'B' Prepared

The perfect approach and landing is a joy to behold. You'll know when you've got it right!

AEROBATICS OUT OF THE WAY, ANDY ELLISON LINES UP THE PERFECT LANDING APPROACH IN THE QUEST FOR A BMFA 'B' CERTIFICATE

Last month we finished on the spin, its completion concluding the 'aerobatic' section of the 'B' Certificate. If you've come this far without making a cock-up, the rest should be plain sailing. When we parted ways last time your model had (hopefully) just recovered from the best spin and recovery you ever flew! If all went well then you'll find it heading into wind, still with a reasonable amount of altitude and ready for the last parts of the test.

j.) Fly a rectangular landing approach and overshoot from below 10 feet. One question I hear quite often during lectures on the BMFA examinations is, "What's an overshoot, then?" Well, for the purpose of this test it's an aborted landing. It most certainly isn't a low pass, though it may at first appear so. To illustrate this clearly I always point out to the candidate during practice that if I don't call "overshoot!" as he approaches the strip and drops down below the preset altitude, I would expect him to land the model just as if he were doing a normal power-on landing. That won't happen during the test, of course (though I sometimes use that ploy when testing an examiner for the role), but it does eliminate any confusion as to the requirements of the flight pattern.

You'll notice that this is the first instance where the test requests a rectangular circuit to be flown and in my experience many pilots don't routinely fly rectangular circuits at their patch, primarily because it takes a little extra thought. Anyway, I'd expect you to have practiced these by the time your 'B' Certificate examination comes around, to the point where flying them is almost second nature. In readiness, then, there are a few key points to remember when flying a rectangular approach. The first might be obvious

When flying the rectangular circuit, turns should be made quickly and accurately with a clear 'straight and level' section between each.

Some fun fly models have thick, draggy wing sections that, if you're not careful, can result in them falling short of the strip.

Only when it's clear that the model is below 10ft and about to make a landing should the pilot call the overshoot.

Beware of slamming the throttle open after a prolonged idle, especially if the mixture is a little weak.

For reference, 40ft is about the height of your average house, although you may have to adjust this to account for obstructions.

in that the circuit should of course be rectangular! This means 90° turns, straight legs and parallel sides. You should also aim to position the circuit equidistant to either side of the point where you're standing, or at the very least imprinted over the first circuits you flew in the test, for some level of uniformity. Refer to the diagrams in your BMFA member's handbook if you're still unsure.

The turns should be made quickly and accurately, and a clear 'straight and level' section should be obvious between each turn. Resist the temptation to make very quick 'snap' turns at the corners of the circuit; fly smoothly but don't labour the point and waste sky to get the turn in.

This circuit is a landing approach, and the examiner will be looking for good throttle control and an element of height loss throughout the circuit, reflective of the starting altitude. Racing around the first three legs then diving for the patch on finals demonstrates none of this and will certainly result in a valid fail. I find it better to achieve the bulk of the height loss on the last crosswind leg and the 'into wind' run to the landing, reducing the throttle just before the last crosswind turn. Once established on a line for the final approach and descending, throttle management should determine the final descent rate. It's permissible to close the throttle to idle at this point, but many modern models have quite thick wing sections and draggy airframes and this practice could easily result in them dropping short of the strip. The key to the final approach is to get the model down to a speed, position and rate of descent that will ensure a landing in the (pre-arranged) designated area. Only when it's quite clear that the model is below 10 feet in altitude and about to make the landing should the pilot call the overshoot. This involves a carefully applied - but swift - opening of the throttle and regaining airspeed before the model is flown back out in a straight line to circuit height once again. Beware of slamming the throttle open after a prolonged idle, especially if the mixture is a little weak, as this course of action can result in a stopped motor (dead-stick) and the test will be aborted.

The examiner will be listening for you to call your 'overshoot' and will be observing to see if you've checked the active area before and during the manoeuvre. You did make this obvious by moving your head and calling your landing, didn't you? Anything less than a safely controlled overshoot and climb back to height is unsatisfactory and will result in a legitimate fail. Likewise a low pass, where it's obvious that the pilot has no intention to land the model, will also result in a fail.

Note that if you're flying the test with an electric model the landing

Just prior to 'going around' our examiner will be listening for you to call 'overshoot'.

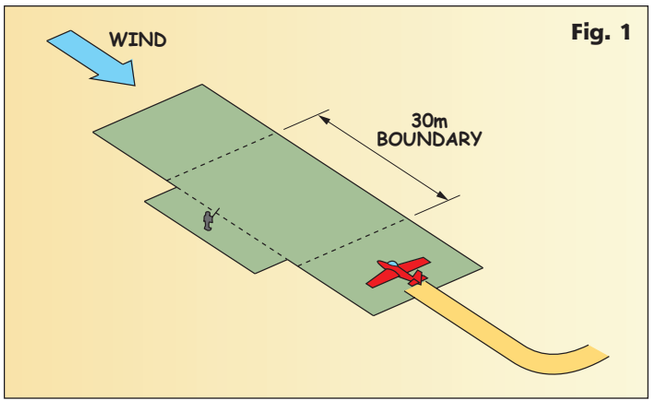

Fig. 1

On a trike set-up a fully-flared main leg landing is what we're looking for.

approach must be flown the same as if for an i.c.-powered aircraft. It doesn't matter if the prop stops during your control of the throttle - the line you're flying is more important here.

Okay then, with the overshoot completed, we can move on to the next task.

k.) Fly a rectangular circuit in the opposite direction to that in j.) at a constant height of not more than 40 feet. This element of the 'B' Certificate has undergone some subtle changes throughout the years, and used to be an opposite-hand landing approach and overshoot to demonstrate that a pilot wasn't 'handed' on his approaches. While this has now changed to an opposite hand circuit, the requirement to fly it at low altitude indicates that the intent is the same.

Everything that applied to the previous flying task is applicable here, except for the height loss. Be aware of the manner in which you choose to swap the circuit direction to commence this flight pattern, remembering back to our method of using a half 'figure eight' circuit or a procedure turn to change direction without adjusting height or speed.

The opposite hand circuit should start over the strip as the model passes you downwind (you did do your previous overshoot into wind, didn't you?) and you should make sure that your examiner knows you've started by telling him so. Again, keep the turns crisp and accurate, but here you need to watch the height carefully. A height of 40 feet is about the same as your average house and if you need to be higher to avoid obstacles such as trees etc. or need to take an unusual line to suit your patch, this should be agreed with the examiner in advance of the flight. The back end of the 'B' Certificate test is no place for detailed negotiation!

Remember to switch your receiver off before your transmitter.

The BMFA advocate that the height of this circuit shouldn't waver, but there's sometimes a natural tendency to fly slightly higher on the back leg of the circuit. As long as this isn't pronounced and deliberate and you fly a steady circuit with good parallels, you should be fine.

Bear in mind the origins of the circuit as an opposite-handed landing approach. While there's no indication now that this is the case, a circuit flown at full throttle will spoil the test. Remember the cruising speed you established before you started the aerobatic elements of the flight and stick with that or go slightly slower. Okay, it's almost time to bring your model safely back to earth.

l.) Fly a rectangular landing approach and land (wheels to touch within a pre-designated 30 metre boundary). This final circuit of the test flight is exactly the same as the landing approach and overshoot that you just flew in j.) above, but with a termination of the flight as the model alights onto the strip. This criteria of a 30m boundary (Fig. 1) is worth a closer look here, though. I've yet to see an examiner measure out a 30m boundary when conducting a 'B' Certificate flight. Typically, what this request means is that the model should touch down at a point reasonably in front of the pilot and somewhere on the landing strip - a very broad 'spot landing', if you would.

Usually the examiner will make it clear before the test that the landing should touch down between "here and here" as he points along the strip / landing circle / football pitch - whatever you're using as your patch. Note that the model doesn't have to stop in this boundary, nor should it touch down before the boundary and taxi into the area, but it should land, preferably with the motor still running. I say that as it insinuates that you haven't floated over the area and elected to bang in a load of down elevator and dive for the spot! A three-point landing on a tail dragger or a fully flared main leg landing on a trike set-up is what we're looking for here, and is better achieved by a proper lined-up approach, good throttle management to descend to the strip, and a full landing flare with the model touching down in the correct place, just before the stall.

By the time you achieve the standard of flying where you're eligible for a 'B' Certificate you'll have landed many models many times, and you'll know the difference

Post-flight checks are something you'll be familiar with by now. Don't forget to follow frequency control procedures and clear the channel for others to use.

All you need do now is answer a few small questions from the BMFA bible.

between a good landing and a bad one. Try to make your 'B' Certificate flight test landing the best one you ever did! Here again, there are a few tricks you can employ to increase your chances of success in front of the examiner. Think about the height at which you're to start the approach. This should mirror your overshoot circuit, and if this was higher than the 40 feet you're currently flying at, think about gaining a little height as you go about the process of swapping circuits to achieve an into-wind landing. The landing circuit should commence over the patch and, again, heading into wind. It's very important that you call "landing!" quite loudly as you begin the task. Make sure that the examiner sees you visually check the area to satisfy yourself that it's safe to land the model. Remember to let him see you moving your head.

If you need to perform an overshoot instead of the landing you'd best make sure you have a very good reason for doing so! Lining the model up incorrectly or fluffing your throttle control isn't a good enough excuse, and you'll fail. People on the strip, pedestrians on the approach, or the sudden 'dead-stick' of another model in the circuit are legitimate reasons for calling off the landing approach early, and your examiner should direct you to abort the circuit if any of these things occur unobserved by you. Don't rely on it, though!

So, there it is. Model safely on the ground and you suddenly find yourself able to breathe again. Mind you, be careful because this flight isn't technically over. If all is well your model should be sat on the strip with the engine ticking over nicely, following the greaser of a landing you just pulled off. Don't blow it now by messing up a tricky taxi operation or carrying your transmitter

out onto the strip when you go to retrieve your model. Stop the engine, pass the transmitter to a helper (or the examiner if you like) and, observing that it's safe to do so, go and retrieve your aircraft from the landing zone. Once back at the pit area, go through the last task:

m.) Complete the post-flight checks as required by the BMFA safety codes. These post-flight checks are listed in your BMFA member's handbook, and are detailed as follows:

1. Receiver off, then transmitter off.
2. Clear the frequency control system.
3. Clean the aircraft down.
4. Check propeller, airframe, undercarriage, wing fixings etc. for security of fastening and possible flight or landing damage.

These are all fairly clear from their descriptions, but to be sure that you're observed doing them, go a little 'over the top' with your post-flight checks and make a point of exaggerating them a little, just as we did for the pre-flight checks. Leave nothing to chance by assuming that the examiner has seen you do them.

A word of caution about electric-powered models here: these should be considered to be 'live' until the flight pack has been properly disconnected. The easiest way to ensure you treat them this way is to pretend that the motor is still running and carry the model or restrain it accordingly during retrieval.

Even though your electric-powered model doesn't require a 'clean down', go over it as if you were doing just that as it gives the opportunity to really look for any damage that you might have missed.

With the conclusion of the post-flight checks the first part of the test is over, and you can relax a little. It should be clear to you by now whether you've passed or failed the flying task, but if it isn't, just ask.

There's little point in sitting through the scary process of answering the part two questions if you need to fly again that day, although your examiner may request that you do so just for practice or to better assess your competency. If you failed the flying, well, you can have another go at it later the same day. If you clearly passed then well done to you, and we can move to the bit that terrifies most candidates... the mandatory questions. We'll look at these next time, when I'll wrap up this series. Hmm, by my reckoning that leaves you just one more opportunity to cram in some knowledge before you go for it!