

So you'd like to be a Flight Instructor? Part 2

by Alan Newton

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On our return from lunch we find that the aeroplane has been fixed and is being refueled. At this stage I ask the candidate to explain the aeroplane documents to me and how I know that the aeroplane is airworthy.

This aspect of flying seems to be lost on many pilots. Would you knowingly drive your car without an MOT or Insurance Certificate? Of course not, I hear you say. Yet some pilots will take to the air in an aeroplane without knowing if it is airworthy and without all the appropriate documentation.

I know it doesn't help you to fly the aeroplane. For that matter an MOT doesn't help you to drive your car. Suffice it to say the law states you must have an MOT; well the Air Navigation Order (ANO) – the law for pilots - states that certain aeroplane documents must be carried onboard.

I have had some candidates arrive at Wellesbourne Airfield for an FI Proficiency Check without these aeroplane documents which, in accordance with the ANO, makes their positioning flight illegal.

After signing the technical log we walk out to the aeroplane together, which is a PA28 Cherokee. During the external inspection I take the opportunity to ask him some simple technical questions such as: What is this aerial used for? What is the minimum oil quantity for the flight? The sorts of questions students would ask their instructor during their training.

I complete the internal checks and start the engine. He makes the radio call and I taxi to the runway and complete the power and pre-take-off checks. At this stage before we get airborne we



complete an emergencies briefing. This procedure is something all On-Track staff and students are required to do prior to take-off. This is the only part of the flight during which the role playing stops - whoever is going to fly the take-off shall give this brief. I find it interesting when I fly with other pilots on Skill Tests or Proficiency Checks that a number of them don't bother to brief on what actions they shall complete in the case of an engine failure during and after take-off; those that do just read off a standard set of actions without thinking about the actual weather and runway conditions and surrounding terrain.

At Wellesbourne Mountford Aerodrome there is a high ridge

covered with trees located off the end of runway 18 and a large factory to the east of runway 36 threshold (Figure 1). An engine problem on this runway requires a little thought prior to take-off.

As per my candidates pre-flight briefing I complete the take-off and climb towards the west up to 4000 ft QNH. After reaching top of climb I carry out a FREDA check and then he takes control. He briefs me to carry out two 30 degree angle of bank turns, one to the left and one to the right. I complete these items without any faults so that he will move on to teach me the main exercise

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Article 86 ANO - Documents to be carried

1. An aircraft shall not fly unless it carries the documents which it is required to carry under the law of the country in which it is registered.
2. Subject to paragraph (3), an aircraft registered in the United Kingdom shall, when in flight, carry documents in accordance with Schedule 10.
3. If the flight is intended to begin and end at the same aerodrome and does not include passage over the territory of any country other than the United Kingdom, the documents may be kept at that aerodrome instead of being carried in the aircraft.

Schedule 10 Article 86 ANO - Documents to be carried

Circumstances in which documents are to be carried:

1. On a flight for the purpose of public transport Documents A, B, C, D, E, F, H and, if the flight is international air navigation, Documents G and I shall be carried.
2. On a flight for the purpose of aerial work Documents A, B, C, E, F and, if the flight is international air navigation, Documents G and I shall be carried.
3. On a private flight, being international air navigation Documents A, B, C, G and I shall be carried.
4. On a flight made in accordance with the terms of a permission granted to the operator under article 21, Document J shall be carried.

Description of documents

For the purposes of this Schedule:

1. "Document A" means the license in force under the Wireless Telegraphy Act 1949(a) in respect of the aircraft radio station installed in the aircraft;
2. "Document B" means in the case of a non-EASA aircraft the national certificate of airworthiness in force in respect of the aircraft(b); provided that, where the certificate of airworthiness includes the flight manual for the aircraft, with the permission of the CAA, an aircraft to which article 38 applies need not carry the flight manual as part of this document;
3. "Document C" means the licenses of the members of the flight crew of the aircraft;
4. "Document D" means one copy of the load sheet, if any, required by article 43 in respect of the flight;
5. "Document E" means one copy of each certificate of maintenance review(c), if any, in force in respect of the aircraft;
6. "Document F" means the technical log, if any, in which entries are required to be made under article 15;
7. "Document G" means the certificate of registration in force in respect of the aircraft;
8. "Document H" means those parts of the operations manual, if any, required by article 38(2)(c) to be carried on the flight;
9. "Document I" means a copy of the notified procedures to be followed by the pilot in command of an intercepted aircraft, and the notified visual signals for use by intercepting and intercepted aircraft;

10. "Document J" means the permission, if any, granted in respect of the aircraft under article 21; provided that, with the permission of the CAA, an aircraft to which article 38 applies need not carry such a permission if it carries an operations manual which includes the particulars specified at sub-paragraph (1)(q) of Part A of Schedule 9.

Notes:

(a) 1949 c.54.

(b) An EASA aircraft is required by virtue of Part 21 to carry its certificate of airworthiness, restricted certificate of airworthiness or permit to fly, as the case may be, during all flights.

(c) An EASA aircraft is required by virtue of Part 21 to carry its airworthiness review certificate

In summary:

- Certificate of Airworthiness
- Certificate of Registration
- Certificate of Maintenance Review or Airworthiness Review Certificate (ARC)
- Certificate of Release to Service
- Aircraft Radio License
- Certificate of Approval of Aircraft Radio Installation (maybe incorporated with Aircraft Radio License)
- Aircraft Technical log
- Flight Manual including Aircraft Weight Schedule
- Operations Manual (if applicable)
- Aircraft Noise Certificate (if applicable)
- Certificate of Insurance (it shall state on the certificate that it complies with EC Regulation 785/2004)
- Interception Signals

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Figure 1

Take-Off Briefing (SE aeroplane)

During the take-off if the engine fails on or close to the runway and there is sufficient area to land ahead and stop I shall land ahead or on the runway and stop. After take-off without sufficient room to land on the runway or ahead I shall turn right and land in a suitable field. If the engine fails and I am above the ridge of trees I shall choose a suitable field to the left into the wind and land.

Note: The exact wording is not important. What is important is that the PIC has given some thought as to his/her actions for a possible engine failure situation.

- stalling part 1.

The airborne instruction can prove quite a demanding task for the new instructor student as he not only needs to remember what he has to teach but put the words and actions together in a flowing lesson. Most new instructor students find that their words lag behind their actions and therefore to compensate for this deficit they try to speak faster, which only goes to make matters worse. It is important that the student instructor uses the correct words when he/she teaches. It is easy to fall into the trap of omitting words and phrases so that ones actions are synchronized. Beware of this trap as it is possible to change the emphasis and meaning or miss the point completely. Let me illustrate this by a simple example. My candidate is teaching the Stall Recovery and he could simply say, "Push the control column for-

ward whilst applying full power". What is wrong with that simple phrase, I hear you ask? Well, does it correctly and completely describe the recovery action? Does it describe to the student how far the control column needs to be pushed? No it does not.

Stall recovery is a supposedly well known technique, yet if I ask a number of pilots attending an FI R course how far they should push the control column forward the answers I receive are as diverse as the pilots themselves. But surely it doesn't matter, as long as the aeroplane recovers, does it? Well it does matter for a variety of reasons – in order to minimize the height loss, to regain control of the aeroplane quickly, etc.

So what are the correct words? "Control column centrally forward until the warnings/buffet stops whilst simultaneously applying full power". A lot to say in a short space of time I know, but it correctly describes the action required fully and completely. The student, whilst following through on the controls with you, will hear, feel and see what you are doing and when you do it. So it's not important that the words and the actions are matched perfectly. Always say and do the correct things, don't short circuit the system.

Another important and yet seemingly forgotten teaching technique that should be used in the air is the 'follow through'. Flying is both a manipulative as well as mental skill. So it is important that instructors use the full range of teaching aids at their disposal including the tactile feel of the controls during aeroplane manoeuvres. We learn by watching, hearing and FEELING. So why is that so many instructors are unwilling (may be they haven't been taught correctly) to use the 'follow through' technique? There are a number of famous sayings such as 'a picture is worth a thousand words', 'a look is worth a thousands scans' and one of mine 'a follow through is worth a thousand words and pictures'.

It is well documented that our learning process is made up from a combination of stimuli. These can be split into 75% visual, 13% hearing and 12% feeling. So if you don't use the 'follow through' technique you are depriving your student of 12% of his learning ability.

So what do I mean by 'follow through'? Well it means the student places his feet and/or hands on the appropriate controls in the aeroplane, without restricting their movement, so as the instructor moves the control(s) the student can feel these movements. It allows the student to gauge the magnitude of the control movement before he/she has a go. It also allows the student to simultaneously see the visual result of this control movement and if appropriate hear the changing engine note at the same time. All of this stimulation gives the student a complete and full

appreciation of what is required to perform the task.

Once the student has been taught a specific item then he/she must be allowed to practice. New instructors are taught to brief their students on what they are to do and then hand over control of the aeroplane to the student so he/she may carry out the practice. This aspect is one of the hardest to come to terms with, especially if you are slightly under confident in your own ability. Be assured it is something that will get easier with experience, but even then I have come across some instructors who ride the controls throughout the students practice. This is a big NO, NO. How can a student learn if he/she is not allowed to make any errors? If you have taught the student correctly then they will do their best to achieve the standard and if they don't then analyse their performance and re-teach. It's that simple.

My candidate is progressing well with the teaching of stalling part 1 and we are now approaching the conclusion. He has created a well balanced lesson with many good teaching points and plenty of student practice. He has used the airspace wisely and managed to find the better areas to work as the weather situation changed during the flight.

I now ask him to teach me some Full Panel instrument flying, followed by a Practice Forced Landing (PFL) and an Engine Failure After Take-Off (EFATO) before telling him to take me back to the airfield and teach me an overhead join and some visual circuits.

There is a lot to cover on the FI R Skill Test and the candidates can become very tired and confused about what they are sup-



Figure 2

Avions Robins 2160i Spin Recovery Drill**Direction Generale de l'Aviation Civile (France)**

Throttle	Closed
Flaps	Up
Full rudder	Opposite to spin direction
Elevator	Fully back
Ailerons	Neutral
Rotation stops	Centralise elevator and rudder

Civil Aviation Authority (UK)

Throttle	Closed
Flaps	Up
Full rudder	Opposite to spin direction
Elevator	Forward to neutral
Ailerons	Neutral
Rotation stops	Centralise rudder

posed to be teaching next. It's a bit artificial I know but there hasn't been any better solution offered to date. Maybe there is a chance here for a keen young person to take the initiative and provide a different solution!

On this test there isn't a requirement to complete a spinning exercise as his FIC instructor, who is an FIE, has already carried out this element of the test. Spinning appears to be an emotive topic and people either like it or they don't; there seems to be no halfway house on the subject.

On-Track Aviation uses several different aeroplanes for spin training (Robin 2160i, Chipmunk, T67 Firefly and PA38 Tomahawk). Now, I appreciate that some of these aeroplanes have a bad reputation when it comes to spinning, mainly due to the number of accidents associated with spinning these types. In my view it isn't the aeroplane that is dangerous but the pilot's lack of understanding of the spin manoeuvre itself accompanied by a good dose of fear.

On the FI R course students will be required to teach all aspects of spinning from the incipient to the fully developed spin. But there's no spinning exercise on the PPL or the CPL course, I hear you say, so why do it on the FI R course? Well there is a requirement to teach spin avoidance (exercise 11) on the PPL course in addition to teaching the spin on the FI Skill Test. Is that a justifiable reason to teach spinning on an instructor course? I think it is, so let me give you some food for thought as potential instructors.

An instructor can be put in all sorts of awkward situations by his/her student and therefore has to have the ability and knowledge to retrieve the situation and get the aeroplane back to a safe flight condition. Wouldn't it be better still to be able to spot the signs of a developing critical situation before you have to use your superior flying skill to recover the aeroplane back to safe flight? The numbers of accidents or incidents that have resulted from pilots mishandling the aeroplane controls unknowingly are well documented and unfortunately for some this results in loss of life.

The spin training carried out on the On-Track Aviation FI R course is comprised of two sorties, one covering incipient spins and the other covering fully developed spins. Prior to the flight exercises full ground training is completed using the aeroplane Flight Manual including Mass and Balance calculations as well as the theory behind the spin manoeuvre. It isn't uncommon for students to be very nervous about this aspect of the course and the training is therefore designed to overcome these fears by a combination of theoretical knowledge and practical demonstration (thereby removing the misconceptions and folklore surrounding spinning).

Included in the On-Track Aviation FI R course is a home produced video demonstrating the spinning characteristics of the Robin 2160i. It has been photographed from both an internal and external perspective to give the student instructor the best possible understanding of the spin, including entry and recovery drills. We use the Robin (Figure 2) because it has 2 different spin recovery drills, both of which work very well.

When the aeroplane was initially certified in France the Flight Manual stated the manufacturer's (Avions Robins) spin recovery drill. When the aeroplane was first registered in the UK the CAA produced a supplement which modified this drill to bring it more into line with pilot's expectations and training.

By using the Robin 2160i instructor students are able to experience different spin recovery drills and learn that not all aeroplanes conform to the so called 'Standard Spin Recovery' drill.

The flying training on the FI R course is mostly dual flights with some mutual flights (five hours maximum). There are a number of ways of teaching the flight exercises and at On-Track Aviation they have adopted the 'give' and 'give back' approach on separate flights. In other words student instructors will be briefed and taught the exercise by the FIC instructor on flight one and then on the second flight the student will repeat the process of briefing and teaching the same exercise. This 'give back' flight may take place the next day or in the afternoon. By completing the flight training in this manner it allows the student instructor to see the flight profile completely, after which they can revise and take notes before they have to do it themselves. Moreover, it allows the student instructor to run the whole teaching process from briefing, through airborne lesson, to debriefing. Representative time slots are used for the flights in order that students get the feel of what teaching at a typical flying school would be like. The whole course is therefore geared up to the real job and not made too artificial.

After a good number of dual flights (give and give back) we allow the students to fly mutual sorties. This is where two instructor students fly together - one acting as an FI and the other as a PPL student. They go through the same process of briefing and teaching the airborne exercise but without their FIC instructor watching. It is the closest one can get to providing a realistic student teaching environment. Sometimes it is possible to fly students together who are completing the FI R course on different aeroplanes and this proves to be very popular with the student instructors as most find they lose their teaching virginity on these flights. The exercise debriefs are very informative

too, as they reveal a student instructor's strengths and weaknesses. Indeed many student instructors have commented that the mutual flights were turning points in the FI R course.

One student remarked, "I realised if I didn't use the correct words my colleague didn't understand what I wanted him to do". "I had to break the exercise down even further because she was finding it difficult to handle the aeroplane at low speed", said another.

We are approaching the overhead of the airfield and the join is going well. I wonder if he has noticed the other aeroplane ahead descending into the visual circuit - apparently not! My candidate positions the aeroplane onto the down wind leg. We are quite close behind the one ahead. He notices eventually and explains he will extend down wind for spacing so he can teach the approach and landing. This isn't good airmanship and not something I would expect an instructor to be teaching.

Why doesn't he use the mistake to demonstrate good airmanship and teach me the go-around? A great opportunity missed I feel. This seems to be a common issue with many pilots, let alone instructors, who think every approach, MUST result in a landing. Well, that's a misconception. Every approach should be a go-around until a safe landing can be assured. Visual circuit flying appears to have become a lost skill and more and more pilots and instructors are letting ATC do the flying for them. At airfields with Air Ground, Aerodrome Flight Information Service and at uncontrolled strips it is vital that pilots conform to the correct procedures.

Teaching go-arounds are not just done on the final approach because the runway isn't clear to land on. Pilots can go around from any part of the visual circuit and at any height. This is where you, the instructor, have a duty of care to teach this skill. Visual circuit training on the On-Track Aviation instructors' course will give you this skill and knowledge.

My candidate continues to teach me another couple of visual circuits, a flapless and a glide. His teaching is good with the majority of teaching points being made. He is probably getting tired as the edge has gone from his instruction. So I ask him to make a low level circuit to land without teaching. After landing he completes the after landing checks and taxis the aeroplane to parking. I can detect a sense of relief and anticipation. The final part of the FI (R) Skill Test is the oral questions, but first a well deserved coffee and biscuit.

During the oral questions I expect the candidate to give answers in a simple and concise manner as if he/she were talking to a PPL student. The candidates may illustrate their answers using any visual aids, materials or books. The oral for the FI (R) rating covers all the topics examined at PPL level. The candidate shall demonstrate they have a sound understanding of basic principles in all subjects.

FI (R) Ground Oral Subjects

- Air Law and Operational Procedures
- Human Performance and Limitations
- Navigation and Radio Aids
- Meteorology
- Aircraft General and Principles of Flight
- Flight Performance and Planning
- Communications

Candidates shall be asked at least one question on each of the topics.

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After about 40 mins of questions and discussion I finally bring the test to a close. I am happy with the candidate's performance and tell him he has passed. At this point he smiles and relaxes in his chair. I offer some debrief items and points to consider when teaching real students. I complete the paperwork and sign his logbook.

This is only the beginning of the hard work for this young man as the really difficult bit is about to start, namely finding an instructing job. Many of On-Track Aviation students do get jobs quickly after graduation. Indeed some are offered positions during the course providing they pass the Skill Test. As Head of Training I often get emails and phone calls from flying schools wanting graduates from our instructor courses. We have even instigated an Instructor Job page on our website to encourage flying schools to advertise their vacancies. To date, On-Track Aviation instructor graduates have all found jobs, even in the very competitive market around today. As we come out of the recession and the airlines begin to seek new pilots, many of the flying schools will lose their flying instructors and in turn will require replacements. Do you have an instructor rating and are you ready to step into the breach?

