Chiltern Airwords

The Stargazer is a Lockheed L-1011 TriStar built in 1974, that was subsequently modified in 1994 by Orbital Sciences (now part of the Northrop Grumman) in order to launch satellites (95 to date) from Pegasus-H and Pegasus-XL rockets, air launched under the fuselage. Photo Credit Northrop Grumman.

The Chiltern Aviation Society Magazine

January - February 2021

CHAIRWORDS

When I started this, we were approaching the end of an appalling year, which has affected all of our lives. Sadly, in some cases, our families have lost loved ones to Covid-19. My Chairwords seems to be a repeat of last time, with cancelled monthly meetings and further Covid-19 restrictions from the government that ruined many of our member's Christmas celebrations. With the rise of a new variant of Covid, and now almost everywhere in Lockdown, there seems to be a distinct lack of hope that this wretched virus will disappear! For our benefit and the country at large, I sincerely hope Covid does get defeated soon and that our members all stay in good health and keep busy. Our thoughts are also with Ted Smith and Eric Spanier at this time!

With our programme currently at a standstill I have looked back through earlier issues of Chiltern Airwords, to recall one sad and other happier times in the Jan / Feb 2000 issue. We had just lost our former President John WR Taylor, who had provided tremendous support to CAS over the years. He had been responsible for providing very well-known guest speakers for us, and the year 2000 was no exception. We started the year with a talk by Handley Page Test Pilot, then Captain Eric Watts BEA, talking about his troubles with a Vickers Viscount flame-out incident. Another talk was from an Ex-FAA Swordfish and Avenger pilot. The list of specialist speakers went on throughout the year.

Back to the present and we're still having to take things month by month. Thankfully we have had John and Lawrence keeping things going with Airwords and some interesting articles, and of course thanks to those who have contributed articles and photographs. As you will appreciate, we are always in need of articles for Airwords, so please contribute if you can – anything anecdotal or otherwise to keep us going would be gratefully received. A belated *Happie*r New Year! **Keith**

SOME LIGHT RELIEF

HM The Queen and Prince Philip flew with BEA and BA in their Tridents and Tristars on several of their Royal visits to European destinations, one of which was commanded by a well-known somewhat flamboyant BEA Captain, sadly no longer with us, who often sported a white scarf flung round his neck, whilst in uniform. The Trident was well known for its somewhat 'firm landings' and on arrival at their destination, the crew lined up to be presented to the Royal Couple. Prince Philip thanked the Captain and added *"Oh by the way, the rest of the undercarriage is way over there"* – pointing to the other end of the runway! Ouch!

(Ed – Tridents carried out the first Commercial Autolandings and the same system was installed by 115 Sqn in some Argosy E.1 aircraft, but it was found that without human intervention, the system flew the aircraft 'at the runway' rather than to gently drop it on to the runway. The Argosy had very low hanging front undercarriage doors, which could be removed for desert landings but it did not take kindly to a rough Autolanding on a runway with electronics onboard, so the Autoland was removed. I guess BEA never bothered or never knew of this, hence the hard landings. LPH)

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THE CHILTERN AVIATION SOCIETY (CAS); Founded in 1968. Associate member of Air Britain Historians Ltd. President; Philip Birtles. Patron; David F. Ogilvy OBE FRAeS. CAS is a not-for-profit Society relying on donations and membership fees. Membership is £15 PA. Non-Members also welcome for a small contribution of £2 per event.

MEETINGS & TALKS: Fourth Wednesday of the month (third in December) 8pm to 10 pm at *Ruislip Methodist Church Hall, Ickenham Road, Ruislip, Middx, HA4 7BX.* **SADLY, ALL CANCELLED UNTIL FURTHER NOTICE**

CAPTAIN DANIEL SKILLMAN DFC – BSAA/AIRWORK – A SAD STORY - BY KEITH HAYWARD

During my period with British South American Airways (1945 to 1949) as a young Traffic Apprentice I had several opportunities of gaining air experience which was offered as part of my training. These local flying trips were offered by Training Captain Ernest Rodley, based in the BSAA training hut on Heathrow Northside, and were very popular. We were either accommodated in the cockpit of an Avro Lancastrian (a tight fit) or in the luxurious (??) cabin of a noisy Avro York when these aircraft were available for training duties, after arriving back from an arduous journey to Buenos Aires.

I clearly recall one Lancastrian flight, when the pilot being checked out was Dan Skillman, a well-decorated ex-Pathfinder officer. He was a large man and I had to squeeze in behind him in the small cockpit with the training captain beside him. We taxied out and took off from the northern runway for the ensuing session of circuits and bumps (the latter being the operative word). On the first approach, after the flare-out, with the four Merlin engines popping, we dropped on to the runway rather heavily. The instructor took over and away we went for another circuit. Dan Skillman again approached rather high and once more the Lancastrian dropped heavily on to the runway. To this day I can recall his comment "I'm just not getting the hang of this." The back of his neck was red which I observed due to his close proximity in the small cockpit. "Let's have one more try," shouted the instructor as we climbed away on full power. The third landing was reasonable with less of a bounce, and after some general handing tests we returned to base. Dan Skillman, on reflection, didn't exude confidence and was not, for example, like Captain Rodley who was a natural pilot.

Recruited by Air Vice Marshal Don Bennett from his Pathfinder Force in Bomber Command as one of the first pilots for BSAA at the end of 1945, Dan Skillman was initially sent 'down the line' to man one of the new stations on the South American route before returning later in the year to London on flying duties. He was a passenger on Lancastrian G-AGWG *Starlight* which operated the first flight from Heathrow on 1 January 1946. Years later, in the 1980s, when I persuaded British Airways to display a captioned photograph which listed the crew members of that first departure from Heathrow in the Terminal 1 Domestic Executive Lounge, he wrote to me to complain that he wasn't shown on the crew list. I had to explain that he was a staff passenger, and shown as such on the manifest; he was not happy!

He flew the east coast route to South America on Lancastrians and Yorks, gaining his command in due course. However, at the time of the merger with BOAC in 1949 he realised that he was low on the crew seniority list and he resigned. He moved to Morton Air Services, later part of British United Airways, at Gatwick and flew DC-3s on cargo flights. Interestingly, Dan seems to have had some problems of confidence at this time and it is recorded that co-pilots who flew with him were uneasy when rostered with him during this period. His decision-making seemed slow and some nicknamed him 'Dangerous Dan.' One night, flying a Dakota laden with three tons of newspapers bound for Hanover, he took off from Gatwick to find that Hanover weather was very marginal. He decided to divert to Hamburg where conditions were slightly better. On the approach he was way above the glideslope, wary of getting low and too slow. The First Officer grabbed the throttles, cut the power and with much popping from the engines they descended rapidly and landed safely. On another occasion corrective action was taken by the First Officer when Captain Skillman switched to visual too early on the approach to Gatwick for Runway 27 (as it was) and it was realised that they were about to land on the South Park!

On one windy night at Gatwick with the newspapers fully loaded on to a Dakota, the cargo door slammed shut catching Dan on his head throwing him across the fuselage. Dazed, but insisting he was all right, he started the engines and commenced to taxy out to the runway. Just as they started their take-off run, he collapsed over the controls. The First Officer cut the throttles to abandon the take-off and it took him 30 minutes to taxy back to the terminal. If Dan had collapsed halfway down the runway it would have been a disaster; he was detained in hospital for a few days under observation.

Later career details are sketchy but there are photographs of him attending the official inquiry concerning the loss of Vickers Viking G-AIJE of Independent Air Travel that crashed at Southall on 2 September 1958. However, there is no evidence that he was employed by that company. One hopes not, bearing in mind its reputation following the inquiry.

He died circa 1993 and it is sad that an obviously courageous and competent wartime pilot with the Royal Air Force's Pathfinder Force showed signs of lack of confidence in the post-war years. The stress of that period could well have taken its toll. After all, he was selected by Air Vice Marshal Bennett all those years ago as a suitable pilot for BSAA.

FOOTNOTE – A SHORT DAKOTA STORY

A Derby Airways Dakota was preparing to depart from Jersey from its main base at Burnaston (Derby Airport). The engines were started and the departure staff wandered back into the terminal. Minutes later the port engine stopped, the passenger door reopened and the captain disembarked. He strode across to the crew room reappearing minutes later with a set of golf clubs. Without comment, he reboarded the aircraft, restarted the port engine and they were off! Happy days!

WELLINGTON AIR CONTROLLED INTERCEPTION RADAR - BY LAWRENCE HAYWARD

One important version of the Vickers Wellington has consistently been ignored; Wellington Mk Ic R1629 equipped with *Air Controlled Interception (ACI) radar*. This was the world's first operational Airborne Early Warning (AEW) aircraft with a rotating aerial and the forerunner of today's AEW aircraft. This is its history, which I have been pieced together over the years with the kind co-operation of some of those people who designed, flew or worked on the aircraft.

As the 435th aircraft out of a batch of 550 Wellington Mk Ic & Mk IV aircraft, Wellington R1629 rolled off the production line at Chester sometime in early March 1941 under contract 992424/39. Like the majority of the batch, it was destined for service with Bomber Command and so on 12th March 1941 it was delivered to No.18 Maintenance Unit (Aircraft Storage Unit) at Dumfries, where it was held in open storage to await its' allocation to a front-line Bomber Squadron. A little over a month later on 15th April 1941, R1629 was flown to RAF Mildenhall, Suffolk, to join No.149 (East India) Squadron (motto *Fortis nocte* meaning strong by night). The Squadron used the codes OJ but the individual letter used by R1629 is not known. At this time the Squadron was commanded by Wg Cdr J.A. 'Speedy' Powell and had been equipped with Wellingtons, which the Sqn had used since January 1939.

On 4th September 1939 No.149 had shared with No. 9 Squadron the distinction of making the RAF's second bombing raid of the Second World War; the target being German warships at Brunsbüttel, on the Elbe near the entrance to the Kiel Canal. When R1629 joined No.149 Squadron in the spring of 1941, the Squadron was heavily involved in taking the war to German cities and ports **(1).** The Squadron had dropped the first 4,000 lb bomb on 31st March 1941 and by April night-time raids were increasing in size and intensity with Cologne, Hamburg and Kiel receiving repeated visits throughout the month. There were also sorties to Brest, to attack *Scharnhorst* and *Gneisenau.*

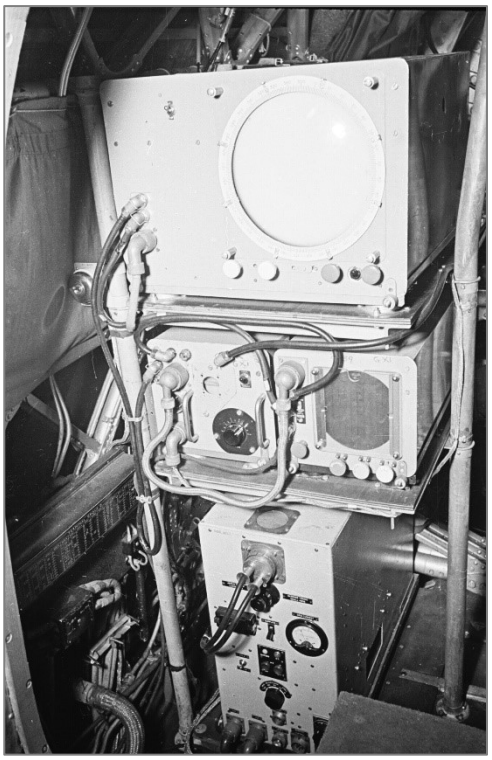
Whether R1629 was used for many operational sorties in April and May 1941 is not known. However, its operational career with No.149 Squadron and Bomber Command came to an end on 8th May 1941, after it suffered damage in a landing accident. As the damage could not be repaired on site, R1629 was transferred to No.43 Group, Maintenance Command for repair which took just under a month to complete.

After repair, R1629 was then delivered to the Royal Aircraft Establishment (RAE) at Farnborough on 3rd June 1941, to begin a new career as a 'trials' aircraft, which ultimately led to it becoming the world's first Air Controlled Interception aircraft. The concept of ACI originated from the need to combat the menace of Focke-Wulf Fw 200 Condor aircraft, principally used by I/KG40, that were operating from Bordeaux Merignac from July 1940. By the spring of 1941, the success of the enemy operations caused the Prime Minister, Winston Churchill, on the 21st March, to issue a personal minute to the Secretary of State for Air and First Lord of the Admiralty: -

'The use of aeroplanes, not only to attack our ships, but also to direct the U-boats onto them, is largely responsible for our losses in the North Western Approaches. No effort to destroy the Focke-Wulfs should be spared. If we could employ radar methods to find their positions and to direct long-range fighters or ship-borne aircraft to the attack we ought to be able to inflict serious casualties.'

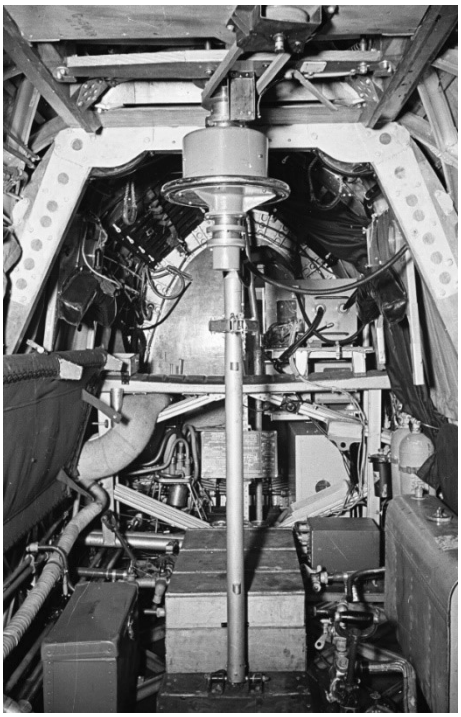
The threat to shipping, from Focke-Wulf Condors was raised at a meeting on 6th April 1941, at the Telecommunications Research Establishment (TRE), at Worth Matravers, Dorset, where the feasibility of fitting an experimental airborne version of Ground Controlled Interception (GCI) radar to an aircraft was discussed, which would transmit on the same 1.5 metre wavelength. (Although scientists Randal and Boot had designed the resonating cavity magnetron in 1940, which made centremetric wavelength radar possible, '10 cm' radar was still in its infancy at this time). At first a Consolidated Liberator aircraft *(see photo left)* was proposed and such was the urgency that one was studied (possibly Liberator Mk I AM912 at the RAE) and reported on two days later.

It was anticipated to fit a smaller high-power transmitter being developed at TRE but without the height finding capability of GCI. The equipment would be powered by an auxiliary petrol-electric generator. The overall weight was estimated to be approximately 1,600 lb, including a stream-lined rotating Yagi aerial above the aircraft fuselage. However, the Deputy Chief of the Air Staff decreed that until lightweight equipment had been developed, a Liberator would not be allocated (though possibly there were other factors which precluded the use of such a valuable type).



Further consideration was given to the idea of ACI but it was not until 1st August 1941, that a formal request by the Director of Communications Development (DCD) was received for TRE to investigate the possibility of installing equipment for an experimental ACI. Shortly afterwards at a meeting of the Air/Sea Interception Committee, it was agreed by the AOC-in-C Coastal Command that ACI would provide an extension of radar cover beyond the range of ground radar stations, particularly in the North-Western and South-Western Approaches, and have an all-round range of 50 miles. It was also stated that ACI should hopefully provide cover against low flying aircraft which might prove valuable for convoy protection on the East coast. It was also thought that the installation might be used as an improved form of ASV radar. In order to reduce the weight of the ACI equipment, an ASV Mk II receiver unit was used together with two new units under development; a high-power transmitter and a lightweight Plan Position Indicator (PPI), which were expected to be available towards the end of 1941. The ACI station could now be powered by the aircraft's port engine driven alternator, as used for ASV radar, so the auxiliary petrol-electric generator was not required. Consequently, the weight of the whole system including the rotating aerial was reduced to 700 lb; less than half the weight of the original proposal using existing GCI equipment. The new transmitter had been designed as a piece of ground equipment but it was acceptable in size and weight, and with the power of 100 KW there was a possibility of meeting the range requirement which could not have been met with an existing GCI unit. The PPI unit had been designed for general use and was suitably constructed for aircraft installation. It employed a 9-inch circular cathode ray tube *(shown above in the top unit)* on which target and attacking aircraft movements could be plotted. It had the appearance of a modern radar scope with the trace of the radar aerial going round and round the centre of the tube highlighting various blips, and very novel in 1941.

Until early 1941 airborne radar installations employed a separate transmitter and receiver aerial in order to protect the receiver from being damaged by the transmitter. This meant that the receiver unit had to constantly switch in a Left/Right mode of search and display by means of a rotary mechanical switch, though later this was done electronically. When ACI was proposed, a method that enabled both the receiver and the transmitter units to be connected to a common aerial (known as duplex working) had been developed at TRE for operational use at Chain Home Low radar stations. Its further development for airborne use was about to start. This breakthrough made it possible for the first time to conceive a relatively simple airborne rotating aerial system comprising a Common T&R Unit, an RF Coupling Unit linking the static and rotating elements of the system, a high gain Yagi aerial with associated turning gear and interconnecting RF cables.



The aerodynamic design, manufacture, and installation of a 15 ft aerial blade with mounting and turning gear were all the responsibility of the RAE Farnborough, whilst the TRE was responsible for the radar design and its installation, and the performance of the complete system. In view of the weight saving, TRE and RAE agreed that a Wellington would be an acceptable alternative type to the Liberator. So, on 28th October 1941 it was confirmed that Wellington R1629 would to be fitted with ACI. On 13th December 1941 the RAE started work on the rotating aerial system which was installed above the fuselage and on 18th Feb 1942 flight tests were carried out to assess the effects of the aerial mounted on the aircraft. Despite its size, the aerial didn't seriously affect the stability and performance of the aircraft and the aerial could be locked in a fore and aft position if not in use.

Above; The turning gear for the aerial was belt driven off a pully mounted above the electric motor. It is said that no electric motor of the correct power was readily available so they found one in a scrapyard of crashed Luftwaffe aircraft!

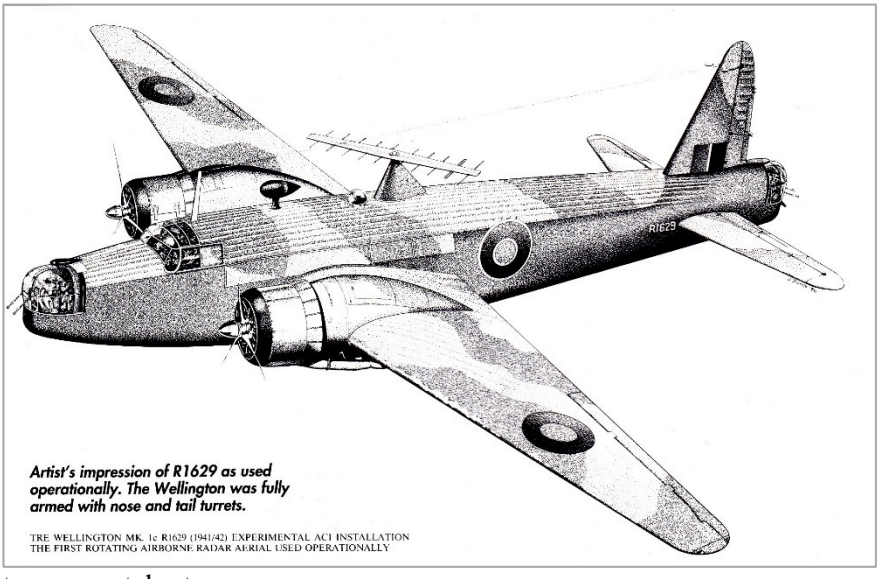
On 20th February 1942 the aircraft was transferred to the Telecommunications Flying Unit (TFU) at Hurn in order for TRE to install the internal equipment and then conduct airborne performance trials. By March 1942 the installation of the equipment had reached the stage where ground tests had been completed and R1629 was ready for flight trials. Even to the pilots of the TFU who were used to aircraft adorned with all types of radar aerials, Wellington R1629 was still a strange sight to RAF personnel. When Flt/Lt Frank Griffiths of the TFU, flew R1629 on 15th March 1942, with three passengers on board, he recorded the flight in his log book, rather humorously, as *Test of Autogyro Wellington!*

Two weeks later on 1st April 1942 Flt/Lt Frank Griffiths flew the first proper test flight, lasting over three hours, off the Lizard with seven passengers (RAF crew and TRE scientists) to gain familiarity with operating the equipment and to overcome technical problems that became noticeable under flight conditions. The trials revealed several factors that adversely affected the performance such as the rotating coupling unit which developed an insulation breakdown that could have attenuated both the transmitted and the received signals. A comparison of the power output of the new transmitter with a normal ASV Mk II unit indicated that the new unit was developing only about 70% of its rated figure. It was also noticed that weak signals, visible on a range tube, were not displayed on the PPI. By now it was more a year since Churchill had issued his personal minute and in the intervening period Catapult Armed Merchant ships had come in to use to protect Allied convoys from air attack, a few of which were now equipped with radar hand built by TRE, and the first escort carrier, HMS Audacity, came into action in September 1941 equipped with some of the first Grumman Martlets at sea.

Both were proving effective against the Focke-Wulf Condors (despite the loss of *HMS Audacity* in late 1941). By early 1942 the Condor had become of less concern to the Admiralty and Coastal Command. Although the threat from U-Boats was given the highest priority, the Admiralty was also increasingly concerned by the threat from German E-Boats. Used as fast torpedo craft and for laying mines, E-Boats were a constant threat to coastal convoys, were difficult to detect and were an elusive target, against which counter-measures were not very effective. New Royal Navy motor gun boats - MGB – which entered service in April 1941, were suitable in speed and armament for use against E-Boats and towards the end of the year were being organized into Flotillas located around the East coast. However, to deploy these forces efficiently they needed to obtain early detection of the E-Boats on their nocturnal activities before they could reach their objective, particularly when this was to lay mines in UK coastal convoy lanes.

At a meeting on 1st April 1942 to discuss the ACI flight trials, the Coastal Command representative explained that the AOC-in-C now wanted ACI used to control the interception of enemy E-boats by Royal Navy MGBs or by RAF aircraft. The Focke-Wulf Condor wasn't mentioned as being a potential target. In view of the change in its role, Wellington R1629 was sent on detachment to RAF Bircham Newton on 14th May 1942, for trials against small surface vessels and on other types of shipping off the East coast, as well as aircraft if the opportunity arose. The TFU pilot for the trials was P/O A.J.D. 'Jack' Ruttledge RCAF **(2)** who was well regarded by all who knew him as very conscientious, unflappable and devoted to flying. He had completed at least one operational tour on Wellingtons with Bomber command before joining the TFU.

It was while the aircraft was at Bircham Newton that a rather unexpected signal was received on 19th May, from Coastal Command, which ordered Wellington R1629 to be flown to RAF Wick. On arrival, P/O Ruttledge was informed that he and his crew were to assist in a search for the German battleship *Lutzow* which was expected to make a dash north to a Norwegian harbour. At 22.40 hours that night the aircraft took off on its mission and returned safely at 08.00 hours on the 20th. The ACI equipment worked satisfactorily but no surface target was detected during the line-ahead search that was made off the Norwegian coast. A range of thirty miles could be expected on a battleship out on the open sea, but if it hugged the Norwegian coast its echo might be masked by strong coastal returns.



Artist's impression of R1629 as used operationally. The Wellington was fully armed with nose and tail turrets.

TRE WELLINGTON MK. 1c R1629 (1941/42) EXPERIMENTAL ACI INSTALLATION
THE FIRST ROTATING AIRBORNE RADAR AERIAL USED OPERATIONALLY

In searching for the *Lutzow* that night R1629 therefore gained the distinction of being the first aircraft with all-round-looking airborne early warning radar to be used on an operational sortie. Had the Wellington's radar located the *Lutzow*, the radio operator would have immediately reported its position for a possible strike by RAF aircraft or Royal Navy forces in the area. However, a report by another reconnaissance aircraft that also flew that night led to the opinion that the ship had already reached harbour and the hunt was called off. R1629 returned south on the afternoon of the 20th to resume trials off the East coast.

It is now known that the *Lutzow* joined the *Scheer* at Narvik and sailed a week later on the 26th May 1942. An anecdote to this operation was given to me by Roy Hodges, one of the principal TRE scientists involved with ACI, who remembers that work on the radar installation and the operational trials took precedence over other checks: -

'Pilot Officer Jack Ruttledge was OC of a detachment at RAF Bircham Newton, for trials of the ACI equipment in the aircraft. As the trials would be conducted over the North Sea, he arranged for the crew to have a dummy ditching drill. However, on return to TFU the OC B Flight, Sqn Ldr Frank Griffiths, ordered an inspection of the dinghy only to find that it was missing. It was realized after the aircraft had been involved in the operational trials, that it had been delivered without a dingy! 'It was fortuitous that the Wellington never ditched in Arctic waters off Northern Norway, as the chances of survival with a dingy were slim, whereas without a dingy they were impossible.

Despite the success of the ACI concept, rapid strides had been made in the research and development of centimetric radar equipment, leading to an experimental 10 cm ASV being flight tested in Wellington T2968 on 13th January 1942, just weeks before the start of the ACI trials. In view of this, on 28th May 1942 the Air/Sea Interception Committee stated that all equipment operating on wavelengths above 10 cm would now be considered obsolescent. Production of 10 cm ASV would now be undertaken at the highest priority. The Committee's decisions were conveyed to the Ministry of Aircraft Production on the 5th June and this spelt doom for the ACI project. An interim report on the experimental ACI installation was sent to DCD on 26th June. However, tests were still being carried out by the TFU, as on the same day F/Lt Frank Griffiths flew R1629 for trials off the coast of Eire. Shortly afterwards TRE received a verbal report to confirm that Coastal Command had no further interest in ACI. TRE wrote to the DCD on 16th July to propose that further tactical trials should be undertaken at TFU with the loan of an officer experienced in GCI control. In response, the Deputy Director (DDCD) informed TRE that no more effort should be wasted on the ACI installation in view of the centimetric radar ruling (that it had priority).

However, Fighter Command was asked if the ACI aircraft might assist with any interception problem of theirs and as they showed an interest, the aircraft was sent on 21st September 1942 for air-to-air interception trials at RAF Valley. These were conducted on the 22nd and 23rd September 1942 with Sqn/Ldr Craig, a very experienced GCI officer controlling the trials. In his report, Sqn/Ldr Craig concluded that air-controlled interception was practicable but the ACI equipment required considerable technical development before it was in a position to undergo service trials. (Against surface vessels the ACI radar in R1629 didn't need a height finding capability but for air-to-air interceptions this would have been essential as it was for GCI radar). By July 1942, the earlier successes that Coastal Command had been achieving with ASV Mk II against the U-boats began to diminish. Reports of disappearing ASV contacts indicated that enemy U-boats were now able to detect the ASV transmissions and take avoiding action **(3)**. Thus, the usefulness of metric ASV (and ACI which transmitted on the same frequency of 176 MHz) was seen to be at an end. Following the visit by the British Technical Mission in 1940, under Sir Henry Tizard, technical secrets of all kinds were revealed to the United States in order to enlist their help with the development and production of various inventions vital to the British war effort. In respect of radar, the secrets including the resonating cavity magnetron and other radar devises useful for centimetric radar using 10 cm and later 3 cm wavelengths. With their superior R&D facilities the Americans soon made great progress with centimetric radar.

In view of the decision to end the ACI project in late 1942, the aerial and radar equipment was removed from Wellington R1629 and as the TFU had no further use for the aircraft, it was sent to Brooklands Aviation Ltd, at Sywell on 23rd January 1943. At Sywell, the aircraft received a thorough overhaul and after this work was completed, R1629 went to 12 MU (Aircraft Storage Unit) at Kirkbride on 27th April 1943. Finally, after more than four months at 12 MU the aircraft was taken on charge by No.105 (Transport) OTU at RAF Bramcote, on 9th September 1943, where it would have been marked with the code letters 8F-? or I5-? Some of the Wellington aircraft used by 105 OTU had Vickers Warwick dual controls fitted in order to prepare pilots for Warwick equipped RAF Transport Squadrons but whether R1629 had these is not known. Unfortunately, R1629 did not last very long in service with No. 105 OTU, as two weeks later on 24th September 1943 it was hit on the ground by another 105 OTU Wellington, R1412, which swerved on landing at Bramcote. Sadly, R1629 was deemed beyond repair and was struck of charge on 1st October 1943. Despite the cancellation of the original ACI project, wartime use of Air Controlled Interception by the RAF did not end with R1629. More to follow soon!

Air Controlled Interception - Notes

(1) When R1629 arrived at No 149 Squadron in April 1941, the Squadron was helping the Ministry of Information's Crown Film Unit in the making of *Target for Tonight* directed by Harry Watt. It was first wartime documentary to take an offensive rather than a defensive war attitude and told the story of 'Sqn/Ldr Dickson' portrayed by Sqn/Ldr Charles 'Pick' Pickard, as the skipper of Wellington, F for Freddie (P2517 OJ-F) preparing for and carrying out a raid on Germany. Even if the reality of Bomber Command's night offensive was different from events portrayed in the film, psychologically it was well timed, being released in July 1941 just after the blitz and the German invasion of Russia, and at a time when the war was at a weary stage as far as Britain was concerned. It had been made simply and cheaply, with many sequences mocked up in the fuselage of an obsolete and un-airworthy aircraft at the edge of the airfield and without the use of actors, as the RAF personnel played themselves. However, despite being on strength there is no evidence that R1629 was involved!

(2) After leaving the TFU in late 1942, Pilot Officer Alfred John De Laune 'Jack' Ruttledge DFC (J/15160) was posted to No 138 (SD) Squadron. Frank Griffiths and Roy Hodges' impression of him was than he was an excellent pilot who would hold an aircraft on track as steady as possible to a split degree if he could. Both were in no doubt that Rutledge's successes with SOE supply drops stemmed largely from the importance he placed on pin point navigation. He was later promoted to Flight Lieutenant and gained a Bar to his DFC in addition to a Netherlands Flying Cross. In all it is believed that he completed three operational tours during the war. Sadly, Jack Ruttledge was on board Boeing B-17 Mk IIIA '9203' of 168 Heavy Transport Sqn RCAF that disappeared without trace over the Atlantic, between Morocco and the Azores on 15th December 1944. He was returning home on leave to his wife in Simcoe, Ontario.
(3) During July 1942 the Kriegsmarine introduced the first experimental versions of the 'Metox' ASV radar detection device. The device covered the wavelengths of 1.3 to 2.6 metres. By the end of 1942 sufficient quantities of the set were available to equip all U-Boats on patrol and warn them of ASV II transmissions from approaching Allied aircraft.

I am grateful for the help and advice of the following people who over the years have enabled me to document Air Controlled Interception; Roy Hodges (ex-TRE) for his letters and for all the technical details of ACI, Douglas Fisher (ex-TRE photographer) for all the photos, the late Group Captain Frank Griffiths DFC AFC for his letters and log books, and Dr Bill Penley (ex-TRE scientist) and Ian White AMRAeS for their suggestions and corrections.

CHRISTCHURCH AIRFIELD – THE JOY OF RESEARCHING ITS HISTORY

It's over 35 years ago since I began researching the history of Christchurch Airfield, after I discovered that my parents' home was built beside it and was used by the 405th Fighter Group, USAAF. Obviously the first thing I have to mention to aviation enthusiasts is that its Christchurch, Dorset not the one in NZ! It was Harry Moyle (who wrote the 'Hampden File') who recruited me in to Air Britain, after he asked for a minor bit of info, and I'm glad he did, as in the pre-internet days I wrote to many AB members and in turn I was fed information by them. I'm glad I started my research in the 1980s as I have many letters, accounts and hundreds of photos, from many contacts. Sadly, those veterans are no longer with us, and some incredibly generous AB Members too, such as Ray Sturtivant who was of great help, plus Rod Simpson (Dept Editor of Aviation World and John Hamlin (both alive) for whom I wrote a few lines for his 'Oxford, Consul and Envoy' book.

The starting point for me was a little booklet by Allen White, who was a Christchurch plane spotter pre-war and later an RAF photographer in WW2. I am honoured to have his details of the aircraft he spotted at Christchurch, given to me shortly before his death and I'm honoured that the Curator of a museum in 1990s, handed me many of Allen White's photos, on the promise that I return them once I have copied as many as I wished. The archive consisted of many small prints, some curled at the edges, but quite usable. Sadly, I never copied all the photos. Allen White was in NW Germany in WW2 and just afterwards, and photographed many abandoned Luftwaffe aircraft, which might have been of use to Phil Butler of AB who wrote 'War Prizes' Sadly, I only had eyes for Christchurch related images then! I fear for this archive, as Allen's photos were held in the back of a draw in an old wooden desk! The museum has since been modernised, dare I say, more in line with PC thinking so I'm lucky I have what I have. However, it did teach me to share any supplementary info I might have that is useful for other researchers, of aircraft types or Squadrons etc, often sent unsolicited. Before 'Data Protection' was invented, I was fed with names and addresses of those who had a connection to Christchurch and somehow, I came in to contact with Alan Streeter who worked for Surrey Flying Services when they visited Christchurch in 1926 *(and featured in the July-August 2019 Airwords).* At the time he was recalling events from nearly 70 years before!

In 1935 Bournemouth Airport Ltd was formed by Francis Fisher and his wife Iris Fisher (Nee Stewart) whose brother and actor Stewart Grainger, had to change his name from James Stewart for obvious reasons. The Company also had Sir Alan Cobham as a Director and by chance the archives of Cobham PLC, had details relating to this period of Sir Alan' involvement and of his visit to Christchurch with his National Aviation Display (AKA Cobham's Flying Circus). Quite an amazing find, as was an account of the loss of Cobham's Westland Wessex trimotor, in the website for a graveyard!

Douglas Jones, born and bred in the area was another great source, who had the most extraordinary connection with the airfield for any airfield researcher. As a boy born in 1920s, he remembers the pre-war airshows and empire air days, and supplied the photos. Circa 1940, he joined Airspeed at Christchurch and supplied information and the photos concerning Oxford production and flight testing *(see photo left).* Remarkably when he was called up, he chose the Fleet Air Arm, and after basic training was posted to the Naval Air Radio Installation Unit, which remarkably had moved to Christchurch, at the same time. Naturally Douglas helped greatly with photos and details of their FAA's activities never published and to this day, and unknown to the FAA Museum in Yeovilton; I asked and they have nothing on NARIU in WW2 (yet).

Sadly, Douglas lost the sight in one eye when doing an engine change on a Fairey Swordfish in 1944. Wire was used to secure the nuts on the engine and when these wires were in position the excess wire was snipped. Unfortunately, a piece of wire shot in to his eye, meaning he was invalided out of the FAA. However, this was not the end of his involvement with the history of Christchurch Airfield, as after a short spell as a steward on flying boats with Aquila, he became a local estate agent and he kindly searched the estate agents records for copies of maps and conveyances, as he actually sold parts of the airfield in 1960s – 1970s, after Airspeed closed their subsidiary factory (then part of de Havillands).

Douglas Jones was also instrumental in putting me in touch with another four or five ex-NARIU members including the Mayor's wife! It seems many fell in love with the area and the local girls, and settled in the area. One of these contacts PO Boivin RN had a meeting with Churchill in c July 1944 when he was planning for the British Fleet to join the USN in the Pacific, well before anyone knew. He won the BEM for his work in NARIU in WW2 but he died before I could ask him about it but that is something I must research on the web. Another contact was Arthur Ablett who remembers many incidents and PO Joseph Waterman, who both recalled the names of nearly everyone at NARIU in WW2; circa 70 men and a handful of Wrens! (Is 'handful' the correct word? It seems it was to a few of the men!)

Another great source of info, was Ex RAF Sergeant, Howard Hill who, literally over his garden fence, told my dad that he was in the RAF at Christchurch and that we should contact Group Captain Frank Griffiths, who was a pilot with the Special Duty Flight at Christchurch and Telecommunications Flying Unit (TFU) at Hurn.

Sure enough, Frank Griffiths *(shown on the right in a Boston)* was another great supplier of information and some remarkable photos via TFU photographer, Douglas Fisher. Both became new found friends to my father in their old age, as he was a retired Sqn Leader and RAF pilot. Frank Griffiths served nearly the entire war with the SDF and later the TFU, except for the fact that the Air Ministry in WW2 wanted pilots to alternate between cushy postings to front line units. So Frank Griffiths was posted to 138 (Special Duties) Sqn at Tempsford, supporting SOE. During his training with 138 Sqn, his aunt in North Wales asked if by chance he could buy a mangle locally for her washing day and bring it to her on leave, but he could do better than that and managed to dropped it by parachute from a Halifax on a 138 Sqn training sortie! Sadly, he did not last long in 138 Sqn; only a few weeks after joining, he was shot down on 9th August 1943 near Annecy. All his Halifax crew died in the crash landing but he was ejected through the front of the cockpit, with just a broken arm. Within minutes he was rescued by a boy in the resistance and in the confusion of the moment put on the cross bar of a bicycle and ridden in to the darkness to a safe house. He evaded capture and via established escape routes, he crossed France to Gibraltar, where he was flown home at the end of November 1943. After his return as an evader, he was prevented from active duty so opted to return to the TFU and stayed on in experimental flying. He carried out the first Autoland (hands off blind landing) in the TFU's Boeing 247D, Serial DZ203 in late 1945. This system was developed and later fitted in BEA's Trident Aircraft about 20 years later! Why did it take so long? From a researcher's point of view, it was lovely for me to be given contact names and addresses and then for me to write off to a veteran or fellow researcher, in the hope of a reply, and then get a letter full of information I was missing and copies of photographs I had never seen before. A phone number was also great to have, and I remember phoning Arlie Blood ex-USAAF, at midnight UK and 4 pm in California. to as to speak with him 'in the afternoon'. He was with the 405th Fighter Group based at Christchurch in 1944, shot down and fought with the Resistance, captured and escaped, and carried on with his French comrades. He later captured Tours by gathering a gang of children and sending them over the main bridge in to town, shouting "The Americans are coming" whereupon the Germans evacuated Tours in a panic without a fight! Arlie was kind enough to send me his book for nothing, which I did not expect. From my research in to the 405th FG, I have had contact with many veteran's relatives asking for information about where they served or were killed in action, and likewise contact with people in France who had family members in FFI or who stole German aircraft and flew to England. All told it has been a great hobby, if that's the right word for researching the history of an airfield, that no one has heard of, and yet from 1940-42 was at the centre of radar research flying, from which AI, ASV, H2S and centimetric radar was first flown! It should be as famous as Scampton or many other RAF Stations but isn't. Most of the TRE scientists were sworn to secrecy as even their wartime research was top secret in the early cold war period and some were party to 'Enigma' so only wrote their memorise in the 1980s and by then Malvern and Defford were both the places most mentioned for radar research.

Sometimes it seems the hunt for information gives the most pleasure, and it is true that it gives a certain buzz to obtain some new info that ties up a loose ends but I have to tell myself that all this info will be of no use to anyone, unless it is written up and collated. Thankfully Airwords has help me in this task hence a few related articles! Thanks all!

FINAL TWO BRITISH AIRWAYS 747S FIND NEW PERMANENT HOMES – BY JOHN ROACH

Two more iconic British Airways Boeing 747s are set to be preserved for tourists and enthusiasts alike to continue to marvel at the Queen of the Skies. British Airways has confirmed that its final two Boeing 747s – both sporting eye-catching retro liveries –had found permanent new homes, and the first departed from the airline's engineering base in Cardiff for the final time on Saturday 5th December.

Left G-BYGC at Cardiff, prior to its ferry flight on 11th December, via John Roach).)

The two Boeing 747s, registrations G-BYGG and G-BNLY (shown in BOAC colours above and British Airways colours below), were among several aircraft painted in heritage liveries to mark the airline's centenary last year. Adorned in the iconic Landor livery, used between 1984 and 1997, G-BNLY is set to see a new lease of life as a permanent exhibit at Dunsfold Aerodrome in Surrey from 5th December. The aircraft joined its sister 747-436, G-CIVW, which was retired in late October and features the current Chatham Dockyard livery.

Meanwhile, G-BYGC, painted in 'Gold Speedbird' livery used by BOAC between 1963 and 1974, made the short journey from Cardiff Airport on Friday 11th December 2020, to the Bro Tathan Business Park at St Athan Vale of Glamorgan. Here, she will be maintained as a heritage piece by aviation specialists eCube Solutions to showcase the pre-eminent contribution British Airways' 747 fleet made to UK aviation. According to British Airways. Sean Doyle, CEO of British Airways, said*, "While we will miss seeing them grace our skies, we are delighted to have found permanent homes for our remaining centenary 747 aircraft. "We think they have great historical importance, not only to British Airways but to the entire aviation industry, and we are pleased they will be preserved for future generations in locations in the UK. As the final 747s to leave our fleet, their departure will be an emotional moment for former and current British Airways staff, including our engineering team in Cardiff who have lovingly looked after our jumbo jets for decades."*

G-BNLY and G-BYGC are the last two British Airways 747s to be retired, with G-BYGC being the final 747 to leave the British Airways fleet. The Negus-liveried 747, registration G-CIVB, was one of the last two 747s to depart Heathrow Airport in October and has also been found a permanent home at Cotswold Airport in Gloucestershire.

British Airways was forced to accelerate the retirement of its Boeing 747s in light of the global COVID-19 pandemic and subsequent near total shutdown of international air travel demand.

The airline announced in July that it would be immediately retiring all of its 31 remaining jumbo jets. The accelerated retirement has meant that unfortunately no formal retirement celebrations could be organised to mark this end of an era, and properly farewell the 'Queen of the Skies'.

Photo Credits John Roach

"YOU HAVE CONTROL" – SOME WARTIME TIGER MOTH STORIES – BY KEITH HAYWARD

During my brief flying training period with the Airways Aero Association, the BOAC/BEA flying club at Denham, in 1950/1951 on the dear old 'Maggies' – Miles Magisters - I flew with instructor Derek 'Wilbur' Wright. Small of stature with weather-beaten features, he was one of the 'old school' and didn't suffer fools gladly. I can still remember his muffled voice through the old Gosport tubes in my flying helmet – "You have control," generally followed shortly afterwards with an expletive and "I have control" as I was about to stall us into the ground!

I was reminded of my flying when I recently researching a particular wartime Tiger Moth incident. I trawled through a batch of 2,000 of these legendary machines that had been produced by Morris Motors in Cowley between May 1940 and April 1941 – just some of the thousands produced during the war by many sub-contractors.

I soon came across no less than six accidents caused by "I have control" confusion between instructors and pupils:

- 22 July 1941 T5624 2 EFTS Crashed Naunton, Worcs
- 29 July 1941 T6320 No.16 Group. Crashed low flying, Detling
- 4 September 1941 T6301 99 Squadron. Crashed near Waterbeach, Cambs
- 19 August 1942 T6915 22 EFTS. Dived in ground near Cambridge
- 1 June 1943 T5965 10 FIS. Control lost, crashed Watlington, Oxon
- 15 December 1944 T7743 18 EFTS. Dived in to ground, Windsor Park

Presumably at least one pilot survived each of these incidents for the causes to be identified at the subsequent inquiries. There are also some other rather bizarre reasons for accidents included in this batch:

- On 8 June 1943, T7107 of No.15 EFTS crashed near Dumfries when the pilot's parachute jammed the control column
- On 27 April 1944, T6264 of O.R.T.U. came to grief when the pilot lost his goggles on take-off; he lost control and the machine crashed at Shrewton
- A bizarre incident occurred on 7 January 1944 at Hucknall, Notts, when T5613 inadvertently took off whilst taxying rather fast and spun into the ground
- A security lapse at Fairoaks on 1 September 1942 allowed an unauthorised civilian to attempt to take off in T5749; unfortunately, he crashed before reaching the airfield boundary.

With so many inexperienced trainees being put through their paces at the training schools it was inevitable that a number of aircraft were lost while practicing aerobatics. A classic case occurred on 20 October 1943 when T5367 of 13 EFTS experienced engine failure in the middle of a spin over Longthorpe. The aircraft was rapidly abandoned. It is hard to imagine the terror for a young trainee, clad in a heavy Sidcot flying jacket, trying to extricate himself from the confines of a small cockpit as the aircraft tumbled.

The stresses that the Tiger Moth airframes were exposed to were considerable during aerobatics in the hands of novice pilots. On 8 October 1942 T6559 of 15 EFTS suffered a wing collapse during aerobatics and the aircraft dived into the ground at Rockliffe, Cumberland.

Strangely, T6246 of 22 EFTS started to break up whilst on a navex on 27 November 1944 and crashed near Hilton, Hunts. It seems likely that the aircraft had hit turbulence en route for such an incident to occur.

Equally tragic was the case of T6550 of 26 EFTS on 20 June 1945; after a normal take-off at Theale a wing folded back and the aircraft dived into the ground.

These are just some of the more bizarre incidents that occurred to just one batch of Tiger Moths during World War 2; there were many more similar accidents amongst the other batches produced which included "You have control" incidents. Thankfully modern 'side by side' seated trainers with 'state of the art' headsets have removed the chances of 'who's in control' controversaries. The poor old Tigers were put through so many stresses and strains in the hands of ab initio pilots and they performed a vital job during the war.

Fortunately, a number still survive – a legend indeed. (or: - legends indeed).

Photo Above; DH82 Tiger Moth, T6562 is a WW2 survivor, serving first with 3 EFTS, 7 FTS, 228OCU & SF Leeming

THE NORTH AMERICAN F-100 SUPER SABRE – BY LAWRENCE HAYWARD

The North American F-100 Super Sabre holds special memories for me, as I remember them flying with NATO air forces, over my home in Norfolk in the late 1960s. The F-100s were either on their way to Stanford Training Area, near Thetford, or to the Firing Ranges in The Wash. I never found out where they flew from, but I suspect they staged through Lakenheath or Mildenhall. I also had a friend at Boarding School who was living in Famagusta, Cyprus (in the school holidays) at the time of the Turkish Invasions on 20th July 1974. His home was covered in Union Flags which gave him a (false) sense of security that 'you can't kill me', as he watched Turkish F-100s attack ground targets in the area. I know he had a supply of 20 mm canon shells and I think I had one in my collection for a few years until *Operation Under Stairs Clean-up* occurred at the hands of mother not long afterwards. I even had a flying model of an F-100 that was powered by a flammable pellet that was lit and placed in the metal jet pipe, and subsequently air launched in to uncontrollable free flight straight in to the ground!

And what of the North American F-100 Super Sabre; it may come as a surprise to learn that although it was the first of the Century Series of USAF jet fighters, it was in fact a private venture by North American. Early variants suffered from various stability issues and but for delays with other jet fighters in the USAF, the F-100 might not have served at all. However, it did become the first USAF fighter capable of supersonic speed in level flight. The F-100 was designed by North American Aviation as a higher performance follow-on to the F-86 Sabre air superiority fighter of Korean War fame.

In January 1951, North American Aviation delivered their unsolicited proposal for a supersonic day fighter to the United States Air Force. It later served with the United States Air Force from 1954 to 1971 and with the Air National Guard (ANG) until 1979-80. Named initially as the Sabre 45 because of its 45° wing sweep, it represented an evolution of the F-86 Sabre. The mock -up was inspected on 7 July 1951, and after over a hundred modifications, the new aircraft was accepted as the F-100 on 30 November 1951. Extensive use of titanium throughout the aircraft was notable. On 3 January 1952, the USAF ordered two prototypes followed by 23 F-100As in February and an additional 250 F-100As in August.

The YF-100A first flew on 25 May 1953, seven months ahead of schedule. It reached Mach 1.04 in spite of being fitted with a de-rated XJ57-P-7 engine. The second prototype flew on 14 October 1953, followed by the first production F-100A on 9 October 1953. The USAF operational evaluation from November 1953 to December 1955 found the new fighter to have superior performance, but declared it not ready for wide-scale deployment due to various deficiencies in the design. These findings were subsequently confirmed during *'Project Hot Rod'* operational suitability tests.

(Right; North American Aviation Chief Test Pilot George S. Welch in the cockpit of the protype YF-100A, 52-5754, at Los Angeles International Airport. (Via NA Aviation, Inc.)

Six F-100s arrived at the Air Proving Ground Command, Eglin Air Force Base in August 1954. The Air Force Operational Test Center was scheduled to use four of the fighters in operational suitability tests and the other two were to undergo armament tests by the Air Force Armament Center. The Tactical Air Division of AFOTC was conducting the APGC testing under the direction of project office Lieutenant Colonel Henry W. Brown. Initial testing was completed by APGC personnel at Edwards Air Force Base. Particularly troubling was the yaw instability in certain regimes of flight which produced inertia coupling. The aircraft could develop a sudden yaw and roll which would happen too fast for the pilot to correct and would quickly over-stress the aircraft structure to disintegration. It was under these conditions that North American's chief test pilot, George Welch, was killed while dive testing an early-production F-100A (s/n 52-5764) on 12 October 1954. In addition to George Welch, an early F-100A also claimed the life of Air Commodore Stephenson RAF on 8th November 1954, while on an exchange tour with the USAF. *(His Spitfire N3200, that he crash-landed on a French beach in May 1940 was restored to airworthiness by Historic Flying Limited at Duxford in 2014 at the hands of John Romain)*

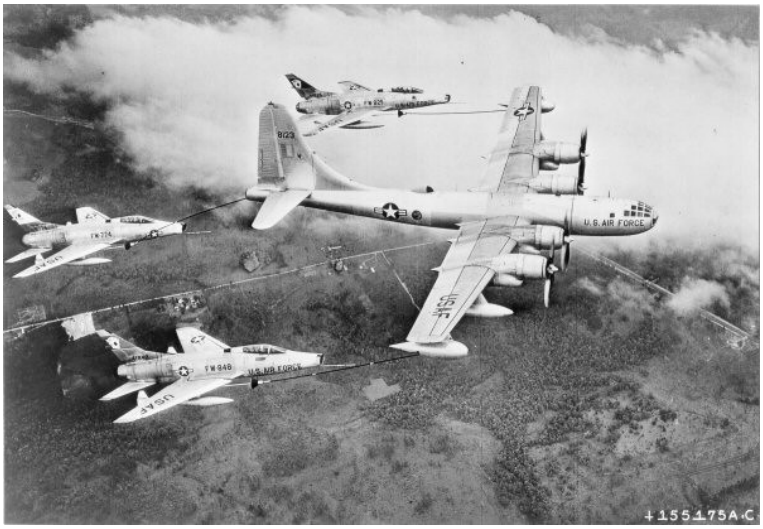
Another control problem in the F-100 stemmed from handling characteristics of the swept wing at high angles of attack. As the aircraft approached stall speeds, loss of lift on the tips of the wings caused a violent pitch-up. This particular phenomenon (which could easily be fatal at low altitude where there was insufficient time to recover) became known as the "Sabre dance". Nevertheless, delays in the Republic F-84F Thunderstreak program pushed the Tactical Air Command to order the raw F-100A into service. Tactical Air Command also requested that future F-100s be fighter-bombers, with the capability of delivering nuclear bombs. The North American F-107 was a follow-on Mach 2 development of the F-100 with the air intake moved above and behind the cockpit. It was not produced in favour of the Republic F-105 Thunderchief which superseded the F-100. However, the F-100 is perhaps best known for flying close support missions over South Vietnam as the air force's primary close air support jet until being replaced by the more efficient subsonic LTV A-7 Corsair II. In later life the F-100 was known to its pilots as 'The Hun' a shortened version of "one hundred".

Operational history

The F-100A officially entered USAF service on 27 September 1954, with the 479th Fighter Wing at George AFB, California. By 10 November 1954, the F-100As suffered six major accidents due to flight instability, structural failures, and hydraulic system failures, prompting the air force to ground the entire fleet until February 1955. The 479th finally became operational in September 1955. Due to ongoing problems, the air force began phasing out the F-100A in 1958, with the last aircraft leaving active duty in 1961. By that time, 47 aircraft had been lost in major accidents. But escalating tension due to construction of the Berlin Wall in August 1961, forced the USAF to recall the F-100As into active service in early 1962. The aircraft was finally retired in 1970.

The TAC request for a fighter-bomber was addressed with the F-100C which flew in March 1954 and entered service on 14 July 1955, with the 450th Fighter Wing, Foster AFB, Texas. Operational testing in 1955 revealed that the F-100C was at best an interim solution, sharing all the flaws of the F-100A. The uprated J57-P-21 engine boosted performance but continued to suffer from compressor stalls. However, the F-100C was considered an excellent platform for nuclear toss bombing because of its high top speed. The inertia coupling problem was reasonably addressed with the installation of a yaw damper in the 146th F-100C, later retrofitted to earlier aircraft. A pitch damper was added starting with the 301st F-100C, at a cost of US$10,000 per aircraft.

(Right; A USAF KB-50D of the Air Proving Ground Command at Eglin AFB Florida, carrying out the first triple-point refuelling op with three F-100Cs in 1956)



The addition of "wet" hardpoints meant the F-100C could carry a pair of 275 U.S. gal (1,040 l) and a pair of 200 U.S.gal (770 l) drop tanks. However, the combination caused a loss of directional stability at high speeds and the four tanks were soon replaced by a pair of 450 U.S. gal (1,730 l) drop tanks. The 450s proved scarce and expensive and were often replaced by smaller 335 US gal (1,290 l) tanks. Most troubling to TAC was the fact that, as of 1965, only 125 F-100Cs were capable of utilizing all non-nuclear weapons in the air force inventory, particularly cluster bombs and AIM-9 Sidewinder air-to-air missiles. By the time the F-100C was phased out in June 1970, 85 had been lost in major accidents. I used to think of the F-100 as a Hawker Hunter equivalent but not with those losses from accidents!

The definitive F-100D aimed to address the offensive shortcomings of the F-100C by being primarily a ground attack aircraft with secondary fighter capabilities. To this effect, the aircraft was fitted with autopilot, upgraded avionics, and, starting with the 184th production aircraft, AIM-9 Sidewinder capability. In 1959, 65 aircraft were modified to also fire the AGM-12 Bullpup air-to-ground missile. To further address the dangerous flight characteristics, the wing span was extended by 26 in (66 cm) and the vertical tail area was increased by 27%. The first F-100D (54–2121) flew on 24 January 1956, piloted by Daniel Darnell. It entered service on 29 September 1956 with the 405th Fighter Wing at Langley AFB. The aircraft suffered from reliability problems with the constant speed drive which provides constant-frequency current to the electrical systems. In fact, the drive was so unreliable that the USAF required it to have its own oil system to minimize damage in case of failure. Landing gear and brake parachute malfunctions claimed a number of aircraft, and the refueling probes had a tendency to break away during high-speed manoeuvrers.

Numerous post-production fixes created such a diversity of capabilities between individual aircraft that, by 1965, around 700 F-100Ds underwent High Wire modifications to standardize the weapon systems. High Wire modifications took 60 days per aircraft at a cost for the entire project of US$150 million. In 1966, the Combat Skyspot program fitted some F-100Ds with an X band radar transmitter to allow for ground-directed bombing in inclement weather or at night.

In 1961, at England AFB, Louisiana, (401st Tactical Wing), there were four fighter-bomber squadrons. These were the 612th, 613th, 614th and the 615th (Fighting Tigers). During the Berlin Crisis (September 1961) the 614th was deployed to Ramstein Air Base, Germany, to support the West Germans. At the initial briefing, the 614th personnel were informed that, due to the close proximity of the USSR, if an ICBM were to be launched, they would have only 30 minutes to launch the 614th's aircraft and retire to the nearest German bunker.

In 1967, the USAF began a structural reinforcement program to extend the aircraft's service life from the designed 3,000 flying hours to 7,000. The USAF alone lost 500 F-100Ds, predominantly in accidents. After one aircraft suffered wing failure, particular attention was paid to lining the wings with external bracing strips. During the Vietnam War, combat losses constituted as many as 50 aircraft per year. On 7 June 1957, an F-100D fitted with an Astrodyne booster rocket making 150,000 lbf (667.2 kn) of thrust successfully performed a zero-length launch (ZeLL). This was accomplished with the addition of a large canister to the underside of the aircraft. This canister contained a black powder compound and was ignited electro-mechanically, driving the jet engine to minimal ignition point. The capability was incorporated into late-production aircraft. After a major accident, the USAF Thunderbirds reverted from F-105 Thunderchiefs to the F-100D which they operated from 1964 until it was replaced by the F-4 Phantom II in 1968. The F-100 was the subject of many modification programs over the course of its service. Many of these were improvements to electronics, structural strengthening, and projects to improve ease of maintenance. One of these was the replacement of the original afterburners of the J-57 engines with the more advanced afterburners from retired Convair F-102 Delta Dagger interceptors. This modification changed the appearance of the aft end of the F-100, doing away with the original "petal-style" exhaust. The afterburner modification started in the 1970s and solved maintenance problems with the old type as well as operational problems, including compressor stall issues.

The F-100F two-seat trainer entered service in 1958. It received many of the same weapons and airframe upgrades as the F-100D, including the new afterburners. By 1970, 74 F-100Fs were lost in major accidents. By 1972, the F-100 was mostly phased out of USAF active service and turned over to tactical fighter groups and squadrons in the ANG. In Air National Guard units, the F-100 was eventually replaced by the F-4 Phantom II, LTV A-7 Corsair II, and A-10 Thunderbolt II, with the last F-100 retiring in 1979, with the introduction of the F-16 Fighting Falcon. In foreign service, the Royal Danish Air Force and Turkish Air Force F-100s soldiered on until 1982. Over the lifetime of its USAF service, a total of 889 F-100 aircraft were destroyed in accidents, involving the deaths of 324 pilots. The deadliest year for F-100 accidents was 1958, with 116 aircraft destroyed, and 47 pilots killed.

RF-100A

North American received a contract to modify six F-100As to RF-100As carrying five cameras *(shown right)*, three Fairchild K-17 cameras (see Fairchild K-20 camera) in a trimetrogon mounting for photo-mapping and two Fairchild K-38 cameras in a split vertical mounting with the cameras mounted horizontally, shooting via a mirror angled at 45° to reduce the effects of airframe vibrations. All gun armament was removed and the cameras installed in the gun and ammunition bays covered by a bulged fairing under the forward fuselage.

The selected pilots trained on the F-100A at Edwards Air Force Base and George Air Force Base in California and then at Palmdale Air Force Base for training with the actual RF-100As they would be deployed with. Flight tests revealed that the RF-100A in its intended operational fit of four external tanks was lacking in directional and longitudinal stability, requiring careful handling and close attention to speed limitations for the drop tanks. On takeoff, the four-tank configuration was very sensitive in pitch and take-offs were prone to what we now know today as pilot-induced oscillation. Amongst the Slick Chick pilots, take off with four external tanks was called the "JC manoeuvre" as all a pilot could say after getting out of that state, was "Jesus Christ!"

Once pilot training was completed in April 1955, three aircraft were deployed to Bitburg Air Base in Germany, flying to Brookley AFB in Mobile, Alabama, where they were cocooned, loaded on an aircraft carrier and delivered to Short Brothers at Sydenham, Belfast, for re-assembly and preparation for flight. At Bitburg they were allocated to Detachment 1 of the 7407th Support Squadron, and commenced operations flying over Eastern Bloc countries at high altitude (over 50,000 ft) to acquire intelligence on military targets. Many attempts were made to intercept these aircraft to no avail, with some photos of fighter airfields clearly showing aircraft climbing for attempted intercepts. The European detachment probably only carried out six missions between mid-1955 and mid-1956 when the Lockheed U-2 took over as the deep penetration aerial reconnaissance asset. Between 1955 and 1956 it is believed that six *Slick Chick* missions were flown over targets in Hungary, Czechoslovakia, and East Germany, but never Russia as that was out of range.

Three RF-100As were also deployed to the 6021st Reconnaissance Squadron at Yokota Air Base in Japan, but details of operations there are not available. Two RF-100A aircraft were lost in accidents, one due to probable over speeding, which caused the separation of one of the drop tanks and resulted in complete loss of control, and the other due to an engine flame-out. In mid-1958, all four remaining RF-100As were returned to the US and later supplied to the Republic of China Air Force in Taiwan.

Project High Wire

"High Wire" was a modernization program for selected F-100Cs, Ds and Fs. It comprised two modifications: an electrical rewiring upgrade, and a heavy maintenance and IRAN (inspect and repair as necessary) upgrade. Rewiring upgrade operations consisted of replacing old wiring and harnesses with improved maintainable designs. Heavy maintenance and IRAN included new kits, modifications, standardized configurations, repairs, replacements and complete refurbishment. This project required all new manuals and incremented (i.e., -85 to -86) block numbers. All later production models, especially the F models, included earlier High Wire modifications.

The F-100 in Vietnam

On 16 April 1961, six Super Sabres were deployed from Clark Air Base in the Philippines to Don Muang Royal Thai Air Force Base in Thailand for air defense purposes; the first F-100s to enter combat in Southeast Asia. From that date until their redeployment in 1971, the F-100s were the longest serving U.S. jet fighter-bomber to fight in the Vietnam War. Serving as MiG combat air patrol (CAP) escorts for F-105 Thunderchiefs, *Misty* FACs, and *Wild Weasels* over North Vietnam, and then relegated to close air support and ground attacks within South Vietnam. On 18 August 1964, the first F-100D shot down by ground fire, piloted by 1st Lt Colin A. Clarke, of the 428th TFS; Clarke ejected and survived. On 4 April 1965, acting as escorts protecting F-105s attacking the Thanh Hoa Bridge, F-100 Super Sabres fought the USAF's first air-to-air jet combat duel in the Vietnam War, in which an F-100 piloted by Captain Donald W. Kilgus of the 416th Fighter Squadron shot down a Vietnam People's Air Force MiG-17, using cannon fire, while another fired several AIM-9 Sidewinder missiles. The surviving North Vietnamese pilot confirmed three of the MiG-17s *(like one shown above)* had been shot down. Although recorded by the U.S. Air Force as a probable kill, this represented the first aerial jet victory by the U.S. Air Force in Vietnam. However, the small force of four MiG-17s penetrated the escorting F-100s to claim two F-105s. The F-100 was soon replaced by the F-4C Phantom II for *MiG CAP* but F-4 pilots soon noted that the F-4 suffered from lack of built-in canons for dogfights.

The Vietnam War was not generally known for utilizing activated Army or Air National Guard or other U.S. Reserve units; but rather, had a reputation for conscription during the course of the war. But during a confirmation hearing before Congress in 1973, Air Force General George S. Brown, who had commanded the 7th Air Force during the war, stated that five of the best F-100 Super Sabre squadrons in Vietnam were from the Air National Guard. This included the (120 TFS) of the Colorado Air National Guard, the 136 TFS of the New York Air National Guard TFS, the 174 TFS of the Iowa Air National Guard and the 188 TFS of the New Mexico Air National Guard. The fifth unit was a regular AF squadron manned by mostly air national guardsmen.

The Air National Guard F-100 squadrons increased the USAF strength by nearly a hundred Super Sabres in theatre, averaging, for the Colorado ANG F-100s, 24 missions a day, delivering ordnance and munitions with a 99.5% reliability rate. From May 1968 to April 1969, the ANG Super Sabres flew more than 38,000 combat hours and more than 24,000 sorties. Between them, at the cost of seven F-100 Air Guard pilots killed (plus one staff officer) and the loss of 14 Super Sabres to North Vietnamese enemy action, the squadrons expended over four million rounds of 20mm shells, 30 million pounds of bombs and over 10 million pounds of napalm against their enemy.

The ‘Hun’ was also deployed as a two-seat F-100F model which saw service as a "fast FAC" or Misty FAC in South Vietnam and Laos, spotting targets for other fighter-bomber aircraft, performing road reconnaissance, and conducting Search and Rescue missions as part of the top-secret Commando Sabre project, based out of Phu Cat and Tuy Hoa air bases. The Hun had logged 360,283 combat sorties during the war and its wartime operations came to end on 31 July 1971.

The four fighter wings with F-100s flew more combat sorties in Vietnam than over 15,000 P-51 Mustangs flew during World War II. After 1965, they did not fly into North Vietnam and mainly performed close air support missions. Despite the 4th April 1965 dogfight (mentioned above) involving F-100s and North Vietnamese MIG-17 aircraft, the air force classified the engagement as resulting in a "probable" kill, and no F-100 was ever officially credited with any aerial victories. As the conflict progressed, the USAF's F-100 force was augmented by squadrons from the Air National Guard (ANG). These proved highly effective and were among the best F-100 squadrons in Vietnam.

During the later years of the war, the F-100 was slowly replaced by the F-105, F-4, and LTV A-7 Corsair II. The last Super Sabre left Vietnam in July 1971 with the type having logged 360,283 combat sorties. In the course of the conflict, 242 F-100s were lost with 186 falling to North Vietnamese anti-aircraft defences. No F-100 in Vietnam was lost to enemy fighters, but 186 were shot down by anti-aircraft fire, seven were destroyed from Vietcong attacks on airbases, and 45 crashed in operational incidents. In 1972, the last F-100s were transferred to ANG squadrons which used the aircraft until retiring it in 1979-80.

USAF Wild Weasel

The F-100 was also the first Wild Weasel air defense suppression aircraft, whose specially trained crews were tasked with locating and destroying enemy missile defences. Four F-100F Wild Weasel Is were fitted with an APR-25 vector radar homing and warning receiver, IR-133 panoramic receivers with greater detection range, and KA-60 panoramic cameras. The APR-25 could detect early-warning radars and emissions from SA-2 Guideline tracking and guidance systems. These aircraft deployed to Korat Royal Thai Air Force Base, Thailand, in November 1965, began flying combat missions with the 388th Tactical Fighter Wing in December. They were joined by three more aircraft in February 1966. All Wild Weasel F-100Fs were eventually modified to fire the AGM-45 Shrike anti-radiation missile.

Above; F-100F-20-NA Super Sabre, 58-1221, Weasel Det/6234 TFW (Prov), Korat RTAFB, Thailand circa 1965-66.

QF-100 Drone

After Super Sabres were withdrawn from front-line service, a large number were converted into remote-controlled drones (QF-100) under the USAF Full Scale Aerial Target (FSAT) program for use as targets for various anti-aircraft weapons, including missile-carrying fighters and fighter-interceptors, with FSAT operations being conducted primarily at Tyndall AFB, Florida. Other QF-100s were cancelled such as that seen left and owned by Mojave Flight Systems Inc. Typically the conversion included all hard points being removed and the painting of red as a warning, on the nose, wings, and tailplane.

F100-ZEL

During the Cold War, the vulnerability of airfields to attack was obvious to military planners, and a number of schemes were dreamt up to develop ways to fly aircraft without using airfields. Early experiments with vertical take-off and landing (VTOL) aircraft, the "flying pogos", focused on aircraft that could take off straight up and land on their tails. Taking off wasn't so troublesome, but landing was a frightening procedure, and the concept did not inspire enthusiasm. Another approach was considered: slap a rocket booster onto a conventional aircraft, and simply blast it up into the sky. "Rocket-assisted take-off (RATO)" rockets had been used to help get heavily-loaded aircraft off the runway since the end of World War II, and developing a bigger rocket to do the whole job didn't seem like too big a stretch. Besides, by 1953, contemporary cruise missiles were being launched with precisely such a technology. The idea materialized in the form of a program named "Zero Length Launch / Mat Landing (ZELMAL)". Not only would the fighter be blasted into the sky, by a big booster rocket obtained from a cruise missile; the fighter would also land, gear up, on a huge inflatable mat, 80 x 800 x 3 feet in size.

On landing the fighter would snag an arresting cable to stop. Tests began in 1953 at Edwards Air Force Base in California. The launches were easy, but the mat landings were a fiasco; hard on aircraft, hard on pilots, & entirely impractical. ZELMAL was halted after a few dozen launches. Although the mat landings were a bad idea, the rocket take-offs had actually worked pretty well, and in 1957 the Air Force decided to revive that part of the concept. The idea was to launch a nuclear-armed strike aircraft from a truck trailer, bomb a target, then have the pilot bail out over friendly territory. The scheme became simple "zero length launch", abbreviated as "ZELL", truncated to "ZEL". The Super Sabre was considered best suited to the scheme, with two F-100Ds modified for booster launch. However, the F-100D weighed over twice as much as the F-84, and so required a really big booster rocket to get it into the air. The booster was built by Rocketdyne and generated almost 578 kN (59,000 kgp / 130,000 lbf) of thrust for four seconds, providing a maximum acceleration of 4 gees. The aircraft would be instantly airborne, flying at an altitude of 120 meters (400 feet) and almost 450 KPH (275 MPH) at the stage of rocket 'burnout.'

Engineers conducted preliminary launch tests with an "iron bird", a structure of steel and concrete that simulated an F-100. The iron bird performed some really impressive manoeuvres, such as backward somersaults, that demonstrated the importance of precisely aligning the booster. The first actual shot with an F-100D went fine. The test pilot, Al Blackburn, found it "exhilarating" and "better than any ride you can find at Disneyland." The second launch didn't go so well. The booster didn't separate, and nothing Blackburn could do would shake it off; he had to eject and let the aircraft crash into the desert. A post-mortem showed the booster had hung up on the attachment bolts, which were supposed to shear off, but didn't. The attachment scheme was modified with explosive charges that could blow the bolts off on command.

JF-100

This particular machine, shown left was eventually passed on to the US National Aeronautics & Space Administration (NASA) and had a long career as a test aircraft. NASA would fly a number of F-100s on tests and trials, as chase planes, which incidentally, were designating as 'JF-100'. In service with NASA there was no need for hard points for bombs or rockets or fuel tanks, so the aircraft had a more aerodynamic appearance, which increased its speed slight as a chase plane. Its looks like an RC jet in this photo!

French Air Force

The F-100 was the main fighter-bomber in the French Air Force during the 1960s, until it was replaced by the Jaguar. The Armee de l'Air was the first Western-aligned air force to receive the F-100 Super Sabre. The first aircraft arrived in France on 1 May 1958. A total of 100 aircraft (85 F-100Ds and 15 F-100Fs) were supplied to France, and assigned to the NATO 4th Allied Tactical Air Force. They were stationed at German-French bases. French F-100s were also used on combat missions flying from bases in France against targets in Algeria during the Algerian War of Independence, fought between France and the *Front de Libération Nationale* from 1954 to 1962, which led to Algeria winning its independence from France. *(Right; F-100D 54-2122 marked 11-RV was the second F-100 received by the French Air Force. It is seen in the colours of the 3/11 "Corsica" at Toul-Rosières Air Base, in June 1970.)*

The French employed a variety of aircraft during the conflict, from the A-26 now the B-26 Invader, the Sud-Est Mistral jet fighters (de Havilland Vampire) to US-built North American F-100D Super Sabre jets on photo recon missions from bases in France. French Air Force Super Sabres of the EC 1/3 Navarre also flew combat missions, striking from bases within France against targets in Algeria. The civil war was very bloody with atrocities carried out by both the French and the FLN. The French Air Force also used napalm dropped by a B-26 Invader when a unit of the French army was surrounded by the FLN. The F-100 Super Sabres of EC 1/3 Navarre were based at Reims, refuelling at Istres on the return flight from Algeria. In 1967, France left NATO, among other reasons because the USA refused to share their Nuclear bomb secrets with the French. Consequently, German-based F-100s of the French Air Force were transferred to France, using bases vacated by the USAF. The last unit on F100D/F was the Escadron 4/11 Jura, based at Djibouti, which kept the Super Sabre until 1978. *Above, F-100 '11-ED' from 1/11. Note the heat from the jet engine has created a stained effect of the rear fuselage seen on many unpainted silver jets of the period.*

Taiwan

Taiwan took delivery of 119 F-100As, 4 RF-100As and 14 F-100Fs and lost a number of F-100As and Fs in the course of service, but never lost a single RF-100As in either combat or accident. Those four RF-100As had never been sent on reconnaissance mission over mainland China as they could only produce photographic images of mediocre quality at best. Moreover, after each flying hour, the ground personnel had to spend over 100 hours on the aircraft maintenance. All of the RF-100As were returned to the US after one year and 11 months (1 January 1959 – 1 December 1960) in ROCAF service. It was the only allied air force to operate the F-100A model. The first F-100 was delivered in October 1958. It was followed by 15 F-100As in 1959, and by 65 more F-100As in 1960. In 1961, four unarmed RF-100As were delivered. Additionally, 38 ex-USAF/Air National Guard F-100As were delivered later, to bring the total strength to 118 F-100As and four RF-100As. F-100As were retrofitted with the F-100D vertical tail with its AN/APS-54 tail-warning radar and equipped to launch Sidewinder air-to-air missiles. Several were lost in intelligence missions over the People's Republic of China.

Danish Air Force

In the 1960s and 1970s the RDAF operated a number of US financed Lockheed F-104G Starfighters, North American F-100D and F-100F Super Sabres, and several other types. The F-100 aircraft all supported Denmark's commitment to NATO but without ever firing a shot in action in anger.

By 1980 the RDAF had committed to purchase the General Dynamics F-16 and therefore by summer of 1982, the RDAF flew its last F-100 mission, ending 23 years of F-100 operations in Denmark, with *Esk. 730* being the last squadron to operate the Super Sabre. As Turkey still operated the F-100, Denmark agreed to sell their retired (but still airworthy) F-100D and F-100F series to the Turkish Air Force, *Turk Hava Kuvvetleri* or TuAF for short.

Turkey

The *Turk Hava Kuvvetleri* (TuAF) received 206 F-100C, D and F Super Sabres. Most came from USAF stocks, and much later 21 F-100Ds and two F-100Fs were supplied by Denmark when they replaced their F-100s with the F-16. The most notable use of Turkish F-100s was during the Turkish invasion of Northern Cyprus on the 20th July 1974.

Right; A 1/48th scale model of a typical F-100 of TuAF from the 1970s before camouflage was adopted.

In 1878 Cyprus was placed under the UK's administration based on the Cyprus Convention of 1878 and was formally annexed by the UK in 1914. While Turkish Cypriots made up 18% of the population, the partition of Cyprus and creation of a Turkish state in the north became a policy of Turkish Cypriot leaders and Turkey kept an eye on the situation. Equally the Greek Cypriots had the same idea and wished to create a Greek Cypriot coalition with Greece, despite the Greeks and Turkish populations living peacefully side by side for decades, save for some periods of politically motivated violence in 1950s and 1960s. Britain granted Cyprus independence in 1960 but retained the Sovereign Base Areas of Akrotiri and Dhekelia, which remain under the UK's control, to this today. But on 15 July 1974, a coup d'état was staged by Greek Cypriot nationalists, in league with the Greek military, in an attempt to incorporate Cyprus into Greece. This action precipitated the Turkish invasion of Cyprus on 20th July, which led to the seizure of the present-day Northern Cyprus.

Together with F-104G Starfighters, the Turkish F-100s provided close air support to Turkish ground troops and bombed targets around Nicosia and also were active in using their 20mm canons for group attack operations. On 20th July at 04:49 hours a TuAF RF-84F reconnaissance aircraft was launched from the Inçirlik Air Base as the first action. The assault on the island itself was planned for 06:00 on the 20th, with an airborne assault at Gönyeli (10 km NW of Nicosia) by 19 C-47s and at Kirni by 6 C-130s and 11 C-160Ds. All went well, but three aircraft were hit by anti-aircraft fire. A C-130 and a C-160 only sustained light damage, whereas a C-47 (6035) caught fire and barely made an emergency landing near Silifke on the Turkish mainland. The first day of operations included 117 ground attacks, 64 airborne assaults, 18 reconnaissance missions and 8 air defence sorties. Air Force losses were two F-100D; of 171.Filo, one F-100C of 132.Filo, and one RF-84F of 184.Filo and the one C-47 (6035) making a crash landing. Much of the time F-100s were lost due to shot AAA fire, as the Greek Cypriot forces had no effective fighter aircraft. *(A Filo in TuAF is equivalent to a Squadron).*

The following day the TuAF ordered the 111.Filo with F-100Ds and 141.Filo with F-104Gs to attack targets in and around Cyprus. At 14:00 the departures got under way with 111.Filo launching 16 F-100Ds from Eskişehir between 1410 and 1416 and 181.Filo launching 12 F-100Ds from Antalya between 14:30 and 1503. Each of the 28 aircraft carried two 750 lb bombs. Before more could be done, however a message was received at 15:30 that the aircraft had attacked and sunk a Turkish ship in error! On 21st July there were 28 air defence and 23 transport sorties flown (not including army helicopter operations). The day however had seen the loss of four F-100s and a F-104G (of 191.Filo), fortunately without casualties. On 22nd July the Turkish General Command announced an armistice from 17:00 onwards and so air activity was reduced although the day's losses included an F-100D and the pilot ejecting from it.

With the Armistice holding for the moment, TuAF air activity was greatly reduced, so no further F-100 losses were recorded. The TuAF lost six F-100s in action and one in a landing accident, and despite the fighting resuming a few days later, the F-100s continued bombing and strafing until 18th August cease fire, without loss.

Turkey was evidently happy with the F-100F *(Left*) even though the F-16 was readably available, and increased their stock by acquiring more F-100 aircraft from Denmark that retired theirs from service in 1980. These F-100s were still in service in March 1987, when F-100s bombed Kurdish bases inside Northern Iraq.

FIRST FLIGHT IN A 'DAK' – BY FRED BARNES

Fred Barnes recalls fulfilling a lifetime ambition with his first flight in a DC-3 and a brief history of the Jersey based airline Intra Airways.

By the early 1970s I had been able to fly in a varying selection of both propeller driven and jet aircraft but had not managed to get a flight in the iconic piston engine Douglas DC-3, also known as a C-47, 'Dakota' or 'Dak'. In 1974 Intra Airways was operating year-round scheduled services using the DC-3 on the Jersey – Gloucester - Jersey route. There were becoming fewer opportunities in the UK to get a scheduled flight in a 'Dak' as the number of services was dwindling so I decided that it was time to take some positive action. I started to make plans to take a flight but my journey would have to be on the Gloucester to Jersey sector to permit a round trip from London and return in a single day and tickets had to be organised.

Departure from Gloucester (Staverton)

On Wednesday 11th September 1974 I travelled by train and bus to Gloucester (Staverton) Airport to take the Intra Airways DC-3 service to Jersey. At the airport I went into the small passenger building to check-in and then had some refreshment whilst awaiting the inbound flight from Jersey which was on time. Outside there was a small viewing area and I found a good location where I could see the runway and soon there was the unmistakable sight of the DC-3 on final approach to runway 27. The DC-3, registration G-AMYJ, c/n 32716 a C-47 'Dakota' variant, landed and then taxied back to the parking area on a short, half-moon curved taxiway and I took a photograph. G-AMYJ was painted with a white top covering the fuselage to below the cabin windows with two thin red lines above the windows and a single red line below the windows. The 'Intra' titles were painted in red and 'Jersey' in black on the top of the fuselage and the white extended under the nose. The tail fin was painted all white with a stylised 'Intra' logo depicted in red and black and the aircraft registration was in black on the rear fuselage whilst the wings, engines and tailplane were left in natural metallic condition. There were some variations to the basic livery across the Intra Airways DC-3 fleet.

Then I returned to the passenger building to await the departure announcement for flight JY982 to Jersey and when the flight was 'called' I went through the check point, showed my boarding card and into the small departure area. When boarding started it was just a short walk out through a gate in a wire fence to where G-AMYJ was parked just the other side on the taxiway. I followed the other passengers in turn up the short mobile steps through the left side open door into the cabin and only had to walk a few paces 'uphill' to my seat on the port side. The flight was not full and I had a window seat with a view over the rear of the port wing and engine so I sat down and made myself comfortable. As the other passengers settled into their seats, I noticed the old well used seats, spartan and period interior fittings but that was the authentic atmosphere in a 'Dak'. The passenger baggage had already been loaded into the rear hold from a hand pulled cart by two ground handlers in white overalls who then removed the passenger steps away from the aircraft. Then the passenger side of the door was closed with a firm slam and secured by one of the cabin staff. It was not my first flight in a tailed wheel aircraft, a taildragger, but it was still unusual to see the cabin ahead being 'uphill.' The cabin staff walked through the aircraft and after checking that all of the passengers were strapped in started the safety briefing. Outside of the aircraft the two ground handlers moved the mobile steps and baggage cart further away from the aircraft.

Departure for Jersey

The captain welcomed everybody on board and announced that the weather in Jersey was dry and sunny and that the aircraft was about to depart. Then I heard a whirring sound from the starboard Pratt and Witney R-1830 Twin Wasp engine and then a rumbling sound as the engine started. As the power was increased the engine sound became louder and the aircraft started to rattle and vibrate. When the port engine was fired up, I saw a puff of blue smoke and then the three-bladed propeller started turning and as power was increased the noise, rattling and vibration became louder. I saw the chocks removed from the main wheels by one of the ground handlers who signalled to the captain that the aircraft was clear of ground equipment. The rumbling sound became louder when engine power was increased and G-AMYJ started to move forward on the short-curved taxiway and turned along the main taxiway towards the runway.

It was an interesting sensation to be in an aircraft with tail wheel steering and after a short distance along the taxiway with the sound of the brakes squeaking the DC-3 came to a halt. Power checks were then carried out on both P&W R-1830 engines and the noise, ratting and vibration reached a crescendo. After completion of the engine power checks the aircraft moved forward along the taxiway and turned on to the runway and was brought to a halt. Noise, rattling and vibration increased again as take-off power was set on the two engines and G-AMYJ started to move forward slowly and as the aircraft started to accelerate along runway 27 the tail came up, which was an unusual sensation, and then it continued accelerating along the runway and became airborne. The aircraft was in a slow climb and the main landing gear was retracted and when the aircraft reached a safe height the engine power was changed and the cacophony of sound rattling and vibration reduced for a while. G-AMYJ was then flown in a left turn to take up a southerly heading and then engine power was reset as the aircraft continued climbing to the cruising level and at the top of climb cruise power was set and noise, rattling and vibration was much reduced.

During the flight I could see views of the patchwork of colours of the English countryside, small towns and villages and G-AMYJ was routed west of Bournemouth and crossed the coastline abeam Swanage and was then flying over the waters of the English Channel. At the lower cruising height of about 6000 feet the DC-3 was a bit 'bumpier' in the turbulent air rather than a turbine propeller type that cruised at a higher level. The friendly cabin crew offered a beverage service with biscuits as the two P&W R-1830 engines rumbled along and the aircraft cruise speed was around 170 mph. I could see boats, yachts and ships in the English Channel and I was really enjoying the experience of flying in a DC-3. Later in the flight I could see the Cherbourg Peninsula in France on the port side and I thought that I had been lucky to have had such good weather for flying.

Arrival in Jersey

The captain announced that the weather was still good in Jersey and that the aircraft would soon be landing. Then the engine tone changed as power was reduced for the start of the descent and soon G-AMYJ crossed the rocky north coast of the island and was then flown in a right-hand turn heading west to line up with the runway ahead. Engine noise, rattling and vibration increased again when the main landing gear was lowered on the approach to the runway. The slow approach speed was noticeable compared to a jet and soon the DC-3 was over the threshold of runway 27 and then made a gentle touchdown and as G-AMYJ slowed down the tailwheel was gently lowered on to the runway surface. Then it was a slow taxi to the ramp and the self-manoeuvring stand at the passenger terminal where the brakes squeaked again as the DC-3 came to a halt and the engines were shut down. Flight time from Staverton to Jersey had been 1 hour and 17 minutes.

The ground handlers were waiting and after putting the chocks into place opened the passenger door and put the mobile steps into position. Then the cabin staff welcomed the passengers to Jersey and asked them to disembark from the rear of the cabin. I waited for my turn then left my seat went 'downhill' a few paces then through the passenger door and down the steps on to the ramp. As I walked across the ramp to the terminal building, I stopped and turned to take a look at the 'Dak' and I was absolutely delighted to have achieved a lifetime ambition. Then I walked into the terminal with a smile on my face. In October 2014 Runway 27 at Jersey was re-designated Runway 26 due to a change in magnetic variation. After a quick look up on the old terminal roof I then went along to the British Airways desks in the departure building to check-in for the early afternoon flight to Heathrow and there was only a short turnaround time in Jersey.

The return flight was in Vickers V.802 Viscount G-AOHS c/n 167 which was painted in the British Airways interim livery of basic BEA 'Speed Jack' colours with 'British airways' titles. It was a pleasant 45 minutes flight to Heathrow with afternoon tea served on route and views of the Cherbourg Peninsula, English Channel and the South Coast of England through those lovely large oval windows in the Viscount.

Brief history of Intra Airways

Intra Airways was formed on 1st January 1969 by a group of former British United (C.I.) Airways staff to operate inter-island services from Jersey within the Channel Islands, hence the name 'Intra'. Aurigny Air Services was already established operating such services and the decision was taken to turn Intra into a passenger and freight charter company to avoid wasteful and unprofitable competition. On 14th March 1969 Intra Airways started operations with a single 36 seat DC-3 'Dakota', registration G-AKNB c/n 9043, and throughout the summer flew inclusive tour charter flights from Jersey and Guernsey to destinations in North West France with 'day trip' passengers. The 36 passenger DC-3 was ideal for the operation with short flights and the capacity to nearly fill an average touring coach on day tours. In the summer of 1970, the company added flights from Jersey to Ostend on behalf of a Belgian travel company. A second DC-3 G-AMPY c/n 26569 was purchased in November 1970 to improve operational flexibility. During the summer of 1971 the 'day trips' to France proved very lucrative and the flights to Belgium were re-routed Jersey – Guernsey – Brussels.

Scheduled services and fleet expansion

At the end of 1970 British Midland Airways had withdrawn their scheduled service on the Jersey to Gloucester route because the short runway at Staverton Airport rendered the Vickers Viscount operation unprofitable as the aircraft could not be flown with a full payload. Early in 1971 Intra Airways successfully applied to the UK ATLB to take over the Jersey to Gloucester route using the DC-3. Permission was granted and on 3rd April 1971 G-AMPY inaugurated the first Intra Airways scheduled service from Jersey to Gloucester (Staverton) with a weekly frequency. The frequency on the route was increased on 15th May for the summer season until October 1971 and repeated in the summer of 1972 and from 1973 the route was operated year-round. Flights were normally operated in summer on Wednesdays, Saturdays and Sundays to coincide with the changeover days at the accommodation in Jersey. In the winter season flights were operated on Fridays and Sundays. In 1972 British Midland Airways decided to relinquish their Jersey to Cambridge route as it was uneconomical using the Vickers Viscount at a time when the company wanted to standardise on the type on more lucrative routes so Intra Airways applied for the licence on that route. When the licence was approved by the UK authorities, now renamed the CAA, it was issued as a joint scheduled service with Air Anglia. On 10th May 1972 Intra Airways started joint services with Air Anglia for the summer season on the Jersey to Cambridge route. On 16th May 1972 Intra Airways opened a new scheduled service from Jersey to Caen, France with a frequency of three days per week. In September 1972 the airline purchased a third DC-3 registration G-AMYJ c/n 32716 as business was expanding. In November 1972 Intra Airways purchased a small Jersey based charter company called International Air Charter Ltd which had been operating a Piper PA-23 Apache and a Piper PA-27 Aztec C and those aircraft subsequently had the Intra logo painted on their tail fins. Later in December 1972 Intra introduced a new all-freight scheduled service from Jersey to Bournemouth with a frequency of three flights per week. These services were initially operated in conjunction with British Air Ferries, using their ATL-98 Carvair aircraft, until that airline withdrew from the route in 1973 whereupon Intra Airways increased their own frequency to four flights a week to Bournemouth in 1974. In April 1973 DC-3, registration G-AMPZ c/n 32872, joined the Intra Airways fleet which then increased to four aircraft for the summer season. A new aircraft type was introduced in May 1973 when the company purchased a nine seat Britten-Norman BN-2A Islander, registration G-BAVT c/n 180, which was ideal for the short sectors from Jersey to Northern France when passenger loads were low and for charter work. New scheduled services were introduced for the 1973 summer season from Jersey to Deauville, Dinard, and Morlaix in France and Ostend in Belgium.

In 1974 a new summer scheduled service was started on 15th May from Jersey to St. Brieux and to increase capacity an HS748 aircraft was sub-chartered from Dan-Air to operate the Saturday service from Jersey to Ostend from 8th May to 28th September 1974. Intra Airways also sub-chartered British Island Airways Dart Herald aircraft for some flights from Jersey to Caen and Deauville during the summer period.

An interesting venture started on 1st April 1974 with a new service from Deauville to London (Gatwick) sponsored by the Deauville Chamber of Commerce. The service initially departed from Deauville daily except Tuesday and Wednesday in the morning then day stopped at Gatwick and returned to Deauville in the evening. From 1st July 1974 at the request of the Deauville Chamber of Commerce the days of operation were changed to Tuesdays, Wednesdays, Thursdays, Fridays and Sundays with two round trips operated on Wednesdays only. The Deauville to London (Gatwick) service was not a success and was subsequently dropped in 1975. A second BN-2A Islander, registration G-BBZD c/n 389, was leased from May until November 1974 and both aircraft retained their basic Britten-Norman livery but Intra Airways titles and logo were added. International Air Charter Ltd was put up sale in late 1974 and sold in early 1975.

Several changes occurred during the summer 1975 season and the Jersey to St. Brieuc service was flown four times weekly but the scheduled services from Jersey to Caen, Deauville and Morlaix were not operated. The Jersey to Dinard service was flown up to ten times a week during the peak season whilst Intra Airways operated the Jersey to Cambridge route in its own right after Air Anglia decided to withdraw its own services to concentrate on their Norwich to Jersey route. A major change came in 1975 when the Welsh Bernelli Finance Group took a 55% share in Intra Airways Holdings which provided an injection of capital for the company. During 1975 Intra Airways started a new venture with charter flights on behalf of the oil-rig support business and initially a DC-3 was based in Aberdeen for flights to Sumburgh, Shetland. Two further DC-3 aircraft were added to the fleet from Humber Airways G-AMHJ c/n 13468 in June and G-AMPO c/n 33185 in August 1975 and both aircraft retained their existing liveries but Intra Airways titles and logo were added. Intra Airways operated the oil related passenger and equipment flights on behalf of Peters Aviation under their contract with the Mobil Oil Company. During that period the company had a fleet of six DC-3s in service and individual aircraft were rotated from Jersey to Aberdeen to cover the operation as required. All of the Intra Airways DC-3 aircraft were the C-47 'Dakota' variant with cargo doors. The remaining BN-2A Islander was sold in November 1975 and Intra Airways became an all DC-3 operator again. During the winter 1975 season the company continued scheduled passenger services on the routes Jersey to St. Brieuc, Dinard and Staverton at a reduced frequency and twice daily Jersey/Guernsey to Bournemouth freight schedules. Charter flights were also operated as required. The major overhaul of the Intra Airways fleet was undertaken in Exeter by West Country Air Services with on-line maintenance carried in Jersey by British Island Airways.

New fleet, new image in 1976

The new management realised that the DC-3 needed to be replaced with more modern turbo-prop aircraft especially on the longer routes from Jersey to Cambridge and Ostend to remain competitive and to increase capacity. Intra Airways made an agreement with Alidair in late 1975 to lease a 65 seat Viscount V.700 for thirteen months from March 1976 and a new company image was planned with a new livery for entry into the turbo-prop era. Viscount V.708 G-ARGR c/n 14 arrived in Jersey in early March 1976 in basic Alidair livery with Intra Airways titles for crew training and route proving flights. On 25th March Viscount V.724 G-BDRC c/n 52 arrived in Jersey from East Midlands in the new Intra Airways livery of white top, blue undersides, stylised 'Intra' in blue and red on the nose and registration in red. The tail fin was painted red with a stylised 'I' in gold. To cover for G-ARGR another Alidair Viscount V.708 G-BDIK c/n 37 arrived in Jersey to operate the scheduled flights to Ostend starting on 3rd April. G-ARGR returned to Alidair at East Midlands in June 1976. The Viscount was placed on the scheduled services from Jersey to Cambridge and Ostend as planned and other inclusive tour charter flights. Meanwhile the DC-3 remained on the Jersey to Staverton route but the summer frequency was increased to six services per week including one flight via Guernsey which was reinstated into the timetable. DC-3s continued to operate Jersey to Dinard and St. Brieuc and on the Jersey to Bournemouth freight flights. A seventh DC-3 G-AMRA c/n 26735 was added to the fleet in August 1976.

G-AMYJ was leased to Nile Delta Air Services on 6th July and re-registered SU-AZF followed by G-AMHJ, re-registered SU-AZI on 5th November 1976 for operations in Egypt. In October 1976 Viscount G-BDRC was repainted with a white tail fin with a stylised 'I' in blue and red and the 'Intra' titles on the nose were re-stylised in with more white background and the aircraft was then stored for the winter season. The Alidair Viscount G-BDIK was returned to East Midlands on 30th October. Viscount operations had been successful and on 23rd December 1976 Intra Airways purchased Viscount V.815 G-AVJB c/n 375 from British Midland Airways and the aircraft was ferried from East Midlands to Jersey and was painted in the revised white tail 'I' livery.

The 1977 summer season was similar to 1976 and DC-3 G-AMYJ returned from lease to Nile Delta Air Services on 3rd February 1977 and was repainted into the Intra 'I' livery. G-AMHJ returned to Intra Airways service on 26th August 1977 and was also repainted into the new livery. In 1977 Intra Airways was contracted by Express Air Freight (Channel Islands) Ltd to operate freight services between Jersey and Guernsey to Bournemouth and DC-3 G-AKNB had their company titles painted on the fuselage whilst in the new Intra Airways 'I' livery. Viscount V.814, registration G-BAPE c/n 341, was purchased from British Midland Airways on 21st October and was ferried from East Midlands to Jersey and on 31st October 1977 Viscount V.724 G-BDRC was returned to Alidair at the end of the lease and was ferried to East Midlands.

Major changes in 1978 and merger in 1979

On 26th January 1978 Viscount V.814, registration G-BAPG c/n 344, was purchased from British Midland Airways and was ferried from East Midlands to Jersey bringing the Intra Airways Viscount fleet to three aircraft for the 1978 summer season. The Viscounts continued to operate the Jersey to Cambridge, Nantes, Brussels and Ostend routes and summer IT charters from Gatwick to Amsterdam, Antwerp, Dublin and Dusseldorf. In September 1978 a new Gatwick to La Corunna service was started on Sundays using the Viscounts. During the summer season DC-3s continued operation on the Jersey to Staverton, Dinard, Caen and St. Brieuc passenger routes and Jersey/Guernsey to Bournemouth freight schedules. The fleet was dramatically reduced when the oil-rig support industry contract ended. Five aircraft were sold during 1978 with three going to Eastern Airways G-AMPO on 7th April, G-AMRA on 18th July and G-AMYJ on 29th November and two to Clyden Aviation with G-AMPZ delivered on 13th September and G-AKNB on 13th October respectively. By the end of the year only G-AMPY was left in service in passenger configuration and G-AMHJ as a freighter. The Jersey to Cambridge Viscount route ended for the summer season on 29th October. Viscount V.815 G-AVJB was placed into winter storage in November 1978 until March 1979 and Viscount V.814 G-BAPG was leased to Dan-Air from 10th November 1978 to February 1979 to operate their Lydd to Beauvais route. On 6th November Intra Airways started a new route from Birmingham to Lyons three times a week and during the winter operated nightly newspaper flights from Luton to Belfast using a Viscount.

In January 1979 Intra Holdings Ltd sold its shareholding in Intra Airways resulting in the company's merger with Bournemouth based Express Air Freight (CI) Ltd which had purchased four Dart Herald aircraft from the Israeli Airline Arkia in 1978. After the merger Intra Airways was absorbed into Air Bridge Carriers (ABC) which was part of Field Aviation in the Hunting Group. A new company named Jersey European Airways (JEA) was formed to take over the merged operation from 1st November 1979. Intra Airways signed a Joint Services Agreement with Dan-Air on 1st April 1979 permitting both airlines to use each other's aircraft on the Jersey and Guernsey to Carlisle, Staverton and Swansea routes. The Jersey to Staverton route was suspended from 29th December 1978 to 16th February 1979. On 21st April 1979 DC-3 G-AMPY operated the Staverton to Jersey route for the final time which was fitting as the same aircraft had started operations on the route on 3rd April 1971 and from then on, the route was operated by Dan-Air HS748 aircraft. Express Air Freight (CI) Ltd operated their Dart Herald aircraft as Express Air Services (EAS) and the aircraft were used on Intra Airways passenger services during the summer season on routes from Jersey to Cambridge, Swansea, Amsterdam and Dusseldorf.

For the peak summer season Viscounts returned to the Jersey to Cambridge route and operated from Gatwick on a series of IT charter flights to Dublin, Dusseldorf, Nice and Tarbes and flights from Birmingham to Dusseldorf. DC-3 G-AMHJ operated alongside the EAS Dart Herald aircraft on the Jersey/Guernsey to Bournemouth freight services. Viscount V.814 G-BAPG was leased to Alidair in July until 28th September and was then leased to Arkia and departed from East Midlands the following day on its delivery flight via Munich to Tel Aviv where it was planned to stay until December. The Jersey to Carlisle route was suspended on 14th October and on 28th October 1979 Viscount V.815 G-AVJB operated the last Intra Airways flight on the Jersey to Cambridge route. Intra Airways went into the pages of history at midnight on 31st October 1979 and ceased to exist when the fleet of three Viscounts, four Dart Heralds and two DC-3s was transferred to Express Air Services Freight (CI) Ltd for operation as Jersey European Airways. Express Air Freight (CI) Ltd subsequently demerged from JEA and eventually became Channel Express Ltd in 1983.

Epilogue - Dakota G-AMYJ was donated to the Yorkshire Air Museum by Air Atlantique in December 2001 and has subsequently been restored and repainted in RAF World War II markings by the museum staff and is now an exhibit in non-flying condition but the two Pratt and Witney R-1830 engines can still be 'fired up'. The author would like to thank John Roach and Robert Urquhart for the use of their photographs.

LETTER TO THE EDITOR (with apologies from the Eds for the delay in publishing)

Dear Editors,

Following on from Keith's article in the May-June 2020 Airwords, concerning the BF108B-1 *Taifun* that was 'detained' at the start of WW2, I saw my first 'ME108' at Fairoaks aerodrome when our aircraft spotters club from my school, Townfield Secondary Modern, visited the site in 1947/48. I believe that we were told it belonged to London Transport Flying Club. Also in the hanger was the Parnell Elf. In those days I never collected registrations and didn't record dates! During the post-war period I also saw quite a collection of unusual aircraft; Beechcraft Bonanza, Republic Seabees, DH 86B to name a few on a visit to Croydon in the same year.

All the best,

Graham Williams

*(Ed - I thought I would see if I could find a definitive answer as to which of the fifteen **Bf 108** aircraft that were impounded or captured, might have been based at Fairoaks in 1947-48. A search of the web gave no firm confirmation except from Key Aero's web pages which had a request from username 'Paddington' in 2017 which said 'I am trying to find a photo of G-AFRN for my second book on Fairoaks'. Presumably the author had proof Bf 108 G-AFRN was at Fairoaks.*

*Graham's mention of a **Republic RC-3 Seabee** (photo left) is also interesting as I can't find such an aircraft on the UK civil register at that time. It seems the one and only Seabee on the UK register is G-CJSB which arrived circa 2005. I guess the one (or more) seen by Graham was for a sales tour as Republic was trying to drum up trade. The Canadians showed most interest with their thousands of lakes.*

L*eft; A photo of a Russian **Tupolev Tu-104** was emailed to CAS via Paul Kendall but nothing to accompany it!*

The Tupolev Tu-104 was a twinjet medium-range narrow-body turbojet-powered Soviet airliner. It was the second to enter regular service, behind the British de Havilland Comet, and was the only jetliner operating in the world from 1956 to 1958, when the Comet was grounded. Sadly, the safety record of the Tu-104 was poor, in compared to western jet airliners (16 of 96 aircraft were lost in accidents).

The Tu-104 was unreliable, heavy, very unstable with poor control response, with an inclination to 'Dutch roll' or stall without warning, resulting in a steep dive in to the ground! - LPH)

OUT OF THE ARCHIVES – PETER FRAENKEL'S COLLECTION

Top Left; Javelin FAW.4 XA737 with 23 Sqn on a visit to Duxford, some time before July-August 1959 when they retired their FAW.4s. for uprated FAW.7s. Left; A line up of Javelin FAW.7s with XH772 first in line of armed aircraft, at Duxford from 25 Sqn. Note, that above the G code on the tail is a marking that corresponds to the pre-war stripes carried by 25 Sqn with which this aircraft served, from March 1959. The next Javelin in line, appears to be XH760 which also served with 25 Sqn. Top Right; A flypast of Javelins over Duxford, no doubt from 23 and 25 Sqns and from the photos and aircraft histories it is a reasonable guess to date the occasion to July-August 1959. LPH

Above Left; A Gloster Javelin, leaves the airshow (probably not Duxford) for its home station. Bottom Left; Hawker Seahawk WV 839 seen at Wethersfield. Conveniently, it carries LM on the tail and 604 on the nose, which confirms the aircraft was serving with 736 NAS based at Lossiemouth in 1958-60. It was lost at sea on 24th November 1960 in a collision with Hawker Seahawk XE401 while with 738 NAS. Both pilots safely ejected. This dates the photo to no later than Nov 1960. Above; Another aircraft seen at Wethersfield this time in 1961, is an EE Lightning F.1A, XM.172, of 56 Sqn. This Lightning was the very first one to join 56 Sqn around Christmas 1960. The 56 Sqn used red and white chequer markings on the nose. LPH

DAKOTA ZA947 – THE UNRECORDED INCIDENT- BY LAWRENCE HAYWARD

These photos of ZA947 have never been published (as far as I know) and have been in my possession since the 1990s. They were given to my father by an RAE friend of his, as dad flew ZA947 when he was with the RAE at Farnborough. RAE was his last posting before retiring from the RAF in mid-May 1984 after 42 years, of which 37 years were as a pilot. I thought that I would look up the details of the incident on the web, which would be easy – or so I thought. The trouble is there is no public record of it, not even from a year-by-year list of DC-3 / C-47 aircraft accidents including minor ones. This crash occurred at Farnborough, most likely on return from somewhere else in the UK or a training flight or trial. The photos are dated 11th September 1989, so the accident either occurred then or between 1984 when my dad left ZA947 at RAE 'in good order'. Obviously, the incident must have also occurred after ZA947 got its 'raspberry ripple' paint scheme, which throws up another mystery. According to every source on the web it says 1984, but I saw ZA947 in September / October 1983 wearing this scheme. I was on exercise with the Royal Engineers in West Germany and saw ZA947 fly over, at low level and I commented to my comrades that it was my 'dad's' aircraft. Subsequently, I learnt he was carrying out trials of helicopter night flying aids in the same area. Perhaps these photos were sent to my dad, five years after he retired, to show what someone had done to 'his' Dakota, which as you may know went on to serve with the BBMF. According to my discussions at the time, the port undercarriage collapsed on landing at Farnborough, ripping the prop off and sending it spinning in to the side of the cockpit door. The foam was a precaution but there was no fire. I wonder if the engine was changed, due to the shock it received. Any comments please, to the Editors by email via cas.editors2020@gmail.com

AVRO LINCOLN B.2 G-APRJ / RF342 - BY JOHN ROACH

In a recent conversation with a friend, of fifty years, we came around to talking about preservation and aviation museums, both past and present, and we arrived at the subject of the short-lived museum at Southend. At this Essex airport the collection included many rare examples such as Short Scion II, DHA Drover II and of course the Avro Lincoln G-APRJ/RF342.

Right; RF342 at the Historical Aircraft Museum Southend in 1973

This phone call spurred me on to find out more about this particular airframe and how many are preserved around the world. Apart from RF342 there are four other Lincolns remaining today namely, two in Argentina (serial B-004 in Buenos Aires and serial B-016 at Vila Reynolds Airbase in San Luis Province), RF398 at RAF Cosford and a nose section of an Australian made Lincoln B30 serial A73-27 at the Camden Museum of Aviation, Narellan, NSW Australia.

History of RF342

The subject of this article, RF342 was ordered as one of 200 'Lancaster Mk IV' (*before the change of name to Lincoln)* and delivered between March 1945 and March 1947 from the Armstrong Whitworth facility at Baginton Airport. Seeing as the RAFM Cosford example RF398 first flew in September 1945, it is likely that RF342 flew a few months beforehand. Many Lincolns, including the RAFM example, were put in long term storage with the RAF after delivery and it seems RF342 was no exception. On 26th November 1948, RF432 was requested by the Ministry of Supply for use as a 'trials' aircraft. Some histories therefore state that RF432 joined D. Napier & Son Ltd shortly afterwards in 1948). However, I contacted Nigel Paine at the Napier Power Heritage Trust to see if he had more info. The NPHT suggested that Napier's only received the aircraft in 1958. Possibly the MoS made use RF432 themselves, or it went back in storage for those 'missing' 10 years. Irrespective of the date of delivery, Napier's had the Lincoln modified for anti-icing research, with the original glass nose removed and replaced with a Lancaster nose (from TW911 that was scrapped in 1954). The nose was without a turret which was replaced by a steel cap to keep the aerodynamic lines clean. As a flying testbed, an aerofoil was bolted, in an upright position, on to the fuselage just in front of where the top turret would be on a Lancaster. In front of this was a frame that could spray water (from a tank in the belly) on to the wing section that was being tested. Equipment in the body of the aircraft would measure the build-up of ice being produced.

RF342 ended up being used by Napier's for four years. Types tested with this Spraymat equipment included, the Blackburn Buccaneer, de Havilland Comet, Blackburn Beverley (wing), Britannia (wing), Avro 748 and Armstrong Whitworth Argosy, to name just a few types. On 29th December 1958, the Lincoln was involved with test work on the Sud Aviation SE 210 Caravelle, for which the Lincoln became G-APRJ to enable it fly to France. The G-APRJ registration was in sequence for 1958.

Right; The Lincoln as G-APRJ at Farnborough in 1959. Note the frame to spray water, on the upper fuselage.

In 1960 the aircraft took up 'B' class registration G-29-1. The Lincoln was then passed on to the research centre at Cranfield which continued to use her for icing trials from November 1962 to 9th May 1967 registered G-36-3. During this period the Lincoln was handed over to the Empire Test Pilot School for several months, until being purchased for £1,500, by the British Historical Aircraft Museum (BHAM) at Southend and was flown to Southend on 9th May 1967 wearing civil registration G-APRJ and placed on display on the eastern perimeter of the airfield. In 1968 RAF marking and roundels were applied again. With the museum's reformation as Historical Aircraft Museum, the Lincoln was moved over to the newly built complex on Aviation Way. Subsequently it was decided to restore the 'Napier Icing 'livery and in these colours the aircraft remained for the next 12 years, until the collapse of HAM in 1982, by which time the paint on the airframe look very faded. The Lincoln was sold at auction to Doug Arnold on 10th May 1983 and moved to Blackbushe where the new owner intended to use her as a spares ship for other Lancaster restorations. There were many movements of the aircraft over the next 8 years finding herself with Aces High of North Weald from 10th September 1986 to December 1988 and then to Charles Church in Manchester from 10th September 1988 before returning to Doug Arnold (Warbirds of GB) at Biggin Hill in August 1990., Sadly the Lincoln ended up in a poor and dismantled state at Aces High North Weald from 15th Feb 1991.

Next RF342, was bought by the Imperial Aviation Group North Coates, Lincolnshire from 15th Jan 1998, and moved to Sandtoft, Lincs in October 1999, being stored with cockpit of Lancaster KB994, parts of Lancaster, KB976 and the nose section of Lancaster TW911. Major sections were dismantled by Imperial Aviation Group and Wizard Investments Ltd at Greenham Common, circa Jan 2004, with the nose and tail section going to the Paul Allen's collection in the USA in 2008. The Lincoln and Lancaster parts, excluding a nose section, were then shipped to Australia (by Mark Pilkington) for restoration in November 2006, arriving at the Australian National Aviation Museum, Moorabbin Airport Melbourne, from March 2007. Sadly, these sections remain in storage at present (January 2021) with one of the Lancaster nose sections being used for interior shots for the remake of 1950s film 'Dambusters'.

Hopefully sufficient funds will be made available for RF-342 to be fully restored in the future. On a personal note, when my wife and I (Covid-19 permitting) will be able to visit Melbourne, I will make another visit to the museum at Moorabbin to view the possible reconstruction of this quite unique Avro Lincoln.

CAPTAIN JAMES W FORDHAM, BSAA/BOAC - BY KEITH HAYWARD

As a young Traffic Apprentice with British South American Airways from 1945 to 1949 I was always slightly in awe of Captain Fordham. He was a large man and could be rather intimidating to mere ground staff such as myself. As I recorded in an earlier article, he once harangued me during my first training period with the mail section for the late delivery of a diplomatic mail bag to his aircraft while he was waiting to start up – not my fault, I might add.

Born in 1914 it appears that he joined the Royal Air force as a young officer trainee in 1936. After qualifying as a pilot, he served in Bomber Command and, later, with the Pathfinder Force flying Lancasters. He was promoted to Wing Commander and was Commanding Officer of 635 Squadron at Downham Market in late 1944. At the end of the war, like many of his contemporaries, he was recruited by AVM Don Bennett as one of the original pilots for British South American Airways in December 1945. He was a crew member with Captain Gordon Store on one of the proving flights to Buenos Aires on Lancastrian G-AGWH Stardust which left Heathrow on 21 January 1946. His first flight in command was with Lancastrian G-AGWI *Star Land*, which left Heathrow on 11 February 1946 on a further proving flight to Buenos Aires.

Captain Fordham settled down to route flying for the rest of 1946 and on 18 January 1947 he accompanied Captain Store on Lancastrian G-AGWH to open up the west coast South American route to Santiago via Lima which became one of the longest routes from Heathrow at that time. He continued to operate the west coast route on Lancastrians and converted to Tudor IVs upon their introduction in late 1947. On 29 January 1948 Tudor IV G-AHNP *Star Tiger* disappeared between the Azores and Bermuda. Captain Fordham was already in Bermuda with another Tudor IV, G-AHNJ *Star Panther*, and from there he flew for an incredible nine hours 35 minutes on a fruitless search over the western Atlantic. Searching for colleagues with no result must have been heart breaking for all concerned. By October 1948 the Tudor IVs were back in the air after their temporary grounding. Captain Fordham, after having reverted to Lancastrians, was once again back with the Tudor fleet.

The final straw came on 17th January 1949 when Tudor IVB G-AGRE *Star Ariel* disappeared between Bermuda and Kingston, Jamaica. Once again, the Tudors were grounded and Jimmy Fordham was transferred to the York freighter's weekly service to the Caribbean. He probably wondered what he had done to deserve that! A not unusual event occurred on 21st May 1949 when, after departure from Heathrow with York freighter G-AGNN *Star Crest*, he had to return to Heathrow with an engine problem after one hour and five minutes and then re-departed for the long Atlantic crossing to Kingston - no such thing as Flight Time Limitations in those days! In July 1949, following the BSAA/BOAC merger, Captain Fordham flew Lockheed 049 Constellations on the South American west coast route. He later converted to Boeing 707s and had the honour of operating the first direct Polar route flight to Japan, with Boeing 707 G-ATWV on 5th May 1969. He retired in 1970 and died in 2011 at the age of 97.

Perhaps not the easiest of pilots to deal with, he had shown great courage during the war and, later, played his part in the development of BSAA and BOAC routes in the rapidly developing early post-war era.

MEMORIES OF THE ATC AND FLYING FROM RAF NEWTON - BY LAWRENCE HAYWARD

In March 1974 I enrolled in 2229 Squadron, ATC in Loughborough, when the Assistance Headmaster said that he would kindly pick me up each weekday parade night, and take me and my friend to ATC in town, and take us back afterwards! Without him I could not possibly attend. I cannot remember his name but he was given an Officer rank. I was in good company as the CO of 2229 was my favourite teacher Mr Doughty, who was the Physics teacher at school. He had served in 207 Sqn, Bomber Command as an Observer on Wellingtons. He held the rank of Sqn Leader and took no nonsense from boys in the ATC or at school and yet was entertaining enough to keep our attention. I remember that when we were learning about electricity, he made the class hold hands in a ring and then 'mildly' electrocuted us with a hand driven alternator, and on another occasion see him bringing a Wellington starter motor out of his store on a trolly, and getting a boy to sit on it as he got it going! In the ATC we always had something interesting going on in the ATC Hut for our weekly meetings but the highlight was a visit to an active RAF Station, which for 2229 Sqn was Cottesmore, to which my father had been recalled by 115 Sqn as QFI on AW Argosy E.1s, as training was in a bit of a mess. I was familiar with the Argosy from my father's previous postings to Aden with 105 Sqn and 115 Sqn at RAF Watton. Mention of Argosies has reminded me of when. Mr Doughty, held me back from physics class and asked me if I could get him an Argosy to fly 2229 Sqn to summer camp in Cornwall! I, of course, said I'd have to ask my Dad but I don't know the outcome. Anyway, when I did join, I discovered that ATC Cadets could be 'enlisted' as an assistant air load master in RAF transport aircraft if the Captain agreed. I asked my dad if I could join his Argosy trip to Cyprus in July 1974. As it turned out, not a good time to go, but the reason my request was denied was my dad preferred to drink and eat out with the crew, when off duty, and didn't want me in the way!

Anyway, regarding the visit to Cottesmore, I was interested in the EE Canberra T.17s of 360 Sqn and I was allowed in to the cockpit to sit in the pilot's seat, obviously accompanied by a member of the ground crew. I was sitting in the pilot's seat when I politely enquired what the loops of yellow and black bungy cord were for above my head and between my legs, to which the screamed response was DON'T TOUCH, KEEP YOUR HANDS OFF! How was I to know the ejector seat was armed and ready to go and I wasn't strapped in! He should have told me earlier!

Understandably the absolute top of the list of activities in the ATC was to go flying. The nearest was to fly from RAF Newton. on a Saturday. I think the journey by coach to Newton from Loughborough took about 45 mins. With about 25 Cadets at their disposal, the ATC Warrant Officers had us fall in, between the hangars, where the first half were selected for flying and the others 5-a-side football or similar, with a swap over later in the day when our lot had been on a flight. Soon it was my turn to have a flight, perhaps the second or third of the morning, as I remember seeing the Chipmunk taxi in and being told you are next. I seem to remember there was a kind of crew room in which we all waited, and being 'fitted' with a bucket seat parachute, which made me walk out to the aircraft like a monkey!

I then met the pilot, who was Polish, who I guess was posted to RAF Newton in the war, and stayed locally ever since. He gave me some rudimentary safety instructions for baling out, which included "With the aircraft canopy slid fully to the rear, climb out on to the wing, slide or jump off the starboard (?) wing, count to three and pull the D ring". There was also mention of looking down between my legs at the same time, perhaps to avoid colliding with him. I was helped in to the cockpit and someone tightened my chute straps and did the same with the aircraft harness. The pilot then taxied on to the grass airfield and took off and the Chipmunk was airborne very quickly. I cannot remember the altitude at which we levelled out but I guess it was 1,500 feet. I was asked if I wanted to do aerobatics, but declined without a sick bag. Afterwards I wished I had accepted, as the flight time might have been extended due to the needed to find an area free of commercial traffic, and fly at a higher altitude. However, that was only a guess after the event. I did take control for a time but I did not do anything too adventurous, as even in my ignorance I did not want to get in to a stall! I do remember lowering the flaps in flight and slowing down, to what seemed like a walking pace, but other than that it was great being aloft and enjoying the view of the Nottinghamshire countryside, imagining I was in some WW2 aircraft type! All too soon the flight came to an end as the Chipmunk slowly descended until the hangars and grass runway came in to view, and the pilot made a perfect landing and we taxied in to give another Cadet a flight. After I had got down from the cockpit, the pilot took my ATC Record of Service book from me and completed the Powered Flight Log with the date (12th October 1974), flight time 15 mins and aircraft registration which was WG469, pictured above. I'm pleased to learn that WG469, like so many Chipmunks was later sold on to the civil register as G-BWJY and later the French register as F-AZKE but still in its red and white paint scheme, as used by the RAF. Happy days, but sadly in 1974 due to the economic situation and oil embargoes as a result of the Yom Kippur War of 1973, the number of Air Experience flights were soon reduced; I only had two.

HISTORIC AVIATION NEWS - JANUARY AND FEBRUARY 1971, 1981 & 1991 BY JOHN ROACH

1971

January 2 – United Arab Airlines Flight 844, a de Havilland Comet 4C (registration SU-ALC), strikes sand dunes at an altitude of 395 feet (on approach to land in poor visibility at Tripoli, Libya, and crashes, killing all 16 people on board.
January 6 – The United States Marine Corps takes delivery of its first AV-8 Harriers
January 15 – Braniff Airways begins Boeing 747 service between Dallas Love Field in Dallas, Texas, and Hawaii, using its first Boeing 747, which it acquired in 1970.
January 18 – A Balkan Bulgarian Airlines Ilyushin Il-18D (registration LZ-BED) crashes 0.7 km (0.4 miles) short of the runway while on approach to Zurich-Kloten Airport in Kloten near Zürich, Switzerland, in poor weather and catches fire. Forty-five of the 47 people on board die.
January 20 – McDonnell Douglas RF-4E Phantom II entered service with the West German Air Force
January 21A French Air Force Nord 262A-34 flying in a blizzard crashes into a 1,342-meter (4,403-foot) high mountain 2.5 kilometers (1.6 miles) south of Mézilhac, France, and comes to rest 200 meters (656 feet) below its summit, killing all 21 people on board. Seven of France's top nuclear experts are among the dead.
A Peruvian Air Force Curtiss C-46 Commando carrying members of a civil guard anti-guerrilla force crashes in the Cuti Padre mountain range in the central Andes near Palca, Peru, killing all 35 people on board.
January 22 -- Its ice protection system rendered ineffective by a closed valve, an Aeroflot Antonov An-12B (NATO reporting name "Cub") crashes on approach to Surgut International Airport in Surgut in the Soviet Union's Russian Soviet Federated Socialist Republic due to icing, killing all 13 people on board. It is the first of the two very similar crashes that happened at the airport nine days apart.
January 23 – Armed with four homemade hand grenades, 19-year-old Kim Sang-tae attempts to hijack a Korean Airlines Fokker F27 Friendship 500 (registration HL5212) during a domestic flight in South Korea from Kangnung to Seoul with 60 people on board, demanding to be flown to Sinpo, North Korea, where he believes his brother settled after defecting during the Korean War. Several Republic of Korea Air Force jets intercept the airliner and fire warning shots, forcing it to crash-land on a beach near Sokcho, South Korea. After the plane comes to a halt, the co-pilot attempts to subdue Kim, who detonates a hand grenade, killing himself and the co-pilot. The airliner is damaged beyond repair, but the other 58 people aboard the plane survive.
January 25 – Línea Aeropostal Venezolana Flight 359, a Vickers 749 Viscount (registration YV-C-AMV) on a domestic flight in Venezuela from Mérida to Caracas, strikes trees and crash-lands on a wooded mountain slope in the Andes near La Azulita, killing 13 of the 47 people on board.
January 26 – A male passenger hijacks an Aerovías Quisqueyana Lockheed L-1049 Super Constellation making a non-scheduled flight from Santo Domingo in the Dominican Republic to San Juan, Puerto Rico, with 74 people on board, demanding that it fly him to Havana, Cuba. The pilot attempts to divert to Port-au-Prince, Haiti, to refuel, but is denied permission to land. He then diverts to Cabo Rojo Airport in Pedernales in the Dominican Republic, where the hijacker is overpowered after the plane lands.
January 31 – An Antonov An-12 crashes on approach to Surgut International Airport due to a loss of control caused by icing, killing all seven people on board. It's the second of two similar crashes that occurred at the airport nine days apart.
February 1 – McDonnell Douglas completes the 4,000th F-4 Phantom II.
February 8 - The last major airmobile assault of the Vietnam War, Operation Lam Son 719, begins. It involves a ground and helicopter assault by South Vietnamese Army forces against North Vietnamese Army forces in Laos, supported by American helicopters.
February 15 – Boeing 747-200B entered service with KLM.
February 26 –First flight of the Saab-MFI 15

1981

January 1 – First flight of the LearAvia Lear Fan registered N626BL
January 7 – A Boeing 747 of CAAC lands at John F. Kennedy International Airport in New York City, marking the first flight from the mainland of China to the United States since 1949.
January 14 – A SAFE Air 170 Bristol Freighter 31E (registration ZK-CAM) damaged beyond repair when its right main gear collapsed on landing at Blenheim Woodbourne Airport NZ. Probable cause: fatigue in the landing gear centre fitting
January 25 – Bell Helicopter delivers its 25,000 th production helicopter, a Bell 222 to Omniflight Helicopters.
January 26 – Pan American World Airways makes its final Boeing 707 service.
February 1 – American industrialist Donald Douglas, founder of the Douglas Aircraft Company, dies at the age of 88.
February 7 – Taking off with a centre of gravity that is beyond certified limits thanks to improperly seated passengers and poorly secured cargo that shifts, a Soviet Navy Tupolev Tu-104A (NATO name "Camel") rolls inverted and crashes immediately after take-off from Pushkin Airport south of Leningrad in the Soviet Union's Russian Soviet Federated Socialist Republic, killing all 51 people on board. Some of the dead are high-ranking Soviet Navy officials returning to Vladivostok after visiting Leningrad for a naval exercise.

February 12–14 – The American balloonists Maxie Anderson and Don Ida attempt a round-the-world balloon flight, setting off from Luxor, Egypt in the helium balloon *Jules Verne* on February 12, and landing 90 miles east of New Delhi, India after a flight of 2,900 miles.
February 18 – American aircraft designer, Jack Northrop, founder of the Northrop Corporation, dies at the age of 85.
February 24 – On approach in rain and high winds to Val de Cans International Airport in Belém, Brazil, a VOTEC Serviços Aéreos Regionais Embraer EMB-110P Bandeirante (registration PT-GLB) strikes a ship in dry dock, then hits two barges before breaking in half, with its forward portion crashing onto a tug and its after portion sinking. The crash kills 11 of the 14 people on board.

1991
January -- Air Dolomiti begins flight operations, offering service between Genoa and Trieste, Italy.
January 16 – Eastern Air Lines is dissolved after 64 years of operation. Many of its remaining assets are sold to American and Continental Airlines.
January 17 – Operation Desert Storm begins as U.S.-led forces attack Iraq in a massive air assault after a United Nations deadline for the withdrawal of Iraqi troops from occupied Kuwait passes unheeded. United States Air Force, United States Navy, United States Marine Corps, Royal Air Force, French Air Force, and other Coalition aircraft participate. The F-117 Nighthawk stealth fighter makes its first successful combat sortie, destroying an Iraqi telecommunications facility. U.S. Air Force B-52 Stratofortress bombers based at Barksdale Air Force Base, Louisiana, fly a non-stop 35-hour, 14,000-mile round-trip mission to strike Iraqi targets, the longest combat mission in history up to that time, and employ the AGM-86 air-launched cruise missile in combat for the first time. The Iraqi national integrated air defence system collapses within the first two hours after shooting down only one Coalition aircraft (a U.S. Navy F/A-18 Hornet), and the Iraqi leader Saddam Hussein has its commander executed. During the first 14 hours of the bombardment, the attacking aircraft fly more than 1,000 sorties and drop 18,000 tons of explosives; they lose three of their number – one American, one British, and one Kuwaiti plane – during the day, all to Iraqi ground fire. Iraq loses 10 aircraft in air-to-air combat during the day.
January 21 – The Soviet Union commissions the "heavy aircraft-carrying missile cruiser" *Admiral of the Fleet of the Soviet Union Kuznetsov*. A hybrid ship combining the capability of a Western aircraft carrier to operate high-performance fighters for fleet air defence with the heavy shipboard anti-ship missile armament of Soviet guided-missile cruisers, she is the first Soviet or Russian ship with a full-length flight deck similar to that of Western aircraft carriers and the only such ship ever to be built prior to the dissolution of the Soviet Union.
February - Unable to find investors in the unprofitable airline Interflug, formerly the national airline of East Germany, German officials announce that it will be dissolved
February 1- USAir Flight 1493, a Boeing 737-3B7 (registration N388US) with 89 people on board, collides with SkyWest Flight 5569, a Fairchild SA227-AC Metro III (registration N683AV) carrying 12 people, on a runway at Los Angeles International Airport, California, killing 22 people on the USAir plane and everyone aboard the SkyWest aircraft. Thirty people on the USAir plane are injured, 13 of them seriously.
February 2 – Coalition aircraft attack Iraqi Navy vessels at the Al Kalia naval facility, hitting a missile boat with two laser-guided bombs and straddling another with twelve 500-pound (227-kg) bombs; helicopters from the American guided-missile frigate USS *Nicholas* (FFG-47) engage four Iraqi patrol boats near Maradim Island, destroying one and damaging two; and U.S. Navy A-6Es destroy an Iraqi patrol boat in Kuwait Harbour with two laser-guided bombs. The Coalition claims to have sunk or damaged 83 Iraqi Navy vessels thus far in the Gulf War, with Coalition aircraft inflicting most of the losses. Iraqi antiaircraft artillery shoots down a U.S. Navy A-6E Intruder near Kuwait City, Kuwait, an Iraqi short-range surface-to-air missile downs a U.S. Air Force A-10 Thunderbolt II, and a U.S. Marine Corps AH-1J Sea Cobra crashes due to non-combat causes while returning from an armed escort mission.
February –3 The Government of Albania establishes the Directorate General of Civil Aviation as Albania's national civil aviation authority. It later will be renamed the Albanian Civil Aviation Authority.
February 6 – Two U.S. Air Force F-15C Eagles of the 36th Tactical Fighter Wing use AIM-9 Sidewinder air-to-air missiles to shoot down four Iraqi Air Force aircraft – two Mikoyan-Gurevich MiG-21s (NATO reporting name "Fishbed") and two Sukhoi Su-25s (NATO name "Frogfoot") – fleeing to Iran at an altitude of about 100 feet A U.S. Navy Grumman F-14 Tomcat of Fighter Squadron 1 (VF-1) aboard the aircraft carrier USS *Ranger* (CV-61) shoots down an Iraqi Mil Mi-8 (NATO name "Hip") helicopter, the last of the five kills F-14s score during the Tomcat's career in U.S. Navy service.
February 13 – Two U.S. Air Force F-117A Nighthawk stealth fighters bomb a low structure in Baghdad which the Coalition believes houses an Iraqi military command-and-control facility. The attack destroys an air raid shelter, with Iraq claiming that over 400 civilians in it were killed, although the Coalition stands firm on its claim that the target was a military facility within which Iraq had illegally sheltered civilians to gain a propaganda advantage if they were killed. Iraqi antiaircraft artillery downs a Royal Saudi Air Force F-5E Tiger II fighter over southwestern Iraq.
February 28 – The U.S.-led Coalition calls a ceasefire with Iraq, with all Iraqi forces driven out of Kuwait and airpower having neutralized practically all of Iraq's ability to make war. Coalition aircraft have shot down 40 Iraqi aircraft while losing none of their own in air-to-air combat.