



More than a Blenheim!

The Duxford-based Aircraft Restoration Company is famous for the epic restoration of a Bristol Blenheim – but as Stephen Bridgewater discovered, there is much more to this organisation than a rebuilt bomber.

Tucked away at the eastern end of Imperial War Museum (IWM) airfield at Duxford is a new hangar housing some very exciting aeroplanes.

Ask many airshow goers what they know about the Aircraft Restoration Company (ARC) and they will sing its praises for restoring Bristol Blenheim G-BPIV to flying status in 1993. The Blenheim is indeed one of the rarest warbirds flying in the world today, and its restoration was a Herculean task, but ARC is also now the proud custodian of various aircraft, ranging from a Great War trainer to a Korean War jet fighter.

Many and varied

"Many people don't realise it, but it but we probably now have one of the most varied airshow fleets in Europe, if not the world," ARC founder John Romain told *Airshow*. "This coming season we are operating both British and American World War Two fighter aircraft, a classic bomber, a Great War era Avro 504, two twin turboprop-engined

Broncos and a number of jets including a Strikemaster and an F-86A Sabre. We also have training and communication aircraft, including a Tiger Moth, Chipmunk, T-6 Texan, T-28 Fennec and the Pembroke."

Since mid-2001 ARC has been based in the new hangar at Duxford, a facility it shares with Historic Flying Ltd (HFL) the world famous Spitfire restorers. ARC can offer a wealth of expertise in restoring,





Left: North American P-51D Mustang 'Susy' is scheduled to join the ARC fleet in time for the 2002 airshow season, along with a host of other types. (John Dibbs/The Plane Picture Company - via ARC)

maintaining and flying old aircraft, and increasing numbers of owners are entrusting their pride and joys into the care of John and his team.

Over the winter, Chance Vought FG-1D (Goodyear built) Corsair G-CCMV has joined the ARC fleet, the aircraft arriving from Sywell in Northamptonshire on November 26, 2001. Owned by the family of the late Paul Morgan, the aircraft will be active on the airshow circuit during 2002 in the hands of both Steve Noujaim and John Romain. "I'm looking forward to flying the Corsair again," says John. "Some of my first warbird displays were flown in Lindsay Walton's old F4U-7 machine in the late 1980s and it is a machine which I really enjoy flying." The Corsair is a welcome addition to the UK warbird circuit and one which, it is hoped, will be in much demand during 2002. With The Fighter Collection's G-FGID and the Old Flying Machine Company's G-BXUL also based at the Duxford, three examples of the 'Bent Wing Bird' now reside at museum for the first time since Lindsay Walton's aircraft departed for the USA in 1993.

Bring on the Bronco

A pair of North American Aviation OV-10B Broncos are due to debut during 2002. Owned by the German Wing of the OV-10 Bronco Association, G-BZGK and G-BZGL are former Luftwaffe target tugs that previously served at Lübeck on the German Baltic coast. Retired

from use some time ago, the machines were used to train engineers in battle damage repair and have consequently endured a fair amount of 'punishment' over the ensuing years. With their care and operation entrusted to ARC, the aircraft were extensively worked upon in Germany in preparation for the separate ferry flights. They arrived at Duxford in September and October last year. "The amount of work that has been expended on these aircraft is incredible," says John. "Each was subjected to over a thousand hours of repairs before we could even get them back to Duxford to start the full restoration. The CAA gave us permission to ferry the aeroplanes back to the UK with the undercarriage locked down and then the hard work really began, with each of the 1,040shp Garrett turboprops being sent away for rebuild and the airframes being completely renovated."

The first Bronco ('GK) is due to make its maiden flight during May, with the second following it into the air as soon as possible. "By the second part of the season, we hope to have both aircraft available as a pair," continued John. They will certainly be distinctive additions to the airshow world, as there are not many other aerobatic twin-boom, twin-turboprop aircraft on the scene at present!

Far left: John Romain runs ARC from its Duxford headquarters. A fully-licensed engineer as well as a display pilot, John learnt to fly in 1984 and has since flown nearly 70 different types. (All KEY - Steve Fletcher unless noted)





Left: ARC's most high-profile restoration to date is Bristol Blenheim IV G-BPIV. Currently painted to represent 'R3821' 'UX-N' of 82 Squadron in August 1940, the aircraft is the only airworthy example in the world. (KEY - Duncan Cubitt)



Above: Vought FG.1D Corsair G-CCMV arrived at Duxford on November 26, 2001, and is now under the care of ARC. (KEY - Duncan Cubitt)

The Broncos join a range of other classic North American Aviation designs in the ARC fleet, including the T-6 Harvard, T-28 Fennec, T-33 Silver Star, F-86 Sabre and a pair of P-51D Mustangs.

Dave Gilmour's Mustang G-SIRR has resided with ARC since 2001, and although it has not been seen at airshows for some time, there are hopes that it will appear at some events this year. Due to arrive at ARC's Duxford hangar in time for the new season is the Morgan family's Mustang G-SUSY 'Susy' that was formerly based at Sywell in Northants. The aircraft retains the 4th Fighter Group markings as QP-M and has recently been fitted with a new engine in readiness for what is hoped will be a busy airshow year.

Right: The first of the OV-10 Broncos is undergoing restoration in readiness for the new airshow season.

Above right: The second Bronco, G-BZGK, is due to take the place of the first in the restoration hangar during late spring. (KEY - Steve Bridgewater)



Jet-powered warbirds are rapidly growing in popularity, and ARC now has three such aircraft operating under its banner. The Lockheed T-33 (actually a Canadair-built CT-133) and North American F-86 Sabre belonging to the Golden Apple Trust are now maintained and operated by ARC. The T-33 has been fully restored and repainted in its original Royal Canadian Air Force markings and made its post restoration airshow debut early in 2001. The Sabre is now approaching the end of an intensive renovation and is scheduled to reappear early this coming season. This example of America's first swept wing jet fighter is one of very few early F-86A models still in existence, and the only example still capable of flight. It is also the only Sabre flying in Europe, so that is certain to make it especially popular with airshow organisers and audiences alike.

Sitting alongside the T-33 and F-86 during *Airshow's* visit to the hangar was G-UNNY, a former Botswana Defence Force BAC Strikemaster belonging to Tom Moloney. Based upon the Jet Provost T.5, this energetic and powerful display machine, carrying the serial 'OJ-4', is resplendent in its former Botswana markings and desert camouflage.

At completely the other end of the speed scale, ARC now owns a replica of an Avro 504K trainer dating from the Great War and a classic de Havilland DH.82A Tiger Moth.

Millennium Trio

When it comes to the most popular aircraft of all time there must surely be one machine that stands out from the crowd - the Supermarine Spitfire.

For the 2002 airshow season, ARC will be flying no less than four different Spitfires, something which John Romain is very excited about. "In recent years we have been able to offer the so-called 'Millennium Trio' of Spitfire Mk IX, XVI and XVIII," says John. "But this year we will be able to offer a unique combination of Spitfires, two powered by Rolls-Royce Griffon engines and two powered by Merlin powerplants, of these two have bubble canopies and two with high back fuselages. Two of the aircraft feature clipped wings and two are fitted with elliptical wingtips, and they have a mix of World War Two and post war colour schemes."

ARC Pilots - 2002

ARC has a pool of very highly qualified pilots from which it can draw to fly the fleet of historic aircraft. For the 2002 season these include:

Jack Brown	Steve Noujaim	Cliff Spink
Rod Dean	Lee Proudfoot	Alan Walker
Tom Moloney	Dave Ratcliffe	John Webb
Rolf Meum	John Romain	Martin Willing
Dennis Neville	Brian Smith	



Although owned by its HFL 'hangar-mates', ARC is responsible for the flight-testing and day-to-day operation of the Spitfires once they have been restored, and this includes their on-going airshow commitments. Two thirds of the Millennium Trio, Spitfire IX MK912 and Spitfire XVIII SM845, travelled widely during 2001 but the silver and red Mk XVI (TD248) was absent for most of the year. That aircraft has benefited from a lot of work over the last year and will hopefully be returning to the air this spring.

21st Century Spitfire

Joining the familiar trio this year is a very special Spitfire indeed. Essentially a stock Mk XIV airframe with a Rolls-Royce Griffon engine, RN201 is a former Belgian Air Force example that is approaching the end of a rebuild by HFL. Although not exactly a common sight, the Mk XIV is a popular warbird choice - but it is what lies within RN201 that makes it extra special.

Cambridge-based Pi Research Ltd is famous in motor racing circles for its manufacture of electronic performance monitoring systems (telemetry) and the company has joined forces with HFL and ARC to develop a system that is suitable for installation in warbirds and general aviation aircraft.

The data analogue analysing system will monitor and record up to 18 different parameters during flight, these including engine rpm and boost levels, airspeed, rate of climb, stick force per 'g' and fuel and oil consumption. This information is stored on a removable 'smart card', meaning the data can be downloaded to a computer after a flight to analyse trends and performance. "The information we gain from the new system will be invaluable," claims

ARC 2002 Fleet

Avro 504K Replica	D8781 (G-ECKE)
BAC Strikemaster	G-UNNY
Beech 18 Expeditor	1164 (G-BKGL)
Bristol Blenheim IV	'R3821' (G-BPIV)
Chance Vought FG.1D Corsair	G-CCMV
de Havilland DH82a Tiger Moth	R5136 (G-APAP)
de Havilland Canada DHC-1 Chipmunk	WP929 (G-BZGA)
North American F-86A Sabre	48-178 (G-SABR)
North American OV-10B Bronco	G-BZGK
North American OV-10B Bronco	G-BZGL
North American P-51D Mustang	'474008' (G-SIRR)
North American P-51D Mustang	'472773' (G-SUSY)
North American T-6 Texan	'1747' (G-BGPP)
North American T-28 Fennec	N14113
North American (Canadair) T-33 Silver Star	G-TBRD
Percival Pembroke	WV740 (G-BNPH)
Scottish Aviation Bulldog T.1	G-CBAB
Vickers Supermarine Spitfire IX	MK912 (G-BRRA)
Vickers Supermarine Spitfire XIV	RN201
Vickers Supermarine Spitfire XVI	TD248 (G-0XVI)
Vickers Supermarine Spitfire XVIII	SM845 (G-BUOS)



Above left: The ARC fleet of historic aircraft includes a number of training types. The 'heavy metal' types, like the Harvard and Trojan, will be joined by smaller machines, such as the Tiger Moth and Avro 504 as well as this Chipmunk and Bulldog. (KEY - Stephen Bridgewater)

Above: Scheduled to make a welcome reappearance at European airshows in 2002, the Golden Apple Trust's F-86A Sabre is the oldest example of the breed still flying.



John Romain. "By analysing fuel and oil consumption trends, we will be able to identify potential engine problems before they arise, thus reducing the risk of failure and the attendant safety and expense implications."

One of the major benefits of the system will be the ability to monitor carbon monoxide levels within the cockpit. The harmful gas has been linked to a number of accidents over the years, although it is often hard to prove after the event as the levels soon dilute within the blood after exposure has stopped. "So far nobody has been able to conduct any accurate research into carbon monoxide levels," says John, "so we don't know when the pilot is most at risk during the flight. Is it when he or she is using high power settings, such as

Left: The engineers from Pi Technologies fitted the data analogue analysing system to RN201 and calibrated the unit just prior to the first engine runs. This system offers enormous potential benefits and will help to improve aviation safety.

Below: Spitfire XIV RN201 performed its first engine runs on March 14. The aircraft wears a similar silver and red colour scheme to TD248. (Chris Nicholls)





Above: ARC operates Spitfire IX MK912 on behalf of Historic Flying Ltd. Although it has wintered in Antwerp, the aircraft is due back at Duxford in time for the airshow season. (KEY - Duncan Cubitt)

during aerobatics, or is it during the cruise? Or is the problem worse on the ground during taxi and take off? Does it help to cruise at different power levels, or does opening the canopy reduce the level? Although everybody has his or her own theory, we just don't know for sure at the moment.

"This system will have a series of lights within the cockpit to warn the pilot of dangerously high levels but will also make accurate readings and record them onto the smart card. After the flight we will be able to play back the flight in real time and see when the problem is at its worst and adjust our flying practices to match."

With John Romain at the controls, RN201 made her first engine runs at Duxford on March 14, the engine having been overhauled by Universal Air Motive. Three more runs followed during the week to allow the adjustment of oil pressures and rpm levels - the aircraft was expected to fly in early April.

Final preparations

During the early part of 2002, ARC was busy training its pilots for the year ahead. With such a diverse fleet of aircraft, a wide range of piloting skills is needed for their safe operation. Some pilots are specifically qualified to fly the jets, while others fly the Spitfires and piston-engined fighters. John Webb and John Romain are the lead pilots on the Blenheim, and Dave 'Rats' Ratcliffe has progressed from the Chipmunk to the T-6 over the winter.

During the coming season, the ARC fleet of aircraft will be seen in the air at events across Europe as well as at its Duxford home. Although the new restoration facility is not open to IWM visitors (due to the nature of the in-depth restoration work that takes place there) many of the airworthy aircraft can be found gracing the flightline or tucked away safely in the other hangars at Duxford.

So next time you hear the purr of the Blenheim's Bristol Mercury engines singing overhead, remember - there is a great deal more to ARC than just this beautifully restored bomber.

Cockpits



Left: F-86A Sabre G-SABR

Above: Avro 504K G-ECKE

Below left: Beech C-45 Expeditor G-BKGL

Right: Spitfire XVI G-OXVI

