**Fly & Deliver: Four World War II flights recreated for Microsoft Flight Simulator**

**Notes on ATA flying and the routes chosen**

These notes are organized in three sections:

1. Background to the Air Transport Auxiliary
2. Simulation of ATA flying
3. Notes on the routes used in each flight plan.
4. **Background to the Air Transport Auxiliary**

*‘Fly and Deliver’[[1]](#endnote-1)* is the title of Hugh Bergel’s 1982 book describing his experiences as a civilian aircraft delivery pilot in the Second World War, working for the Air Transport Auxiliary (ATA).

In Britain the delivery of military aircraft from factory (or Transatlantic arrival point) to the Royal Air Force was a critical element of the war effort during the period 1939 to 1945. It was largely conducted by civilian pilots unable through age, medical restriction or gender policy (no female combatants) to serve as pilots in a military capacity.

In a sense the ATA was a ‘typically English’ organization – eccentric but highly effective. It gave great freedom (departure decisions and routings) to its flyers. It employed female pilots in an era where female pilots did not easily get commercial aviation work. Some of the male pilots had physical disabilities including loss of limbs. Many were old enough to be the fathers or mothers of the service personnel for whom the aircraft was destined. To military service pilots who followed precise orders, routes and flying directions the ATA was something of an enigma at the time. To ground staff watching a small woman pilot (with her own extra seat cushion to help her fly comfortably) climb out of a large bomber after landing, it was a shock.

Initially, the ATA took only a small group of experienced pilots (more than 250 hours logged). This group included retired commercial pilots, ‘society’ wealthy aviation enthusiasts, knighted gentry, film stars and sports aviators among its ranks. As the ATA role rapidly expanded the need for more pilots was evident and the flying hours qualifying limit was reduced – first to 150 hours (when Bergel and many other flying club enthusiasts joined). Eventually it was eliminated, leading to the recruitment of suitable candidates without any prior experience who went to an ATA Flying School.

Bergel, 35 years old at the time he joined ATA, had 153 hours of light aircraft ‘club’ flying experience when he signed up. He worked in a ‘protected’ job (at an aircraft equipment manufacturer) that meant he could not be conscripted and he was, in any case, getting too old for many service roles. However, his love of flying and the opportunity to serve more directly the war effort attracted him to apply in September 1940. By 1945 he had amassed a further 1200 flying hours delivering over 950 planes around the UK, covering 80 types – from light single engine aircraft to fighter aircraft and heavy bombers.

ATA flights were VFR only. Pilots had to remain in sight of the ground at all times and stay below 5000’. There was no instrument flying or radio contact allowed, even if the aircraft was equipped for either (many were not – they were often being delivered from the factory to RAF Maintenance Units for armament and other equipment).

The demand for deliveries escalated rapidly. To cope with the volume and variety of aircraft needing to be ferried, pilots were assigned into classes:

Class 1: Single-engined light aircraft

Class 2 : Advanced single engined aircraft

Class 3: Light twin-engined aircraft  
Class 4: Advanced twin-engined aircraft  
Class 5: Four Engined aircraft  
Class 6: Sea Planes:

Based on experience and assessed suitability, pilots could then ‘graduate’ to a more complex class. Once qualified, they were expected to fly any aircraft type in that class and on any given day fly any aircraft they were qualified for. A delivery of a Wellington could be followed immediately with a job flying an Avro Anson or an open cockpit biplane.

As the war progressed, the ATA produced its own ‘Pilot Notes’ to support this process. The *ATA Ferry Pilot Notes* have now been reproduced by Yorkshire Air Museum ([www.yorkshireairmuseum.org](http://www.yorkshireairmuseum.org) ) and these detail the specific summary flying instructions, a page for each aircraft).

1. **Simulation of ATA flying**

The flights summarized below and the accompanying flight plans for FS2004 and FSX illustrate a little of Bergel’s experience, as best as I can create it from reading both the book and other information sources. The departure and arrival airports, the aircraft and the dates are facts: in an era where there were no assigned airways for this purpose, where ATA pilots flew with the aid of ¼ inch charts and their growing memory of the local geography the rest is fiction and guesswork. Obviously weather conditions would be a primary factor in such routing decisions. The fact that we are flying over modern landscapes simulating flights made 70 years ago is also a factor; while some of the waypoints would be familiar to the ATA pilots (UK ‘A’ class roads don’t change that much!) others did not exist at the time of the original flights.

The ATA philosophy was to ‘get as far as you can’ along the route rather than wait for a good weather forecast for the entire trip. ATA pilots often had to stop at airfields on the way and billet overnight or longer.

The flights were mapped in Tim Arnot’s software ‘Plan G’ then exported as FSX and FS2004 flight plans. I suggest you load each flight and print out the Navlog. Then organize a map (Plan G or Google maps work well for this) and study the route. Load real weather or select your weather conditions.

Most ATA pilots gave a wide berth to larger towns and cities for two main reasons: they were protected by arrays of barrage balloons and there was - by our standards today - extreme industrial air pollution from manufacturing plants and residential coal fire burning. In the war period the smoke and fog were very welcome as the reduced visibility provided extra protection from bombing raids. (I grew up in the Liverpool docklands area just after WWII and experienced it directly, so can attest to the visibility challenges it created!).

I suggest that the best way to fly these routes is to try to follow the approach of the ATA Pilots:

* No GPS/NAV; no autopilot, i.e. ‘hands on’ flying. Remember that many of the ATA pilots had initially little familiarity with the aircraft assigned or the routes to fly. One pilot with prior experience, armed with a map, would often lead other new pilots in loose formation. Pilots would follow roads, railway lines and recognizable landmarks. The mantra was “get as far as you can” and then land at an airfield and report in.
* Try flying the route first in clear weather to get a feel for the landscape, landmarks and times for route segments; then try it again with more challenging weather conditions and different seasons. Decide as you go along whether to ‘go for the next segment of the route’, return or land at an airfield along the way.
* If you get lost, I suggest landing at any airfield in sight and then switch on the GPS to locate your position, to simulate the way in which ATA pilots stopped to ask directions in such circumstances. Remember, there were literally hundreds of small military airfields dotting the UK landscape (and often camouflaged!) at that time.
* If the weather closes in, then reverse your route in good time. Bergel made the point that it was situational awareness of changing weather all around the aircraft – not only the route ahead – which saved pilot’s lives. If the flight ceiling is dropping go straight to your minimum height – don’t be incrementally forced down. If the conditions ahead start to become unacceptable at this height, it is time to divert or return.
* Avoid the temptation to climb above the cloud – it was against ATA rules. There were a number of crashes by pilots who did this and then ran low on fuel trying to find a suitable ‘hole’ through which to descend. The famous aviator Amy Johnson was probably the most notable of these, perishing in the Thames estuary after baling out of an Airspeed Oxford in 1941. Less sombre, Francis Francis, a millionaire ATA pilot, tried this tactic and ran out of fuel, baling out after trimming his Beaufighter to head into the Irish Sea. Somewhat abashed, he wrote the Air Ministry a cheque for a new aeroplane.

1. **Notes on the routes used in each flight plan.**

I have provided FS2004, FSX and Plan G waypoint routings as flight plans, although I flew the routes in FS2004. I have also checked the departure and arrival airports in FSX. The comments below are based on observations from my flights in FS2004 so there may be some differences while flying in FSX.

1. **Brize Norton to Middle Wallop (7 June 1941, a Havoc). (15 minutes)**

This is a short flight south. Many ferry flights were short and pilots sometimes completed 4 or 5 of these in a single day, depending largely on their capability to get to their next pickup point. ATA used cars with drivers for road transport and a fleet of Avro Anson aircraft as taxis to move pilots around, but pilot’s also hitched rides with RAF flights or ended up returning to base on the slow and unpredictable railway system.

After take-off and setting course, you will need to keep the speed of the Havoc in check and fly reasonably low if you are going to see Middle Wallop. On the right side Lyneham Air Force base will be visible as you come to a major crossroad intersection of the M4 with the A419. You then follow the A346 south. Ahead you will see Boscombe Down airfield which you will keep on your right side as you pass over the smaller airfield of Thruxton. Middle Wallop is ahead. Its three grass strips intersect in a star pattern in FS9 rather than the more typical triangular layout (as shown in FSX). At the time of Bergel’s flight Middle Wallop was part of RAF Fighter Group Operations. Now it is an Army Air Corp helicopter base and home to the UK Museum of Army Flying (<http://www.armyflying.com> ).

This flight turned out to be the only one of Bergel`s 950 ferry flights that resulted in a significant flying accident. The Havoc he was flying turned out to have ‘fierce’ brakes – either off or locked on – and, unbeknown to Bergel, the grass field was wet and very slippery from a heavy rain shower a short while earlier. Braking on landing resulted in a slide when the brakes were on and he found rapidly that release and re-braking made no difference. Realising he was approaching a manned gun emplacement located at the end of the runway with no way of stopping Bergel retracted the undercarriage and set the Havoc on its belly.

1. **Kidlington to Dumfries (November 15, 1941, a Hurricane, using Carlisle as a substitute arrival airport). (60 mins).**

The Severn Valley was a primary north-south routing for deliveries from White Waltham, Bergel’s home base for a lot of the war, to avoid the industrial midlands on one side and the Welsh hills on the other.

The airfield at Dumfries has a long RAF history and the Control Tower has been restored as an Aviation Museum (the Dumfries and Galloway Aviation Museum <http://www.dumfriesaviationmuseum.com/> ) but the airport area is not operating. I chose Carlisle as the closest operating airport for the arrival.

After departure west the city of Gloucester will be the first main landmark. You will cross the M5 motorway just before the course change over the city airport. Following the motorway north towards Wolverhampton you will pass over its airport, change course and then cross the Cotsford Air Force Base. Ahead on the left will appear the Shawbury Air Force Base as you proceed toward the coastal estuaries of the River Dee and River Mersey. Crossing the Mersey at the narrows with the John Lennon Airport (formerly Speke Aerodrome) and the Runcorn Bridge on the left, you will head direct to Wharton airfield for the final course change to Carlisle.

On the left at Wharton will be the Blackpool Airport and ahead will be Morecambe Bay, which you will cross before heading for the hills of the Lake District. Climb or alter route as needed. North of the Lake District you will cross the M6 motorway before approaching Carlisle airport. The Solway Firth will be ahead to the left.

It is a sad note that after flying this Hawker Hurricane delivery on 15 November 1941, Bergel took a Wellington back south, due at a base in East Anglia. His departure was later in the day and in failing light he broke his journey at Ratcliffe Aerodrome, Leicestershire – a Ferry Pool base popular with flyers, as it was well equipped, being formerly the private airfield of Sir Lindsay Everard, a wealthy brewer. The added interest for Bergel was the opportunity perhaps to meet with his brother, a newspaper journalist in peacetime who also flew with the ATA. On arrival he found his brother was overdue – he had crashed and been killed on landing in a Blenheim – his first flight after ‘upgrading’ to that class.

1. **Boscombe Down to RAF Scampton (May 16, 1943, a Lancaster – the delivery of one of the Lancaster’s used in the ‘Dambusters’ flight). (60 mins)**

Of the many deliveries flown by ATA pilots, this one had specific short-term outcomes. Bergel and two other pilots flew three Lancasters under Priority 1 orders (get it there quickly!) to RAF Scampton in Lincolnshire, now known to have been the home base of RAF No. 617 ‘Dambusters’ Squadron. At the time, of course, the purpose of this operation was veiled in great secrecy.

Joe McCarty, an American pilot, used the aircraft (ED825) as a ‘short notice’ replacement for his own Lancaster (AJ-Q) which became unserviceable – Bergel’s delivery aircraft (then re-designated AJ-T) was McCarthy’s new plane used in the ‘second wave’ flight that damaged but did not breach the Sorpe Dam.

After take-off from Boscombe Down and setting course Lyneham Air Force Base will be on the left as you cross the M4 motorway. As you approach the first way point at Brize Norton air base the city of Oxford will be on the right hand side. After turning you will pass between the cities of Coventry on your left and Northampton on your right and you will pass over the M40 and M1 motorways.

Approaching the next waypoint the distinctive shape of the Rutland Water reservoir should appear just prior to the turn over the Cottesmore Air Force base. As you head north over the town of Grantham and travel between the A1 and A15 roads, a cluster of airports including Cranwell Air Force base will be on the right. Waddington Air Force base will become visible on the right side of the aircraft. After that, a short distance north you will approach the single runway airfield of RAF Scampton.

1. **Prestwick – Dyce – Sumburgh (March 28, 1942, a Beaufighter). (45 and 80 minute segments)**

Prestwick was the main arrival point of many aircraft manufactured in the USA and Canada. Larger aircraft were flown across the Atlantic by Ferry Command to Prestwick using the northern ferry routes.

Dyce airport (Aberdeen) was an interim stop on this delivery flight to Sumburgh in the Shetlands, where RAF No. 404 Squadron operated Beaufighters against enemy shipping in the North Sea. Without radio access, ATA pilots were instructed to land first at Dyce to gain authorization to enter the Shetlands air space.

After takeoff at Prestwick and setting course look out for the A76, which you will cross. You will be following roughly the A71 main road. You will then cross the M74 motorway which just precedes the waypoint for the first course change. At this point you will be heading for the narrower stretches of the Firth of Forth (the Forth Road and Rail Bridges will be away on the right).

On the north bank you will be flying towards the town of Kinross on the east edge of Loch Leven, near which you will cross the M90 motorway. From there the route takes you over the narrows of the River Tay estuary, with Dundee to the east on the north shore. The next way point is directly over the A90 road with Dundee airport to the right. You will then follow the A90 to the coast at which point you will turn on to the last leg, leading into the airport. Land and park to get clearance for Sumburgh.

From Aberdeen the course is not direct. Naval sensitivities (even with appropriate clearances) were such that the approved route took Bergel well west of the Orkneys and then by compass course back east to Sumburgh. The route selected takes you over Lossiemouth on the North coast – an ATA Ferry Pool centre and RAF base in World War II - (with Kinloss Airport to the left as you pass) then north towards the village of Melvich with the communities of Dounreay and Thurso on your right as you cross the coast.

As you head out over open water the Orkney Islands will lie to the east. Monitor your travel times carefully over open water both to and from the last waypoint (RONVI) as you turn east for Sumburgh. If you miss the Shetlands the next landfall will be Norway!

I hope you enjoy these flights.

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1. Fly and Deliver – A Ferry Pilot’s Log Book. Author Hugh Bergel, Publisher, Airlife Publishing Ltd., ISBN 0906393175, 1982 [↑](#endnote-ref-1)