day/night operation, and true multi-role flexibility. The transition required the squadron to adapt rapidly, retraining crews and reworking operational structures—all while maintaining mission readiness.

Responding to Crisis: Rapid Fleet Expansion

The onset of the COVID-19 pandemic in 2020 revealed critical capability gaps. In response, the Irish Air Corps made the unprecedented decision to acquire an additional PC-12 NG (tail number 280) in just 13 days—a process that normally takes years. The arrival of 280, initially in a civilian paint scheme, provided urgent logistical support and allowed crews to gain valuable experience ahead of the arrival of the dedicated “Spectre” variants.

Today, 280 proudly sports a heritage paint scheme commemorating the Air Corps Centenary, with camouflage accents reminiscent of aircraft used during the Emergency period. The subsequent delivery of three more “Spectre” aircraft (281, 282, and 283) in September 2020, all retrofitted in Denver with advanced sensors and mission systems, completed the transformation of the squadron’s fleet.

A Multitude of Missions

The four PC-12 NGs have since proven their worth across a wide spectrum of tasks, both at home and abroad. Notable missions include:

Medical and Humanitarian Operations

Air Ambulance Missions: 104 Squadron routinely performs urgent medical flights, including short notice neonatal air ambulance missions, to the



UK and Europe in support of the HSE. The PC-12's flexibility allows for both routine and ad hoc deployments, with aircraft equipped for advanced patient care including a full life-port and incubator system.

COVID-19 Support: The squadron played a vital role in transporting COVID test samples to Munich and Birmingham, ensuring rapid turnaround of results. In total, over 50 sorties moved an estimated 500,000 samples.

Vaccine and Medical Supply Delivery: Critical deliveries of COVID vaccines and medical supplies were made to Defence Forces personnel based in Lebanon and other overseas locations.

Overseas and Military Support

UN and NATO Missions: Regular resupply flights supported Irish and allied personnel in UN missions such as MINURSO (Western Sahara), MINUSMA (Mali), UNIFIL (Lebanon), and UNDOF (Syria), as well as NATO KFOR operations in Kosovo.

Beirut Resupply: The PC-12 fleet regularly conducts dedicated resupply missions to

Beirut, ensuring uninterrupted support for Irish troops deployed with UNIFIL.

Support for Undersea Cable Missions: The aircraft have also been tasked with missions to oversee and monitor critical undersea cables, providing surveillance and rapid response capability to protect vital infrastructure.

Government and Training Support

Ministerial Air Transport: The PC-12 has provided reliable ministerial transport, acting as a contingency for the Learjet and ensuring government continuity during critical periods.

Flypasts and Training: 104 Squadron has participated in ceremonial flypasts and supported the build-up of Mission System Operator training, as well as technical and flight crew training in Switzerland, Finland, and Germany.

Intelligence, Surveillance, and Reconnaissance (ISR)

The "Spectre" aircraft are equipped with state-of-the-art ISR suites, including electro-optical/infrared turrets, advanced radios, and the C2

command and control system. This enables the squadron to support military units such as the Army Ranger Wing, provide wildfire and SAR support, and conduct ISTAR (Intelligence, Surveillance, Target Acquisition, and Reconnaissance) operations, including the monitoring of undersea cables.

Looking Ahead

The introduction of the Pilatus PC-12 NG "Spectre" has been transformational for the Irish Air Corps and the State. The fleet's reliability, advanced technology, and adaptability ensure that 104 Squadron is prepared to meet the challenges of the future—whether at home, across Europe, or on UN duty overseas. As operational experience grows, so too will the squadron's ability to innovate and succeed in its vital missions, safeguarding Ireland's interests and supporting its people.



Airbus C295 MSA

The C295 has earned its reputation as the reference in **Maritime Surveillance Aircraft (MSA)**, thanks to the combination of an optimum platform and a state-of-the-art mission system, proven in operational service for maritime and overland surveillance, as well as search and rescue missions.

At the heart of the C295 MSA's mission equipment is Airbus' Fully Integrated Tactical System (FITS) – an advanced

and modern system with high-definition touchscreen displays and an intuitive human/machine interface that provides data fusion and a single maritime picture to the operators.

The FITS also interfaces with the aircraft navigation systems, enhancing situational awareness and reducing operators' and pilots' workload. Even with the FITS consoles installed at the front, the C295's long cabin enables

the aircraft to be used for other roles, such as the transportation of troops, cargo and personnel transport, and for medical evacuation (MEDEVAC).

With the longest endurance in its class, the C295 provides more than 11 hours of persistent surveillance. Its rear ramp enables easy deployment of life rafts, and the fuselage's bubble windows ensure excellent visual coverage.





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AgustaWestland AW139

The Air Corps currently operate six Agusta-Westland AW139. These aircraft first entered service in November 2006 and are utilised mainly in the army support & Air Ambulance role.

The AW139 is a medium-lift twin-engine helicopter with a troop lifting capacity of up to 14 personnel in the normal configuration. In the cockpit the aircrew have a fully integrated digital avionics and cockpit display system, which includes an autopilot, a dual flight management system with GPS and a radio navigation system.

The AW139 can be equipped with 2 FN Herstal M58

machine guns for its air support role. The machine guns are mounted in the forward windows of the AW139 which doesn't affect the troop carrying capability and as they are re-loadable in flight the ammunition load carried can change according to the mission profile. The FN Herstal M58 can fire live/blank rounds and can be fitted with infrared

laser pointers for use with Night Vision Goggles. It can also be modified within to allow a fully independent Lifeport stretcher system to be installed in the cabin. This system can provide a fully independent electrical, oxygen, Vacuum and air source to medical personnel on board the aircraft for the patient transfer.



AgustaWestland AW139	
Roles	Army support, air ambulance, military transport and general utility
Crew	2 pilots & up to 8 fully equipped troops
Powerplant	2 x Pratt & Whitney PT-6C-67C turboshafts
Wing Span	13.80 mts. (45ft. 3in.)
Height	4.98 mts. (16ft. 4in.)
Length	16.62 mts. (54ft. 6in.)
Armament	2 x FN Herstal M58
Entered Service	November 2004
Maximum T/O Weight	6,000 kgs. (13,227 lbs.)
Service Ceiling	20,000 ft.
Cruise Speed	157 Kts.
Maximum Speed	168 Kts.



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Airbus Helicopters EC135P2+

Having originally entered service in 2005 the EC135P2+ is currently operated by 302 Squadron.

The aircraft's versatility combined with its wide array of specialist equipment allows it to adapt excellently to the operational and training requirements of Number 3 Operations Wing. Upon completion of their Wings Course in the Flying Training School (FTS) pilots that are posted to Number 3 Operations Wing must complete their Helicopter Conversion Course (HCC) on the EC135P2+. This diverse course initially teaches students basic skills such as aircraft checks, hovering, taking off, landing and handling aircraft emergencies. The students then progress to learn a variety of advanced skills that are required of an operational

military helicopter pilot. These include many different flying disciplines such as low flying, confined area landings, aerial sniping and fast rope operations, formation flying, cargo slinging, flying with night vision goggles (NVGs) and instrument flying. The course finally concludes with a lengthy operational test where students are put through their paces using the aircraft to complete a simulated mission selected by their Squadron Commander or designated examiner. Upon successful completion they will receive their initial operational qualification as a helicopter pilot within No 3 Operations Wing. The EC135P2+ is quickly reconfigurable and can be set up to perform countless different taskings depending on requirements of the day. The aircraft is fully capable of completing air ambulance missions and is able to act as

a flying intensive care unit for its patients using specialist medical equipment which can be fitted by technicians in a matter of minutes. The aircraft's speed and power proves vital for this mission, allowing the crew to minimise transit times to hospitals while carrying a skilled medical team with the patient. 302 Squadron also regularly works with the wider Defence Forces and is able to provide a variety of services to support operations and advanced training. Crews regularly train to use the aircraft as an airborne sniper platform in conjunction with the Army Ranger Wing (ARW). Missions requiring heli-casting, hoist operations and cargo slinging are also regularly conducted by the helicopter crews. Number 3 Operations Wing's night vision goggle (NVG) capability allows it to conduct all types of missions by both



day and night in a variety of weather conditions and environments. The EC135P2+ is also ideally suited to its secondary role as a surveillance and reconnaissance platform. The aircraft's high speed, quick start up ability and relatively low noise output compared to other helicopters allow it to fulfil this role with ease. These qualities are due, in part, to its modern design. A ridged main rotor head, Fenestron tail rotor system, auto flight control system (AFCS) and full authority digital engine controls (FADECs) all contribute to it being an extremely safe and capable aircraft for its demanding multi mission role with the Irish Air Corps.

Airbus Helicopters EC135P2+	
Roles	Airborne sniper platform, pilot & aircrew training (ab initio & advanced), military support & transport, cargo slinging, hoist operations, air ambulance, aerial surveillance, parachute operations, general utility
Crew and Passengers	1 or 2 pilots + 1 crewman, up to 5 troops
Powerplant	2 x Pratt & Whitney PW206B engines
Rotor Diameter	10.2 m
Length	12.16 m
Height	3.51 m
Entered Service	2005
Max Take Off Weight	2,910 kg
Service Ceiling	20,000 ft
Cruise Speed	120 kts
Max Speed	155 kts
Total Endurance	2 hrs 45 mins
Range	300 NM

Pilatus PC-9M



The Air Corps currently operates eight Pilatus PC-9M aircraft. The Pilatus PC-9 is a single-engine, tandem two-seat turboprop aircraft designed to perform basic and advanced training missions for military customers.

It was developed from the successful PC-7 training aircraft which was introduced in 1978. Although it looks similar, PC-9 only retains 9% airframe commonality with the PC-7. The first PC-9 aircraft performed its maiden flight on May 7, 1984 and was first certified in September 1985. More than 260 aircraft have been ordered by 15 air forces worldwide so far. The Air Corps currently operates eight Pilatus PC-9M aircraft (serial numbers 260, 261, 262, 263, 264, 266, 267 and 269). These aircraft first entered service in 2004 and operate as the main pilot training aircraft for the Air Corps. All seven aircraft are based at



the Air Corps Headquarters at Baldonnel west of Dublin but can often be seen on training and operational missions at airports around the country. They also played a pivotal role during the security operations connected to the recent visits of HM Queen Elizabeth and US President Barack Obama. The PC-9M is equipped with a comprehensive, fully tandem-capable VFR/IFR avionics package for navigation, communication

and identification, using state-of-the-art equipment. The PC-9M features modern avionics including a Head Up Display (HUD) and Electronic Flight Instrumentation System (EFIS) where primary instruments are displayed. The PC-9M is fitted with a Martin-Baker CG-A Ejection Seat, which provides safe escape for the pilot from sea level to its operational ceiling at any airspeed greater than 65kts.



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Formative Years

While the tradition of formation flying was well established in the Air Corps prior to the delivery of the Fouga Magisters in 1975, no formal display team existed. Initially the aircraft continued the tradition of formation flypasts for ceremonial events, in addition to its advanced flying and tactical training roles, much like its predecessor, the de Havilland Vampire.

The early Fouga formation teams trained and “worked-up” sensibly from a 3 and 4-ship flypast to a 3 and 4-ship aerobatic display-ready team over the first ten years of service of the aircraft, with the 1st official public display of the newly branded “Silver Swallows” 4-ship aerobatic display team taking place in 1987 for the 65th Anniversary of the Irish Air Corps at the Air Spectacular in Baldonnel. From and prior to its inception, the Silver Swallows and previous Fouga displays were



designed to take advantage of the jet’s characteristics.

The display was constructed to maintain the aircraft in front of the crowd as much as possible with smooth formation changes coupled with dynamic manoeuvres and breaks spread throughout the routine. The team gained recognition

at home and abroad and there is no doubt were highly successful in promoting the Air Corps, Ireland and its aviation professionalism externally while inspiring pride amongst potential recruits and serving Defence Forces personnel internally. The Silver Swallows continued to exist for the following 10 years with the final



of many highlights being the 1997 display season where the team displayed at the Air Corps 75th Anniversary Families' Day and other Irish and European Air Shows. Without doubt, the greatest decoration and achievement of the team was winning the much-coveted Lockheed Martin Cannestra Trophy for the Best Display by an Overseas Performer at the Royal International Air Tattoo, RAF Fairford in 1997. The Next Chapter With the retirement of the Fouga in 1998, formation flypast and limited display flying continued on other platforms within the Air Corps, however, the brand of the Silver Swallows, like the Fouga jets, did not fly anymore. The delivery of the PC-9M in 2004 saw a modern turboprop trainer replace the SIAI Marchetti SF260 fleet as well as the Fouga Magister fleet. This aircraft afforded the Air Corps to train the next generation of pilots on a very capable and modern platform, in terms of systems and avionics. The aircraft continued

the tradition of air weapons and combat training, secondary to pilot and instructor pilot training. In addition to these core taskings, the Flying Training School (FTS), as the Squadron operating the new PC-9Ms took up the mantle of ceremonial flypast and display flying. In a similar fashion to the early days of operating the Fouga, PC-9M crews built steadily, year on year with straight and level formation flypast to wingover formation manoeuvres to formation aerobatics.

The addition of an internal smoke generating system came as a welcome addition in 2016 for the centenary of the 1916 rising and has been utilised ever since for ceremonial and display occasions.

The Centenary Edition While we may not have the iconic V-shaped "swallows" tail, we have built a formation display for this season playing tribute to our heritage and roots in Irish military aviation. The

team consists of pilots and technicians from the Flying Training School, assisted by all other operational and support elements of the Air Corps. Without completely spoiling the show, the ethos of the Silver Swallows will be very much to the fore from the technical support to the flying display in 2022. The original concept of a safe, graceful display of 4-ship formation aerobatics coupled with dynamic manoeuvres interspersed throughout, all maintained within close proximity of the display axis and crowd line were key to our planning and preparation of the 2022 display season. It is every member of the teams wish to continue the story of the Silver Swallows as ambassadors to Ireland and Irish aviation heritage, commemorating the past, celebrating the present and inspiring the future.

Paul McDemott,
*Captain, Silver 1,
 Team Leader,
 The Silver Swallows*

P51 Mustang Marinell



A genuine warbird which shot down four enemy aircraft before being downed in combat in Northern France in 1944.

April 1944

P-51D-5-NA 44-1352, known as “Marinell”, was manufactured at North American’s Inglewood plant in California. Marinell was shipped to the UK on the 6th June 1944, D-Day. She was assigned to the 504th Fighter Squadron, part of the 339th Fighter Group of the famous Eighth Air Force and was placed under the command of a young pilot called Captain Bradley Stevens.

Captain Stevens was only 24 years old when he arrived at Liverpool Docks in May 1944. Captain Stevens chose to name his new mustang “Marinell” after a young girl he

had met whilst completing his combat training. Mary Anell Stokes was 20 years old when she met the young Captain Stevens.

The Fateful Day

On the morning of the 13 August 1944, Captain Stevens carried out a bombing and strafing mission against railway targets in France in Marinell. Captain Stevens landed back at Fowlmere at 11.30 that same morning. His combat report about the mission stated that heavy, intense and accurate flak had been sustained.

Later that day, Lieutenant Winkelman, another member of the same squadron, set out on a dive-bomb and area sweep mission to Beauvais, France, flying Marinell. He was shot down at approximately 18.30 in the area of Feuquières.

Marinell was with the unit for just 45 days when she was shot down. In that time she had claimed four enemy planes to her name—two FW190s and two ME109s.

Necessity

The remarkable story of the Mustang is one of absolute necessity and incredible ingenuity. In Autumn 1940, The Royal Air Force and the Fleet Air Arm of the Royal Navy were in the guts of their battle against the Luftwaffe for air supremacy of Southern England in the military campaign known as the Battle of Britain. The Luftwaffe had sent wave after wave of fighters, such as the Messerschmitt Bf 109, and bombers, such as the Junkers Ju 87, in devastating attacks with the aim of defeating RAF Fighter Command. From the 12 August 1940 to the 7 September, the Luftwaffe repeatedly targeted airfields, infrastructure and factories involved in aircraft production. The idea was to obliterate RAF Fighter Command to allow for an eventual invasion of Britain.

The Blitz

Then on the 7 September 1940, with what it perceived as time running out, the Luftwaffe





The P51 Mustang is an American plane built on British request in 1940 to help defend a nation under attack.

resorted to a massive attack on the capital, London, in the hope of engaging the RAF in a final and decisive air battle. The sheer size of the attack meant many of the German aircraft were successful in hitting their targets and large parts of London including the London Docks, Woolwich Arsenal, Beckton gasworks and the heavily populated streets of the East End were decimated. The ensuing fires provided perfect illumination for the massive night attacks that followed for the next nine months in a devastating period called the Blitz.

North American Aviation

It was against this backdrop that the Mustang came into being. The British Purchasing Commission approached North American Aviation in April 1940 to build Curtiss P40 fighters under license for the RAF. Rather than build another company's aircraft under licence, North American, led at the time by James Howard "Dutch" Kindelberger proposed the design of a more modern fighter, deploying the latest in aviation technology.

102 Days

The first Mustang prototype "NA73X" was rolled out on the 9 September 1940, only 102 days after the contract was first signed and first flew on the 26 October 1940. Never did the need seem greater for an aircraft that could defeat the Germans; The Battle for Britain raged, and the Blitz pounded London.

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Pilot Isabel Ruthland

Isabel took up flying after a career in the city. Isabel flies many different types including the p51 Mustang, the T-6 Texan and various models of the aerobatics aircraft—the Pitts Special.



Isabel is a professional display pilot. Isabel was the 2023 Standard National Aerobatics Champion and she was also the Tiger Trophy Champion for best aerobatic performance at all levels in the same year. In addition to flying old aircraft and aerobatic aircraft, Isabel is a Cirrus Standardised Instructor Pilot (CSIP).

The P-51 Mustang designed by North American Aviation is perhaps the zenith of piston aircraft engineering. It harnessed the latest in technology from the time and was instrumental in securing air supremacy for the Allied forces during World War II.

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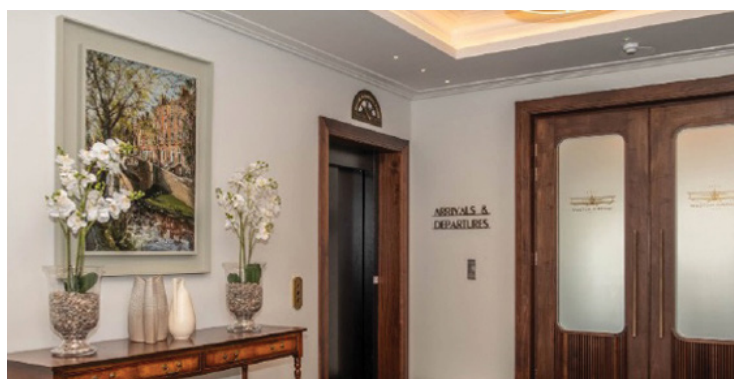
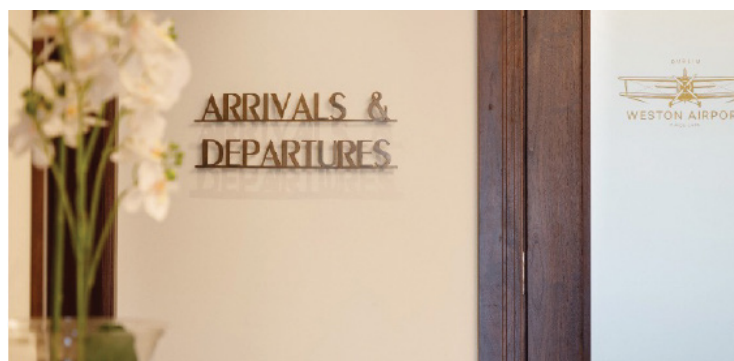
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Technical Data

Runway Data

VOR are based instrument approach on runway 25 available from June 2024

	Runway 07	Runway 25
Length	924m x 23m	924m x 23m
TORA (M)	924m x 23m	924m x 23m
TODA (M)	924m x 23m	1381m x 23m
ASDA (M)	924m x 23m	381m x 23m
LDA (M)	924m x 23m	924m x 23m



THE IRISH HISTORIC FLIGHT FOUNDATION

The Irish historic Flight Foundation (IHFF) is an industry initiative dedicated to the varied and rich aviation history in Ireland.

The main goals for the IHFF are to celebrate and commemorate the very significant role Ireland and Irish people have played in the world of aviation, whilst looking to the future to educate, engage and be pro-active in developing interest in Irish aviation, predominantly in Ireland, but also to a wider audience further afield.

Established in December 2014 the joint industry venture is supported by the Irish Aviation Authority (IAA), Irish Air Corps, Department of Defence, Aer Lingus, Ryanair and ASL Airlines Ireland. A team of volunteer engineers, pilots and aviation enthusiasts are at the heart of keeping alive and supporting the activities of the IHFF, to ensure the value and continuance of the IHFF's short and long term goals. In the short time since its inception the IHFF has acquired an important collection of historically

significant memorabilia which it has made available on temporary loan to a number of different organisations for public display together with four vintage aircraft which it displays across the country. The two types of aircraft displayed by the flight are 3 x de Havilland Chipmunk's (Irish Air Corp markings 168, 169, 170) – (EI-HFA, EI-HFB, EI-HFC) and a Boeing E75 Stearman "Spirit of Tipperary" (EI-HFD), making a fleet of four historic classic aircraft.

The Chipmunk is a two –seat tandem training aircraft used to train civilian, military and airline pilots and was first used by the Irish Aer Corps in 1952. Boeing's basic design of the

Stearman Model 75 is a strong, rugged and reliable biplane, also widely used as a training aircraft. The Stearman has great display characteristics, whilst emitting a very distinctive sound from its radial engine.

In addition to maintaining and flying these iconic aircraft the IHFF is committed to developing an "aviation experience centre" to allow visitors to interact at close quarters with the flight. As part of this facility visitors will be able to understand the science of flight, engineering and maintenance, whilst engaging in personal stories of people past and present in Irish Aviation History.



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Constructed with a steel frame, cotton fabric covering, Canadian spruce wings and a nine cylinder radial engine the Boeing Stearman designed by Lloyd Stearman and built by the Boeing Company at Wichita Kansas tells a story of American entrepreneurship, aeronautical innovation and determination which culminated in the construction of over eight thousand enduring aircraft.

The aircraft featured 'EI-HFD' was originally built in 1942 at the Boeing Wichita Kansas



factory and was delivered to Pensacola Florida where it served as a primary trainer to many thousands of US Airmen during World War II. After the war the airplane was bought from the US Army by a United States Airforce pilot who had trained on Stearman and flown in Europe during the closing years of the War. The aircraft and it's pilot could be seen in Fresno California performing in Air shows during the 50s, 60s and 70s. In 1981

the airplane was bought by an avid classic aircraft collector who based it in the UK and there it began a new chapter in its history, flying the UK Air show circuit. On the 20th March 1999

Ryanair accepted delivery of its first Boeing 737-800 series aircraft and wanting to join the past with the future, the

founder of Ryanair, Tony Ryan and his son Cathal acquired the aircraft and re-named it 'The Spirit of Tipperary' and put it into the skies over Ireland.

The IHFF acquired the aircraft in 2016 in recognition of the role this truly iconic aircraft played in the training of so many pilots across the world and the major contribution Tony Ryan and his family played in placing Ireland firmly at the centre of the leasing and the low cost airline world with the launch and growth of both GPA and Ryanair.

For more information go to www.irishhistoricflight.com or Follow Irish Historic Flight Foundation on:

Facebook: Irish.Historic.Flight/
X: @FlightIrish
Instagram: irishhistoricflight

The Chipmunk is a two-seat tandem training aircraft which was used to train pilots in the Irish Air Corps. Powered by a Gipsy Major 10 MK 2 engine, it has a low-mounted wing and is fitted with a clear Perspex canopy which covers both occupants.



While the aircraft is primarily made of metal, parts of the wing are fabric covered. It features a conventional tailwheel landing gear arrangement.

Initially flown in May 1946, de Havilland went on to produce almost 1,300 of the type. Chipmunk 168 168 was built as a Chipmunk T.MK.20 by The De Havilland Aircraft Company Ltd, Broughton, Chester, UK. It was delivered new to the Irish Aer Corps on 30th January 1952 and registered as 168. The last recorded flight of 168 for the Irish Air Corps was piloted by Comdt. Ralph James in July 1993 by which time it had accumulated 4,500 flight hours.

After 1993, the aircraft was put into storage and it remained untouched until it was donated to the IHFF. 168 was then converted to a Civilian Mk 22 standard and registered with the Irish Aviation Authority as EI-HFA. Its first flight on the Irish civil register was in June

2015. Chipmunk 169 169 was originally UK's Royal Air Force WD.305 Chipmunk T.10, it flew over 4,500 Flight Hours with the RAF before being converted in 1962 for civilian use and being registered with the UK CAA as G-ARGG. Since entering into civilian use, G-ARGG flew for another 6,000 Flight Hours with Air Navigation & Trading Co. Ltd, Blackpool.

In 1987, the aircraft transferred into private ownership and the aircraft was re-covered in ceconite fabric. G-ARGG was acquired by the IHFF in 2015 and assigned Irish registration EI-HFB in May of that year. Chipmunk 170 170 was first flown in September 1952 and flew over 6,500 hrs with the UK's Royal Air Force between then and September 1975.

The aircraft was then converted to an MK.22 for civilian use and went into private ownership, where it remained until May 2015. While being privately operated in the UK, it originally bore the



RAF paint scheme. In 2012, the aircraft was re-covered with ceconite material and painted with the Irish Air Corps 170 markings. Upon transfer to Irish Historic Flight Foundation, the aircraft was registered as EI-HFC. It now has flown over 8,500 hours.



“The first time that I flew the Chipmunk T.22 was in 1975 with the Air Corps CFI, the then Commandant Pat Cranfield, when he brought me for a 45-minute familiarisation flight, which included my first exposure to aerobatics.”

Having previously flown about seven hours on Iona’s fleet of Cessna 150s, I found being trussed-up in a parachute, helmet and mask a very different working environment. I was immediately challenged by the workings of the cartridge starter (which I, in the front cockpit, had to trigger) and startled by the clouds of acrid smoke that were blown back by the propeller and enveloped the cockpit.

The view forward was worse than in the Cessna, with the nose protruding well above the horizon eye-line and necessitating a lot of weaving to ensure that the way ahead was clear of obstacles and other aircraft. The view for the instructor from the rear seat, which had a lower seating position, was even worse! The flying task got harder during

take-off when the power was applied as the nose swung first one way with power and then the other as the tail came off the ground! Once in the air it was necessary to change hands on the control column to retract the manually operated flaps –nothing seemed to be familiar or as easy as in the Cessna. However, once in the air the real difference became immediately obvious.

The ailerons were crisp, the elevators firm and responsive and the rudder was light and needed constant attention in order to keep the aircraft balanced. The view out and about the aircraft was very good, much better than that from a high-wing aircraft. This aircraft demanded to be flown, but if flown well it would reward the pilot with accurate performance and

satisfying results. As a trainer the Chipmunk posed a real challenge to students in the control and manoeuvre phases of the flying training course and placed a realistic and quality demand on their skills.

Any takeoff could degenerate into a series of swings and waltzes if the rudder wasn’t closely co-ordinated with the power and elevator inputs. Landing it on a concrete runway was like trying to land a beachball. Aerobatics were demanding to fly accurately as the ailerons needed a full-deflection push to get it rolling fast enough to get it around the roll, but loops and rolloff- tops were very satisfying with a very challenging phase during the slow-speed roll-out part of the manoeuvre as a lot of aileron was needed. Stall-turns as always were attention-getters,

as the power needed to be cut just at the right moment as the yaw started to move the nose off the vertical. Reduce power too early and you were in for a stomach-churning hammerhead manoeuvre! It flicked readily into spins if tight turns were tightened too much and once in the spin it rotated rapidly—but always recovered using standard spin recovery techniques.

The spin strakes on the rear fuselage ahead of the rudder are witness to earlier problems with spin recoveries but which, thankfully, was not an affliction that affected the Air Corps fleet. “I still maintain that if you can fly a Chipmunk on instruments you could fly anything on instruments.” The magnetic compass was mounted on the floor in front of the control column and, as regular compass checks were required to keep the directional gyro (DG) set accurately, it was necessary to lean forward in your seat, line up the lubber lines with the magnetic lines in the armature itself and then read

and transfer the results to the DG. All this while still retaining control of the aircraft—or nearly! Night-flying stages were also a big challenge—given the nose-high attitude during the take-off and landing phases— seemingly setting the clock back to the first days of the course when the learning all began and good landings were difficult to achieve. In formation it was an exhilarating challenge and the crisp controls rewarded effort and concentration. Not quite in the red Arrows or Silver Swallows speed range, the Chipmunk got across the basics of station-keeping and changing and flying on the leader’s reference points.

The results were most impressive to behold when a section or vic would return to the circuit for a run and break. There were some other Chippie characteristics that were not so endearing, such as not having a cockpit heater—I still recall the piercing cold of night flying in mid-November at 5000 feet conducting a QGH (Homing and Controlled



Descent) to Baldonnell. The Chipmunk did have a ram-air intake for cockpit cooling but alas I never experienced the necessary high temperatures to warrant its use! I do recall it leaking cold air into the cockpit during flight and not contributing to the comfort levels at all, especially during the winter months. Another trial awaited the would-be Chipmunk crew, also due to the damp Irish weather. First flights on Monday morning were always marked by damp starter cartridges that had been left in the engine over the weekend in the hangar. These never fired but instead burned slowly and gave the unfortunate first crew of the new week no engine start, a cockpit full of smelly smoke and a mandatory and interminable three-minute wait before having a second attempt. This early morning gassing seemed to make the day a bit more wearisome than any other in the week!

Stearman Statistics	
Roles	Trainer
Crew	2
Engines	1 x Lycoming R-680 / Radial
Speed	135 mph
Range	up to 500 miles
Length	24.9 ft
Wingspan	32.2 ft
Armament	n/a
Payload	n.a

De Havilland Chipmunk	
Roles	Trainer
Crew	2
Engines	1 x de Havilland Gipsy Major 1C
Speed	138 mph
Range	280 miles
Length	25.5 ft
Wingspan	34.4 ft
Armament	n/a
Payload	n.a

Beechcraft B200 King Air



2Excel provides fixed-wing Coast Guard Services for Bristow Ireland, following the award to Bristow of a 10-year contract to deliver Search and Rescue (SAR) and other aviation services for the Irish Coast Guard (IRCG).

2Excel Ireland holds an Irish Air Operator Certificate (AOC) to deliver the contract, which includes two specially modified King Air aircraft based at Shannon Airport for SAR and environmental monitoring taskings.

The aircraft will also provide 'top cover' support for the fleet of specialist AW189 helicopters, operated by Bristow Ireland, together delivering the next generation of lifesaving SAR for the country.

Irish Coast Guard – King Air 200 aircraft fact file

- This highly-modified version of the ubiquitous King Air

turboprop aircraft has an endurance of 6.5hrs of flying time

- It has a range of over 1,700 nautical miles
- It is crewed by two pilots, one sensor operator and up to three mission specialists
- The ball turret is a High-Definition camera with electro-optical (EO), infra-red (IR) and ultra-violet (UV) sensors so it can see in all weathers, day or night
- It also has an onboard multi-function Radar with the ability to detect objects on the water up to 200 nautical miles away
- The aircraft is also fitted with the Automatic Identification System (AIS) used to monitor shipping
- Onboard mission software displays the aircraft's GPS position and AIS data and it has video feeds from both EO and IR sensors and

radar data, giving the sensor operator a superb 'picture' during their missions

- Radio and satellite communications systems enable the crew to talk directly with Irish Coast Guard and persons in distress on Maritime VHF Channels
- An onboard datalink allows live streaming of mission data and footage, between the aircraft and the control centre and even other aircraft and helicopters
- A Direction Finder gives the ability to detect electronic distress signals generated by Personal Locator Beacons (PLB), Emergency Position Indicating Radio Beacons (EPIRB) and Emergency Locator Transmitters (ELT)
- The aircraft has a drop hatch for life rafts with total seating capacity of 22 persons, smoke markers and drift markers

AgustaWestland AW189



The AW189 has been a key part of the Bristow global fleet since its introduction into service almost ten years ago.

Since then, this agile, flexible and modern aircraft has helped save countless lives across the globe.

Why the AW189?

The AW189 is a modern, high performance helicopter with a proven track record of delivering safe and effective Search and Rescue (SAR) operations in some extremely challenging environments around the world.

Over the years Bristow crews have become global experts in customising, maintaining and operating the SAR variant of this aircraft. Crews use its high performance and all-weather capability to take aid to people in urgent need, from mountains to coastlines and beyond.

The AW189 is fully established in the SAR role and will

continue to be supported as technology advances. Bristow receives good support from the helicopter manufacturer Leonardo, a European company.

From the Falkland Islands to the Netherlands, the AW189 demonstrates its high performance, reliability and capability, saving lives on a daily basis.

In Ireland a fleet of six Bristow AW189s will work exclusively for the Irish Coast Guard alongside fixed-wing aircraft and other emergency services.

The AW189 Top 10

1. The performance of the AW189 provides a high level of safety during critical phases of flight, such as hoisting operations or approaches to elevated helipads.
2. The AW189 has a modern weather radar, a highly capable search camera, and an aircraft anti-icing system.

These features allow Bristow crews to fly safely in all weather conditions, day and night.

3. The AW189 is Night Vision Goggle certified, allowing all crews to operate safely in darkness. In Ireland, Bristow crews will use next generation white phosphor night vision systems, fully compatible with the AW189.
4. The AW189 is certified to approach and land on elevated landing sites, such as the helipad at the new National Children's Hospital in Dublin. This capability can drastically speed up the transfer of critically ill children into specialist care, without depending on road ambulances to take patients from helicopter to hospital.
5. The compact footprint of the AW189 allows crews to access some incident locations more easily than with larger helicopter types, reducing response



times to those in distress. Inside the aircraft the cabin capacity meets or exceeds all the Irish Coast Guard's requirements allowing it to carry all the required rescue equipment.

6. The flexible AW189 cabin interior can be swiftly customised to meet specific demands. For the Irish Coast Guard a permanently installed medical station deploys into position only when required, ensuring a clear and uncluttered cabin which increases safety. All on-board emergency exits can be fully accessed without having to remove cabin seating to do so. This represents a significant safety benefit compared to other aircraft types.
7. Custom mission systems, such as the one designed for the Irish Coast Guard, will help crews find people in distress more quickly. A number of onboard sensors will provide real-time information to all crew using multiple large HD touch-screen monitors and cockpit displays. In a major step forward, Augmented Reality technology will layer vital information on top of video displays, making it simpler for Bristow Ireland crews to

control complex situations and find people faster.

8. The AW189 is equipped with two highly advanced digital rescue hoists, providing 100% backup for this critical equipment. Not only do these provide some of the highest performance and reliability in the world, but the rescue hoists fitted to the AW189 are unique in their ability to self-diagnose faults, alerting the crew to any issues. This not only considerably increases safety, but reduces costly downtime spent rectifying faults; an important consideration in a taxpayer-funded operation.
9. The SAR configured AW189 is specifically designed for long range operations. Extended range fuel tanks beneath the cabin floor, double the fuel capacity of the helicopter without affecting its ability to land on rough ground. This capability - specifically designed to meet Bristow's long-range requirements, is always available. There is no need to install bulky fuel tanks in the cabin which can significantly reduce space for crew and patients.
10. The AW189's large sliding doors on both sides of

the aircraft are a distinct advantage for SAR operations, allowing for safe and fast safe loading and unloading of passengers and patients into the cabin from either side. This is particularly useful during confined or very windy landings where aircraft manoeuvrability may be reduced. Multiple grab handles, steps and a cabin floor at the ideal height for patient loading, reduce the risk of injury to crews and the other emergency services we work alongside every day.

In Ireland, as in many other countries, the AW189 SAR fleet will work as a system alongside fixed-wing aircraft, providing enhanced capability and interoperability, under the tasking authority of the Coast Guard.

In-country maintenance and support teams ensure that the aircraft and specialist crews stand at full readiness to respond from every base.

Bristow's globally recognised and industry-leading Target Zero safety culture ensures safety remains at the forefront of every flight.

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Spot The Aircraft!

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How many aircraft can you identify below from the pages of this programme?



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Emerald Airlines



The ATR72-600 forms the backbone of Emerald Airlines growing fleet. The ATR 72 turboprop equipped aircraft is regarded as the go-to model for short-haul flights due to its short take-off and landing capabilities.

With improved fuel efficiency and reduced CO2 emissions, the ATR 72 stands out as a low-emission eco-friendly airplane. The ATR 72 600 model uses the latest assisted navigation technology and offers the highest standards of comfort. It features five cockpit LCD digital displays for better control and in-flight safety, slimmer seat design to maximise passenger space and larger baggage compartments.

The environmental footprint of an ATR 72-600 versus a similar sized jet aircraft is 4,000 Tonnes less CO2 per aircraft per year. This aircraft has

a significant environmental advantage over regional jets and other turboprop aircraft emitting 40% less CO2 on short, regional flights. Emerald Airlines' ATR 72-600 is configured with 72 new generation seats, all-economy, in a 2-2 layout. Emerald Airlines is Ireland's newest regional airline and exclusive operator of the Aer Lingus Regional route network and uses the ATR72-600 on routes domestically within Ireland along with commuter services between Ireland and the U.K.

Emerald Airlines is currently operating Aer Lingus Regional flights from Dublin Airport and Belfast City Airport, flying over 430 flights per week on 18 routes from 14 airports including Bristol, Birmingham, Exeter, Edinburgh, Newcastle, Isle of Man and Newquay among others.



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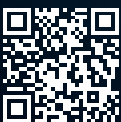
The Saab we know today was born from innovation. In the late 1930s, as the Second World War loomed, Sweden's urgent defence requirements and lack of access to foreign technology meant the country needed the Swedish aircraft industry to supply the Swedish Air Force.

Gripen builds on Saab's decades-long heritage of designing and delivering fighters that are not only superior to the enemy but that will fly and fight reliably and effectively every time they are needed, in a sustained conflict, in the very worst conditions.

Fighting in modern conflict requires being, persistent and constantly one step ahead of potential threats and opponents. Rapid technological progress has driven the development of longer reach weapons and radars with greater precision, low signature targets and advanced electronic warfare. Air combat is now defined and driven by technology. But it's also about how to use technology in a smart way. Born to fight a superpower, smart thinking is in the Gripen DNA.

Gripen is a true multirole and swingrole fighter, performing tasks in all three roles: air-to-air, air-to-ground and reconnaissance, even during a single mission. The pilot can change role while airborne, or act in multiple roles simultaneously. Very high availability and flying hours leads to great operational effect and high survivability on ground. Gripen is designed and built for continuous development and evolution. This supports fast and easy upgrades to affordable cost. Gripen can deliver maximum airpower with minimum resources.

The secret behind Gripen is the modular design and a totally new avionics architecture. Gripen is ready to dominate the battlespace for decades to come. The protection of air supremacy and air defence are key characteristics of an air force. In order to protect a sovereign country, it needs armed operational fighter aircraft that can fulfil their mission at all time.



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