

## Some Days In The Life of a Production Test Pilot

It is usual for the memory to become somewhat vague with the advancing years. Certain facts are definitely well remembered, although dates when things happened will not be precise unless recorded in an official document.

I am using my Pilots Flying Log Book to confirm some dates or periods of my Service as well as locations when odd problems occurred during my days of flying as a Production Test Pilot. To be accurate, I have six log books, five completed and bound in one volume and the sixth almost filled in and ending with my last flight as captain of the aircraft when I flew in an Anson on the 25 September 1959 from Aldergrove to Ballykelly and returning to Aldergrove, Northern Ireland.

My flying career started in Poland in 1938 with glider pilot courses, then service in the Polish Air Force and flying training in Deblin, home of the Officer Cadets Flying Training School. After the Polish September Campaign, I, like most of the Polish Air Force personnel, passed through Rumania, Syria, France, eventually landing in Liverpool, England, at the end of June 1940.

My Pilots Flying Log Book starts with a refresher course at Hucknall, Notts, the first flight taking place on the 12 May 1941 in a Magister aircraft. After a week, posting to No 8 SFTS, Montrose, Scotland. Very soon after obtaining my "Pilots Wings" I became a Pilot Instructor first in Weston Zoyland, Somerset, and then serving with 25 (P)EFTS in Hucknall where I stayed until July 1944.

There is no doubt that I was very lucky to get the next posting to No 18 Operational Training Unit to fly Wellington aircraft, followed by Heavy Conversion Unit to four-engined Halifaxes and Lancasters with final posting to No 300 Polish Bomber Squadron at Faldingworth in Lincolnshire for Christmas 1944 and the last few months of the war.

My last flight there took place on the 7 June 1946 in a Lancaster practicing formation flying. When I left Faldingworth I had 1992 Hours flown on 12 types of aircraft in England as well as the hours flown in Poland on RWD 8 and PWS 26.

I spent the next two years on administrative duties and then in October 1948 I had the good fortune to be granted Commission in the Royal Air Force, General Duties Branch, with the rank of Flight Lieutenant. Again Pilots Refresher Flying Course in Finningley flying Oxford and Wellington aircraft. Two months of further training at Aston Down, and then a posting to No 4 Ferry Pool, Hawarden, near Chester where I stayed for over three years. While with No 4 Ferry Pool, I was qualified to fly on all types of aircraft, that is to say, single, twin, four-engined and also all the jet aircraft then in service. This experience gave me an opportunity to fly a couple of first delivery aeroplanes and I have in mind the Canberra and the Shackleton aircraft. I flew the first Canberra B2 from English Electric airfield at Warton, Lancashire, to RAF Binbrook, Lincolnshire on the 1 August 1951. No brass band or flowers at Binbrook, but the Station Commander came out to meet and have a look at the aircraft. I have flown the Shackleton for the first time at Woodford, near Manchester, (home of A.V. Roe Aircraft Company) on the 27 March 1951 and delivered the aircraft to the Maintenance Unit at Llandow few days later. As a matter of fact, about a year later, I attended a Canberra Conversion Course organized at 231 OCU Bassingbourn and on checking my Log Book the Instructor discovered that I had more hours flown on the type than he had.

RAF Hawarden where I was stationed was fairly busy with few lodger Units and a branch of De Havilland factory in one corner of the airfield. One of the Units was No 48 Maintenance Unit to which I was eventually transferred in September 1952 for duties as a Unit Test Pilot.

I would like to add that No 4 Ferry Pool and No 48 Maintenance Unit belonged to No 41 Group of Maintenance Command, which were operating at RAF Andover. The Ferry Pool had Royal Air Force pilots, navigators and flight engineers, but the care of the Unit aircraft was carried out entirely by civilian personnel. Similarly, No 48 M.U. had a few Royal Air Force Officers such as the Commanding Officer, Chief Technical Officer, Equipment and Supply Officer and the Unit Test Pilot. Most of the senior technical posts were manned by civilian ex-service Officers. This applied to all the Maintenance Units with which I was involved as a Ferry Pilot and later as a Test Pilot. Most of them were lodger Units on large RAF stations and situated as a rule in the west of the country. They usually received aircraft straight from the manufacturers for checks and modifications and some from operating Units for major servicing. The aircraft, after testing, were then ferried to the Squadrons for operational use or disposal as directed by the Air Ministry.

The Test Pilot would usually have a Flight Test Schedule for each type of aircraft which involved a complete sequence such as all ground and pre-flight checks, take off and in the case of jet aircraft, maximum power climb to top altitude (45,000, 48,000 feet), high speed run to the limiting Mach Number and in the case of transsonic aeroplanes dive through the sound barrier (Swift and Javelin). After descent to lower altitude stalling, feathering and restarting or stopping and relighting of engines on multi-engined aircraft, checks of controls, instruments and special installations such as anti-G, auto-pilot and so on.

One of the checks on fighter aircraft was inverted flight to confirm that the fuel negative-G trap worked as long as was prescribed in Pilots Notes for the type, that the seat (or ejection seat) and harness were secure and to check that there were no loose articles in the cockpit.

To keep the cockpit clean, a very powerful industrial vacuum cleaner was used before the test flight so that, normally, the aircraft were quite clean. However, occasionally, bits and pieces would be dislodged in inverted flight and sometimes even a lost "ownerless" tool. It was easy to spot items like that because they would collect on the inside of the canopy and could be retrieved without any problem.

In September 1953 I was testing a Venom aircraft at Shawbury and when carrying out the inverted flight check I would fly at about 5,000 feet and airspeed 300 knots. On this occasion I was just north of Wellington and few seconds after turning the Venom over I heard a loud bang and then a lot of wind noise. Nearly all of double-skinned Perspex canopy was shattered and my immediate action was to close the throttle and roll the aircraft back to level flight. I slowed down to about 160 knots, called Air Traffic Control at Shawbury informing them that my canopy was damaged and asked for permission to land as soon as possible. I was not far from the airfield and after a normal approach landed safely. I managed to taxi to dispersal and after getting out I saw that the drogue gun of the ejection seat fired when I turned the aircraft over, deploying the drogue-chute itself which remained attached to the seat. I was glad that I landed straight away because the metal rod which is fired to pull the drogue out was flapping about the top of the elevator in flight. (The Venom was a twin-boom aircraft).

If I remember rightly, the rod was at least a foot long and over half an inch in diameter. Quite a deadly weapon!

Very shortly after getting back to my office and writing my report, I was informed of the cause of the incident. It appeared that the slight movement of the seat along the seat ejection rail caused the drogue gun to fire because the activating cable attached to the floor did not have sufficient play. The result was that all the Venoms were grounded immediately for the necessary check to be carried out.

No 27 Maintenance Unit at Shawbury had a variety of aircraft for testing such as Devon, Hornet, Mosquito, Venom and Vampire. I have tested a few of the lighter or early marks of the Mosquito (3 & 6) but most of the ones there were the heavy types marks 35 & 36. All of the Mosquitoes required lot of attention when flying on one engine and had a fairly high critical speed, that is to say, a speed below which aircraft goes out of control at a maximum power setting of the unfeathered engine with landing gear and flaps down. For this reason, single engine landing on a Mosquito had a committal height below which it was not possible to abandon the approach and overshoot safely. It was about 600 feet, usually end of base leg on the approach. Such height was required to raise the undercarriage and flaps, (quite a slow process!) whilst maintaining control of the aeroplane for a successful climb-out.

I was actually caught out in such situation during the test of one of the Mosquito aircraft. I completed the airtest and was approaching to land when the fire warning light came on one of the engines. As I was well below committal height, I had to continue the approach and land with the engine on fire and the propeller only partly feathered. I eventually stopped on the runway where the Fire Crews managed to put out the fire. The affected engine was badly damaged, but I was lucky to survive the incident.

In contrast to the Mosquito, the de Havilland Hornet aircraft was an absolute joy to fly. It was very light in comparison with the Mosquito, very fast and had two engines with the propellers rotating in the opposite directions, the left propeller turning clockwise and the right propeller anti-clockwise. One could bang the throttles wide open, say for take off and, if there was no wind, the aircraft would be of the ground in no time. Raising of the undercarriage and flaps on the Hornet was also very quick and feathering and unfeathering of the propellers equally fast.

I mention these facts because earlier, when I was at Hawarden, I saw a very surprising bit of flying. One of the de Havilland Test Pilots flying a Hornet dived towards the airfield and passed low and nearly between the hangars with both the aircraft propellers feathered! It would be hard for me to believe that such a manoeuvre could be carried out but I definitely have seen it done with my own eyes and later met and talked to the pilot involved. When I started testing the Hornet, I realized that such a risky stunt could indeed be done if one had the nerve and a great deal of faith in the electric batteries and the rest of the aircraft gear.

Talking about derring-do deeds. Just after the war I was flying in a Lancaster at about 10,000 feet near Woodford in Cheshire when I saw another Lancaster some distance away do a nice slow roll. Ever since then I have been puzzled what the other pilot had done about the Elsan toilet near the tail of the aeroplane!

My stay at Shawbury was a kind of temporary attachment because when a vacancy occurred at Hawarden I applied for and got posted to No 48 M.U. again for Unit Test Pilot duties. My family still lived on the Wirral, near Ellesmere Port and the posting saved me having to live in the Officers Mess at Shawbury and travelling home at weekends.

Few weeks before my return to Hawarden I had another mishap again in a Venom aircraft. Normal take off and climb in a north-westerly direction through some layered cloud. I must have been approaching Wrexham when at about 12,000 feet the engine of the Venom suddenly stopped. I slowed down to a comfortable gliding speed and turned back towards Shawbury bearing in mind that there were disused airfields between me and home base. I informed Air Traffic Control about my predicament and tried few times to relight the engine, unfortunately without success, and all the time descending through the cloud layers. I think the cloud base near the airfield was at the time about 4,000 feet.

I managed to make a reasonable approach to the runway in use at Shawbury. I delayed lowering the undercarriage and flaps so that I could reach the airfield comfortably, hoping that the hydraulic pressure in the accumulator would be enough to carry out this task. Alas, this did not happen and even though I used the hydraulic hand pump, the undercarriage remained unlocked. I decided at the last minute to crash land on the grass alongside the runway because the aircraft was heavy and near enough full of fuel. I finished well up the airfield with the aircraft on its belly and the Crash Fire Trucks and the ambulance on the scene within seconds. Fortunately, the aircraft did not catch fire and I managed to get out safely remembering even to place the ejection seat safety pin back in position. I was then bundled in the ambulance and taken to Station Sick Quarters. I seemed to have survived the crash pretty well apart from sore stomach where the buckles of the parachute and cockpit harness straps positioned more or less one on top of the other dug in during the rapid deceleration of the crashing aircraft. However, after Medical Officer's examination I was allowed to go back to the Officers Mess and have my late lunch. It must have been over an hour later when the Unit Production Officer (civilian) came in the Mess and showed me a collection of small ball bearings in a match box and said that the drive shaft of the high pressure fuel pump had sheared at the bearing and caused subsequent flame-out of the engine. These facts prevented me from relighting the engine and caused the forced landing.

I feel that I ought to explain a little more accurately how the air tests of aircraft and particularly of jets were carried out. As I said before, a Test Pilot had a schedule to adhere to which meant carrying out all the required tests as well as making notes of behaviour of the engine and noting revolutions, jet pipe temperature, oil pressure and recording any observed snags. These readings had to be

written every 5,000 feet or so and this kept the pilot very busy because, say on a Swift aircraft, one could get to 40,000 feet in about 4 minutes.

To make such notes, I had an aluminium pad with a stop watch at the top and sort of two rollers which would carry pre-printed calibrated paper and on which one could make the necessary notes using pen attached to the pad. I would glance occasionally down in the cockpit to make such notes. One day, I remember climbing out westwards over Wales in a Venom and at over 20,000 feet I wrote something on the pad, raised my head, looked up, and there was I going nearly straight through the middle of a loose formation of about half a dozen American, four-engined B 47 bomber aircraft steaming in the opposite direction. They were the ones with very thin, swept-back, "flapping" wings, probably heading to some airfield in East Anglia. Very frightening experience! I usually kept a very good lookout when flying but this time I did not notice the approaching formation. Mind you, this happened in the very early fifties, no regional Air Traffic Control and not too many aeroplanes in the sky, especially over Wales and high up. And the weather when the near-miss happened was very good.

I usually tried to fly test the aircraft when the weather was reasonable because one never knew what to expect. Sometimes it was necessary to come down fairly quickly or when the radio failed, a hole in the cloud was always handy to be used in an emergency. When I was checked out for my "Master Green" Instrument Rating which allowed me to fly in any weather and authorize my own flights, the examiner, a certain "Taff" Jones (Welsh!) said to me:- "Tad, you are getting this rating not because you know how to fly using only instruments, but that you are certain to know when not to fly!". As if I would ever compete with the birds who were walking because of bad weather!



I must recount another incident to support my cautious approach to flight testing. The incident gave me a rather unnerving experience and I will try and explain why this was so. Actually, nothing really dangerous happened because it occurred when the weather was very good.

I was flying an elderly edition of Vampire jet aircraft on which the gyroscopic flight instruments were driven by a suction pump, a common and nearly universal system in those days. To be precise, the instrument gyroscopes were driven by a jet of air entering the evacuated casing and impinging on the shaped rim of the gyro. When the gyroscopes reached their full operating speed of, if I remember rightly, 8,000-10,000 RPM, the flight instruments such as Direction Indicator, Artificial Horizon and the Turn Indicator worked very well but not so when the suction failed completely which it did in the case I am describing.

To show that there was a useful suction, a small gauge was installed in the cockpit, usually tucked away and not very noticeable. Now, when the suction fails completely, the gyros continue spinning but are slowing down very, very slowly and eventually settle down to a kind of zero position and the instruments affected do not show any aircraft turns or changes of position in relation to the horizon. It would actually seem that you were flying straight and level even if the aircraft was in a dive, upside down, turning or whatever. And, because slowing down of gyros takes a very long time, the calamity, sort of, creeps up on you and the pilot may not be aware that anything is amiss unless he notices that the suction indicator is showing zero and realizes that the gyro instruments may be giving wrong information. The pilot would still have the pressure instruments working properly but they show only airspeed, height and whether the aircraft is climbing or descending. Naturally, the situation I am describing would occur if the aircraft was completely in cloud and the flight was conducted with sole reference to flight instruments. Not a very happy situation to be in!

I remember on Lancasters we had two suction pumps, one for each side of the aircraft, and a selection cock so that if you lost the operating engine on one side, one could change over to the other working side. There would be no such help on single engine aircraft. I guess this type of fault would also explain some fatal bad weather crashes which happened occasionally in those far off days.

Anyway, this kind of fault was overcome very soon after by introduction on newer aeroplanes of electrically driven gyros operating flight instruments. These were extremely reliable and I have not experienced any such problems in my later flying.

I think that I ought to mention the fact that I was awarded the Air Force Cross in 1955 New Years Honours List and received the decoration from the hands of Her Majesty, Queen Elizabeth, during an Investiture at the Buckingham Palace in February of that year. Unforgettable experience! I felt that lot of that honour belonged also to people on the ground who prepared and serviced the aircraft as well as the Commanding Officer and Unit Officers of No 48 MU who were always most supporting.

I remained with no 48 MU until July 1956 when I was posted to No 23 Maintenance Unit at Aldergrove in Northern Ireland. Again, 23 MU was a lodger Unit on the station with Coastal Command and Weather Reporting Squadrons. Fairly busy airfield and with a variety of aircraft to test, such as Anson, Lincoln, York, Shackleton, Swift, Canberra and Javelin. Whilst listing the aircraft, I would like to add that I put down types only and they include most of the marks of the particular type. For instance, if one takes Meteor aircraft, there would be Mark 3 & 4 Fighters, Mark 7 Trainer, Mark 8 Fighter with ejection seat, Mark 9 Phot.Rec. Mk 11 Night Fighter and so on. Each slightly different, but they were all Meteors. Similarly with Canberras;- B2 Bomb., PR3 Ph.Rec., 4 Trainer, B6 Bomb., 7 Ph.Rec., B(I)8 Interdict. - few differences but basically the same Canberras.

The new marks of aircraft would sometimes have more powerful engines, ejection seats, or other improvements such as, for instance, on Shackleton Mk 3, nose wheel, wing tip tanks, toe pedal brakes and sound-proofed cabin.

As a matter of fact, the new aircraft types were much more reliable because of improved methods of construction necessary for the higher performance required, better and stronger materials used for durability and wear - everything much safer altogether. Very occasionally some problem or mishap would arise but they were very few and could usually be attributed to a single component that failed its task.

The oldest type of aircraft at 23 MU were the Ansons, the design dated from early 1930s and still used for aircrew training or carrying of passengers. I remember testing one when the exhaust manifold came nearly loose of the engine with consequent racket from the cylinders and then the other engine started losing the revolutions and power. I was on the other side of Lough Neagh from Aldergrove, but eventually I made it back to the airfield and dispersal. When later the cowling was taken off of the underpowered engine, a large split was discovered in one of the cylinder heads. I think, I was fortunate that the affected engine did not catch fire or I might have been faced with flopping on the water or maybe even a long swim.

I had no special problems with the Canberras or Javelins. A funny thing happened when we started getting the B(I)8 Canberras because some were to be modified at Aldergrove for a special task. I remember being shown a "Top Secret" signal by the Commanding Officer and Chief Technical Officer on the matter of "toss bombing" and I was asked if I knew anything about it. I do not remember exactly what was in the signal, but I was able to tell them that I read a very comprehensive article on the subject of "toss bombing" a week or two ago in the periodical "Discovery" freely available in the Officers Mess. And that was that.

One or two happenings with Swift aircraft. While on an initial test with one I was climbing to 48,000 feet with everything working fine, when just over 42,000 feet, very suddenly, the cabin pressure normally maintained at 27,000 feet at high altitudes, dropped with the needle of the cabin altimeter steadily going up past the height I was flying at and approaching 55-56,000 feet. My reaction was to close the throttle and more or less dive straight down to a more comfortable height. It did not take long to reach lower altitude and I now think that the overshoot of the cabin altimeter might have been caused by the inertia of the indicator needle going past the actual height of the aircraft or just the sudden rush of air out of the cabin reducing the pressure further. As the air pressure above 35,000 feet is only a fifth of that at ground level or as little as one tenth at over 50,000 feet, it was sensible to come down quickly.

Again on the Swift, on another occasion the canopy just blew off when I was climbing out and at about 4-5,000 feet over Lough Neagh. I was glad in a way, that it happened over the water because it was a large and very heavy lump of metal and perspex which would have caused serious damage if it had hit anything on the ground.

The flying controls on the Swift were power-operated, that is to say hydraulic pump supplied the power to move the ailerons and the elevator. (The rudder was manually operated). The aircraft could actually be flown with power switched off and this was achieved by a couple of levers, one for the ailerons and one for the elevator, the procedure tested during the initial test of the aircraft. There was also a warning horn which sounded if the hydraulic pressure failed. I would like to add that the Swift was a strongly built aircraft and heavy overall, but because of power controls quite manoeuvrable with a very fast rate of roll.

Should the hydraulic power supply to the flying controls fail, one had to be pretty quick and disengage the operating levers, otherwise the system would jam up and the aeroplane become unflyable. I did have a case of hydraulic failure on one occasion but I managed to cope with the rest of the flight in manual. Naturally enough, when in manual, the controls are very hard to operate and I think it took me nearly half the County of Antrim to carry out a circuit and landing. Just one of those things.

Looking back over the years now, I must admit that most of the test flying which I carried out gave me a lot of satisfaction. Sometimes you would see wonderful sights when flying, at other times the aircraft behaved very well even when damaged for some reason, thus saving my skin on quite a few occasions. I always had the best support from my Commanding Officers and all the Unit personnel and received lot of kindness from the Group and Command authorities.

I remember one occasion when I was testing a Venom aircraft from No 48 MU at Hawarden. Beautiful, clear day and when I was about 40,000 feet over Liverpool, the time of the day nearly midday, and looking south I could see all of England and the south coast because the sun was reflecting of the sea water in the Channel. I could distinctly see Portland Bill which, when I calculated the distance later, was 3 degrees of latitude south or over 200 miles away. It doesn't seem much these days but in early nineteen fifties there wouldn't have been many people to have seen such a sight. It was a fantastic life!

Reflecting again on some of the happenings during my life in those days, I feel it is pertinent to mention the following brief incident.

My son was born in February 1952 while I was stationed at Hawarden, near Chester. At the time we lived in Whitby, near Ellesmere Port, Wirral. Our house wasn't very far from the RAF Station, Hooton Park, which was then used by an Auxiliary Air Squadron equipped with Meteor jet aircraft. These machines were flying around quite a lot and sometime

fairly low so that Michael became very familiar with the sight and sound of these aeroplanes when he was 2 or 3 years old. Well, one day, we were waiting at the traffic lights on the road passing the end of the runway at Hawarden where I was actually stationed. As it happened, an old Anson (twin-engined, propeller driven aircraft), was coming in to land and passed in front of us very low, throttled back and with the propellers turning slowly. I still remember the remark, which greatly astonished Michael made:- "Look Daddy, an aeroplane with windmills on!".

This happened just over fifty years since Wilbur and Orville Wright first left the ground in a flying machine!

I guess that is all.

List of types of aircraft which I have flown as a pilot:-

Training in Poland:- RWD 8, PWS 26 & 16.

In the Royal Air Force:-

Single-engined (piston);

Auster, Balliol, Chipmunk, Harvard, Henley, Hurricane, Lysander, Magister, Martinet, Master, Prentice, Proctor, Spitfire, Tempest, Tiger Moth, Tutor.

Twin-engined (piston);

Anson, Beaufighter, Brigand, Dakota, Devon, Dominie, Hornet, Mosquito, Oxford, Valetta, Varsity, Wellington.

Four-engined (piston);

Halifax, Hastings, Lancaster, Lincoln, Shackleton, York.

Jet aircraft;

Swift, Vampire, Venom (single)

Canberra, Javelin, Meteor (twin)