



**BRITISH MODEL FLYING ASSOCIATION  
THE R/C ACHIEVEMENT SCHEME**

**TEST STANDARDS for CHIEF EXAMINERS  
and CLUB EXAMINERS**

**GUIDANCE for TEST CANDIDATES**

**THE FIXED WING POWER CERTIFICATES  
(Basic Proficiency, A & B)**

**2017 ISSUE**



## General

The Achievement Scheme is run by the BMFA as a National Scheme and it is open to all model flyers. Where a non-member wishes to participate in the achievement scheme the examiner who will be conducting the test must inform the BMFA office via email or telephone no later than the day prior to the test being carried out of the non-member's full name, address and the date that the test will be conducted. This enables the BMFA to extend insurance at suitable levels for the day of the test. If this procedure is not followed the test will be invalid.

The examination for a 'BPC' or A Certificate may be taken on application to any Registered Examiner.

The examination for a 'B' certificate may be carried out by:

(a) Two Registered Examiners (the 'lead' must be a Fixed Wing Examiner).

(b) A Fixed Wing Chief Examiner

**The candidate must successfully complete the test schedules in one attempt. A maximum of two attempts at the examination are permitted in any one day.**

## Basic Proficiency Certificate (BPC) & 'A' Certificate

The 'BPC' is a measure of flying ability and safety which "may be equated to a safe solo standard of flying" for aircraft that do not meet the requirements for the A certificate.

The 'A' Certificate is a measure of flying ability and safety which "may be equated to a safe solo standard of flying" and an increasing number of clubs use it as their 'solo' test.

**The test for the BPC is exactly the same as that conducted for the 'A' test, however there is a specific test form for the BPC, this is available from the office and can also be downloaded from the BMFA website downloads page.**

As an Examiner, the level of competence you should expect of a candidate should be based on that criterion; that is 'is this person, in your opinion, fit to be allowed to fly unsupervised'.

The candidate should have studied the BMFA handbook, CAP 658, any local site rules (if applicable) and be familiar with the 'Safety Code for General Flying' and the 'Operational Guide, All Models and Radio Control'. Besides being an excellent guide to the safe flying of model aircraft, most of the questions asked at the end of the test will be from these sections of the handbook and CAP 658.

There is a section in the Handbook that gives the relevant page numbers of these sections but remember that addendum sheets to the Handbook are published in BMFA News and on the BMFA website and these may also be relevant as they contain up-to-date information.

Also be aware that you may ask questions on any local site rules that the candidate should be aware of and these may form an important part of the test questions you ask.

## The 'B' Certificate

The 'B' Certificate is "designed to recognise the pilot's more advanced ability and a demonstrated level of safety which may be considered by an event organiser as suitable for flying at a public display."

As an Examiner, therefore, the level of competence required from a candidate should firstly be based on the question; 'has this person demonstrated their flying ability and safety to me in a satisfactory manner' and, secondly, 'how do I feel about them appearing in public, possibly at a large display, on the strength of the certificate which I may be about to award them'.

The aim of the 'B' certificate has always been to give the club flyer a personal attainment goal beyond the 'A' Certificate; a demonstrated level of competence and safety which is attainable by the average pilot with a little thought and practice.

For many years the 'B' Certificate has been seen by some as a 'display licence' but, whilst it certainly has its uses in the context of displays, it has always been much more than that. It was set up in the first place as a method of encouraging club flyers to gain further flying skills by meeting and being tested to a recognised national standard and this is still its main function.

The long term strategy behind this is that if enough club flyers qualify for their 'B' certificates then the general standard of flying both within your club and nationally cannot help but rise. Examiners should be pressing this concept positively within their clubs and discouraging the idea of the 'B' as 'just a display licence'.

**A candidate wishing to take the 'B' must already have passed the 'A' in that discipline.**

However where a candidate presents for a B test who does not already hold an 'A' certificate it is acceptable for the candidate to complete the flying portion of the 'A' test successfully and then move immediately to the flying portion of the 'B' test before attempting the test questions.

If the candidate passes the 'A' flying test but fails the 'B', then you should ask the 'A' questions. If the candidate passes both the 'A' and the 'B' flying tests, then you should ask the 'B' questions.

Note that the 'A' flying test does not finish until the model has been retrieved and the post flight checks have been completed

The candidate for the 'B' should have studied the BMFA handbook and CAP 658 and be familiar with the 'Safety Code for General Flying', any local site rules (if applicable), the 'Operational Guide, All Models and Radio Control' and the 'Safety Code for Model Flying Displays'. Most of the questions asked at the end of the test will be from these sections of the handbook and CAP658.

## The Model

The tests can be performed with virtually any powered fixed wing model, i/c or electric. It is not expected that the test will be taken with an electric powered glider, however, as the Silent Flight Electric Certificates would be more appropriate to that type of model.

**For 'A' and 'B' tests the minimum weight of a model used is 1 kg (2.2 lbs.) without fuel but with batteries, and the use of gyros , autopilot or other electronic stability/pilot aids is not permitted during the tests. If any such system is fitted to the model it must be disabled during the tests and you should check that this has been done. The model must also be capable of taking off from the ground. *If these requirements are not met for the 'A' test, the examiner may only award the BPC on successful completion of the test.***

Whether the candidate takes a **BPC** or an 'A' cert depends entirely on what model they present for the test with;

- If the candidate presents with a model that is not capable of taking off from the ground they will take the **BPC**
- If the candidate presents with a model that is under 1kg, they will take a **BPC**, (irrespective of whether it has electronic stabilisation or not).
- If they present with a model with electronic stabilisation, they will take a **BPC** (irrespective of mass).
- If they present with a model without electronic stabilisation, which is over 1kg and capable of taking off from the ground, they will take an 'A' test.

Electric Powered Models must be treated as LIVE as soon as the main flight battery is connected, irrespective of radio state and great care must be demonstrated by the candidate. The arming sequence should be clearly understood and discussed/demonstrated to you by the candidate.

Whatever model is brought by the candidate it must be suitable to fly the manoeuvres required by the test they are taking.

It is a common misconception that the candidate for the 'B' Certificate needs to fly an 'aerobatic model'. In fact the test can be performed with most powered fixed wing models. The options allowed in the test mean that even a three channel trainer can cope if well trimmed and flown.

Having said this, on no account may the candidate use the performance of the model as an excuse for a poor performance on their part. For instance, a candidate flying a three channel model through the rolling manoeuvres accurately deserves the credit but one who makes a mess of the rolls with the same type of model cannot say that it is the fault of the model. You should make no allowances on this point.

You do not have the authority to alter the required manoeuvres to suit a model and if, in your opinion, the model is unsuitable for the test then you should explain this to the candidate and tell them that they cannot use that model. The selection of the model to do the test is the responsibility of the pilot and it is they you are testing, not the model.

Similarly, the type of model presented cannot be used as an excuse for not completing certain manoeuvres. A pilot cannot turn up with a twin, for instance, and then say that the spin is too dangerous because the model would not pull out of it.

Another important point to remember is that the candidate is not expected to build or even own the model they use. There is no reason why a flyer who does not own a suitable model could not borrow one from a friend or club mate.

## **Buddy Box Systems**

Buddy leads and other dual control training aids must not be used during any achievement scheme test.

## **Hand Launching**

The Member's Handbook states 'If, in the opinion of the Examiner the surface of the flying area is such that a rolling take-off would not be possible, hand launches may be permitted'.

The clear implication of this is that the candidate must turn up for the test with a model that is capable of taking off on its own undercarriage or from a dolly. If they bring a model that cannot take off from the ground then they may not take the 'A' or 'B' test under the 'suitable model' requirements but can attempt the basic proficiency test.

Note also that for the 'A' and 'B' tests you 'may' permit a hand launch. It's just as likely that you 'may not', in which case the test will have to be postponed and taken in better circumstances.

## **Height and Speed and Positioning**

The 'BPC' and 'A' certificate candidate should be a reasonably confident pilot, even though they may only have been flying for a few months, the 'B' certificate candidate should be a confident pilot and this should show in the height and speed at which they fly the test. Flying too high is not the mark of a confident pilot. The test should be flown at a height of between 100 and 150 feet (that is roughly three to five houses high); any higher could be a sign of lack of confidence.

Intelligent use of the throttle is an important factor in confident flying and you should watch out for this. A pilot who flies at take-off power throughout the whole flight should not pass; they are not thinking.

Most electric powered models will have speed controllers that are capable of excellent throttle control. However, if a model is fitted with a very basic type of speed controller which is capable of little more than an on-off action, the comments about speed may not apply and you will have to make some allowances for the fact. Discuss this with the candidate before the flight.

The distance out from the pilot is also extremely important. Any crossing manoeuvres during any one flight should be performed at a consistent appropriate and safe distance out from the pilot, depending on the size of the model being used to take the test, and you should establish this with the candidate prior to the test. Flying closer in or further out than this should be brought to the attention of the pilot and if he does not then comply with the requested crossing distance he must fail.

## **Consistency**

It is a requirement that "all manoeuvres are carried out in front of the pilot" with the implication that the model will be crossing in front of the pilot just beyond the take-off and landing area on several occasions during the flight. Care should be taken by the pilot that the line of approach each time is consistent and you should note if it is not.

For the 'BPC' and 'A' certificates the combination of reasonable height and good use of the throttle should mean that the model will be flying at constant height throughout most of the test and you should note if the height flown varies significantly. Slightly varying height and somewhat inconsistent lines are not necessarily reasons to fail the candidate but they do give you a good indication of the pilot's general level of competence and could influence your final decision. Very poorly flown height or lines are a sure sign that the pilot has not practised the test and are a legitimate reason to fail them.

For the 'B' certificate the combination of appropriate heights and good use of the throttle should mean that, although the model will be flying at various heights throughout the test, these heights will be flown in a steady and consistent manner and you should note if the height flown varies significantly when it doesn't need to. Unnecessary varying of height and inconsistent lines are valid reasons to fail a candidate at this level as they give a good indication of the flyers general level of competence and they should strongly influence your final decision. Poorly flown height or lines are a sure sign that the flyer has either not practised the test or has not reached the required standard of flying and are legitimate reasons to fail them.

### Continuity

Although the manoeuvres are set out in such a way that they can be flown one after the other as a schedule, this is **ABSOLUTELY NOT** what is expected. The candidate can opt to fly the test in this way but it is not mandatory. Most flights will have a combination of direct transitions and positioning circuits between manoeuvres and will help if you discuss this with the candidate before the flight. You, of course, should be watching any extra circuits just as carefully as the rest of the flight as they can tell you a lot about the competence of the flyer.

A pilot who transitions directly from one manoeuvre to the next is not to be penalised as this is quite acceptable but watch out for the pilot who hasn't practised enough. Trying to fly the test in this way can get them into some very awkward positions.

Two attempts per examination will be allowed in any one day.

### Trim

It is expected that the candidate will start the test with a model that has been trimmed out previously but they should be able to trim the model out in the air very quickly if necessary. If you see obvious signs that the model is out of trim and the candidate makes no attempt to rectify the matter you should seriously question their basic competence.

Any re-trimming should be done on the first circuit and if the pilot cannot accomplish this then you should again seriously think about their basic ability, especially if they put the model in any danger or the model flies behind the pilot or in any other unsafe areas.

### Nerves

Quiet competence is what you are looking for during the flight but most candidates will be nervous and you should make some allowance for this. If the flyer is very nervous you should seriously consider abandoning the test for the time being and offering the candidate a coaching flight or two to settle them down before re-taking the test. This can be done on the same day and can really help those candidates who have trouble with nerves when flying in a test situation.

### Repeating Manoeuvres

At 'BPC' and 'A' certificate level the manoeuvres are simple and the candidate should be competent to fly them with very few errors. At 'B' certificate level the candidate should be competent to fly the more advanced manoeuvres in the test with very few errors. If you see any major faults the test should be taken again. It may be, however, that the candidate will make a **minor** mistake on a manoeuvre and if you are not fully satisfied with what you have seen you should consider asking for the manoeuvre to be repeated.

Some judgement is called for on your part here. A major mistake is grounds for failing the candidate, especially if loss of control has occurred or a dangerous situation has arisen. You should definitely not let them have multiple attempts at each manoeuvre until they get it right but you must give yourself the best chance of assessing the competence of the pilot you are testing.



You should consider what you have seen the model do and if you think to yourself "could be better" then a request that the manoeuvre be repeated may be considered. Be extremely careful about using this option, however, as you could very easily be degrading the worth of the test. It must not, under any circumstances, degenerate into a series of 'practice' manoeuvres.

### **Repeating the Test**

The rules allow two attempts at the test in a day. If the candidate fails the first of these you must consider their performance in deciding what to do next. Many failures will be reasonably good pilots or they could be borderline cases. In these circumstances it might be appropriate to offer one or two coaching flights and then a repeat of the test. Remember that many of the candidates will be unfamiliar with flying under pressure and might do very well on the second test.

On the other hand, it will probably be obvious to you on many occasions that the pilot you are testing is simply not ready for the test they are taking. In this situation it is better that you tell them so quite clearly. It could then be extremely useful for you to offer to fly a demonstration test for them (assuming that a suitable model is available to you and that you are happy to do so) so that they can gain an idea of the standard of flying required, especially if they have shown a lack of understanding of the manoeuvres and positioning. This, possibly along with a little coaching, is far more useful to everyone than simply telling the candidate that they have failed.

### **Interruptions to the Test**

A possibility that may occur during a test is an engine failure part way through which could very well lead to a damaged model. If this is the case then the test obviously cannot continue and you should invoke the rule that the test should be performed in one flight and count the flight as one of the two attempts allowed during the day.

Genuine engine trouble or even engine-out situations during the test may be dealt with in one of three ways.

If the test was being generally flown in a satisfactory manner and the problem can be rectified quickly then the candidate may be allowed to continue the test from the start of the manoeuvre in which the problem occurred.

If the problem cannot be rectified quickly but you consider that it was a genuine unforeseen occurrence, you may annul the test and not count it as one of the two attempts.

If the test up to the point of failure was not satisfactory, you have the option to cancel the rest of the test and count the flight as one of the two attempts allowed during the day.

Obviously, you will have to use your judgement on this matter as there will rarely be black and white situations but how they handled the emergency should be of great interest to you when you come to review the candidate's overall standard of flying.

### **Designated Landing Area**

Both the power-on and the deadstick landing have to be performed on the 'designated landing area'. The exact definition of this landing area must be left to the examiner as it will obviously depend on the flying site and possibly the weather conditions at the time of the test.

A point to bear in mind is that the fixed wing 'B' certificate test requires that the power on landing be performed with the 'wheels to touch within a pre-designated 30 metre boundary'. Any decision you make on the landing area for the 'BPC' and 'A' test must obviously not be more restricted than this but if you feel that the site and conditions warrant some relaxation of

this distance then it can certainly be allowed. However, the '30 metre boundary' does give you a useful starting point and one which you may feel comfortable with.

At your discretion you may allow a larger 'designated landing area' for the simulated deadstick landing than for the power on landing. If in doubt you should remember that it is not the intention to put the candidate's model in any danger but a good, controlled, into wind landing must be demonstrated. From 200 ft above the strip, however, it shouldn't be in the next field

It is very important that you discuss all this with the candidate before the test begins so that you are both in no doubt where and how big the designated landing areas are for both landings.

### **Intermediate Landing**

Exceptionally, at a pre-determined point in the flight an intermediate landing may be permitted for the sole purpose of either re-fuelling or the fitting of a freshly charged flight battery. This landing may only be made with the prior consent of the Examiners. The pre-determined point may be either after a specific manoeuvre or at a specific time of flight, whichever is requested by the candidate and agreed by the Examiners.

Full pre and post flight checks are not normally required during an intermediate landing and takeoff unless the model suffered a hard landing. However, the candidate should give the model at least a quick visual examination whilst on the ground.

## **Helpers for Disabled Candidates, Young Candidates and Others Who have Requested Help During the Test**

When disabled or young candidates present themselves for the test it may be that they will not physically be able to perform all the actions that most candidates can. At times, other candidates may also request help with certain physical aspects during the test (they may, for instance, have an injured finger). There will be times when you, as an Examiner, will think 'how much can I relax the test requirements for this person'.

Some Examiners make the decision to make no allowances at all but this effectively bars many people from attempting the tests. If we think of the achievement scheme as a true national scheme then we must consider how we can accommodate candidates, not how we can stop them from participating.

The answer, of course, is that you, as an Examiner, must make on-the-spot decisions about what you will allow during the test and, in such cases, you are within your authority to take such decisions. The guidelines set out below may help but at all times the two items at the end of this section must take precedence. They are not negotiable and mean that, whoever the candidate is, they have to convince you that they know what they are doing or what is happening for the full duration of the test.

For instance, a disabled flyer may have difficulty handling the model and may not be able to carry it out to the strip, release it for launch or retrieve it after the flight. The sensible use of a helper is certainly allowable in such cases but it is essential that they only do what the candidate asks them to do. Pre-flight checks and engine starting may be another problem area that can be overcome by a helper but you should expect the candidate to do as much of the work as possible themselves and they should be able to talk you through anything that the helper does for them. Be sure to discuss all this with the candidate before starting the test.

All of these comments can apply to younger flyers too but there is an added complication with engine starting. Many parents are very unhappy about letting their children near a running engine and will not allow them to start their own engines. This is a perfectly valid view and, again, is a case where a helper can be used. If this situation does occur with the younger candidates, however, you should insist that they do all the pre-flight and preparation work themselves, up to applying the starter to the engine. If they cannot do this then they should not pass.

After engine start, the helper can adjust engine controls and carry the model but only on the instructions of the candidate.

### **In all cases:**

- (1) If, at any time, the helper takes over the decision making process from the candidate then the candidate must fail.**
- (2) You can make no allowances whatsoever for anyone during the flying of the test. The candidate can either perform the flight manoeuvres as specified or they can't. If they can't then they must not be passed.**

Make sure in your briefing that both the candidate and the helper are fully aware of both of these points.

## The 'BPC' and A Test

### **(a) Carry out pre-flight checks as required by the BMFA safety codes.**

The pre-flight checks are laid out clearly in the BMFA handbook. The candidate should also go through the pre-flying session checks, also laid out in the handbook. Ask the candidate to go through their checks as if the test flight was their first flight of the day. Particular attention should be given to airframe, control linkages and surfaces.

Points to look for are that the candidate has a steady and regular ground routine, especially when starting and tuning the engine. Nerves may play a part in the pits but you should satisfy yourself that the candidate is actually in control of what they are doing when preparing their aircraft for flight.

A neat ground layout makes a good impression but bear in mind that many 'A' certificate candidates will not have been flying for too long and you should be prepared to make allowances. A poor performance in this area is not grounds for failing the candidate, however, but it is inevitable that you will be making mental notes of all aspects of the candidates competence and this is one that might have an effect on a real 'borderline' case.

Pay particular attention to the way the candidate uses the local frequency control system and make sure that they fully understand it and use the correct sequence appropriate to their model. For 35 MHz, this is usually 'get the peg, Tx on, Rx on'. For 2.4 GHz, the candidate should be aware of any local transmitter usage limitations and if a flight peg is required, it must be obtained before the Tx is turned on. Some radio equipment and, occasionally, a specific model requirement requires that the Rx be switched on first and, if this is the case, the candidate should explain this clearly to you.

With electric powered models, take note that the candidate is aware that the model is 'live' as soon as the flight battery is plugged in and that they take appropriate safety precautions. If a separate receiver battery is fitted, the candidate should have the opportunity to check the operation of the radio equipment before the flight battery is plugged in.

Watch carefully and take note that the transmitter controls, trims and switches are checked by the pilot.

All candidates are required to be aware of the local the frequency control system and anyone who is required to use it but switches their radio on before doing so should be failed on the spot.

If there is no one else available then there is nothing to stop you aiding the candidate by holding the model for the power check, carrying it out for take-off etc. but any such actions must be performed by you directly on the instructions of the candidate. You must not prompt them or carry out any actions of your own accord. Talk this over with the candidate in your pre-flight briefing.

If the test is being taken with an electric powered model then the candidate should show that they are familiar with the safe handling of such models.

In particular they must demonstrate to you the 'arming' sequence for their model. For safety reasons many speed controllers have a pre-programmed sequence of actions that have to be followed before the motor will respond to throttle stick movements. For instance, after switching on Tx and Rx and then plugging in the main flight battery, one type of controller requires that you move the throttle stick from low to full throttle and then back to low before the motor is 'armed' and ready for flight.

The candidate must be fully familiar with the system fitted to the model and should brief you on the system and demonstrate it working at some time during the pre-flight checks.

Generally, they must show that they are paying particular attention to the transmitter and receiver switch on sequence and they must make you aware that they are treating the model

as 'live' as soon as the flight battery is plugged in, no matter what arming sequence they may then have to go through.

The pilot must demonstrate the correct function of the failsafe, where appropriate, before committing to the flight.

**The pilot must stand in the designated pilot area for the entirety of the flying part of the test.**

**(b) Take off and complete a left (or right) hand circuit and overfly the take-off area.**

The model may be carried out to the take off position by the candidate or a helper or it may be taxied out from a safe position in front of the pits/pilots area. **Taxiing out of the pits is an instant fail.** Prior to carrying or taxiing out, the pilot should inform other pilots flying that his model is going out onto the active area.

Take off must be performed with the model a safe distance from the pilot box area and on a line which does not take the model towards the pits, other people or any other danger/no fly area.

Take off should be reasonably straight with the model not being pulled off the ground too soon. It can be a point in the flyer's favour if, in the case of the take-off going wrong, they abandon it in a safe manner. It's far better that they think about what they are doing rather than try to coax a model with a sick engine into the air. If a take-off is aborted in a safe manner you should immediately reassure the candidate that they will not be penalised for taking correct actions, even though these may conflict with what the test requires.

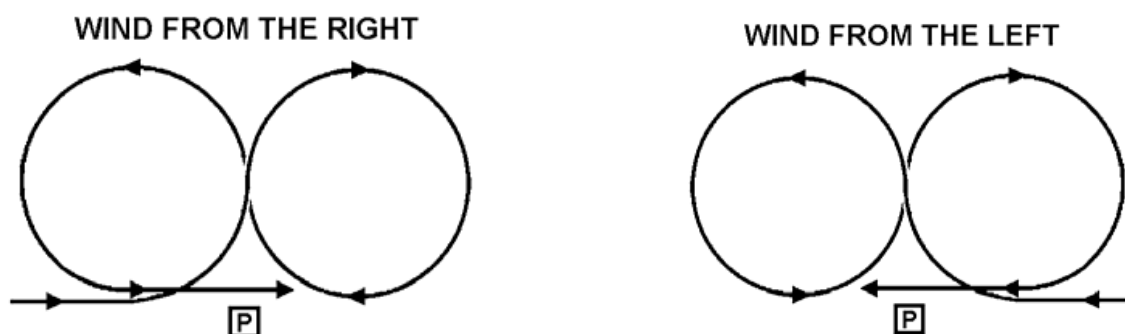
Climb out should be at a steady angle and straight until operational height is reached when the model should be levelled, the throttle brought back to cruise power and the model established in the circuit.

The type of circuit is not stated so either racetrack, rectangular or circular is acceptable. This choice of circuit type applies to the rest of the flight as well except when a certain type of circuit is specified for a manoeuvre.

On completion of the circuit, the model will be flying into wind past the front of the pilot and, for safety reasons, just over the far edge of the take off area. Tell the candidate prior to the flight the line that you want them to be following.

You must make sure that the candidate is clear on this, the line will be set by the model flying across in front of them on a heading which should be agreed before the flight (usually, but not always, into wind) and passing over a set point. This first pass in front of the pilot is extremely important as it sets the standard height and line for the rest of the test and this standard height and line will be referred to often in these notes.

**(c) Fly a "figure of eight" course with the cross-over in front of the pilot, height to be constant.**



The candidate should be aiming to fly the manoeuvre as shown in the diagrams above.

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots as part of the manoeuvre will produce a flight path opposing the normal circuit direction.

The model is flown on the standard line and height into wind across the landing area, a  $\frac{1}{4}$  circle away from the pilot is flown so the model is directly in front of the pilot and briefly flying directly away from the pilot, a full circle in the opposite direction is flown bringing the model back to in front of and heading away from the pilot, a  $\frac{3}{4}$  circle is then flown in the opposite direction to the full circle. The manoeuvre finishes, with the model flying into wind across the front of the pilot at standard line and height, not with another turn away.

The difficult part of the manoeuvre is the first full circle and it catches many people out. Most inexperienced flyers will try to fly this circle with a constant angle of bank but if they do this in anything above a flat calm the crossover point will drift downwind from the pilot. The pilot should fly this turn with varying angles of bank (less at the start of the turn, gradually adding more bank as the model turns downwind) so that the crossover is in front of them and heading away.

If they do not get this right they will either finish up with the crossover way downwind, fly too near the pilots line or panic as the model accelerates towards them as it begins to come downwind and pull far too much bank (vertical!) to get the crossover point correct. This is not a sign that they have thought about the manoeuvre or practised it.

The manoeuvre finishes, as in the diagrams, with the model flying into wind across the front of the pilot at standard line and height, not with another turn away.

#### **(d) Fly a rectangular circuit and approach with appropriate use of the throttle and perform a landing on the designated landing area.**

The pilot should call this manoeuvre out loudly as a **LANDING** during the standard line and height initial into-wind pass across the landing area and you should take note that they have visually checked the active area before and during the manoeuvre (watch for head movements). The ability to glance away from the model to re-check that the landing area is clear is important and is a skill that a 'solo standard' pilot should possess

If a landing is called when there is anyone out on the landing area (for instance taking off or retrieving models) who may not be in a position to hear the call then you may consider that the candidate has not given due consideration to field safety.

Watch out for the downwind leg not being flown parallel to the upwind leg and the turns being flown either too tight or too wide (most will try to fly them too tight and almost try to put a ninety degree 'snap' turn in which is **NOT** required). Throttle should be reduced either just before or just after the last crosswind turn with the crosswind leg descending into the turn on to final approach.

Once established on final approach, on line and descending, the candidate should make appropriate use of the throttle to set up and control the final descent rate. The aim of all this is to have the model at a speed, position and rate of descent which will guarantee a reasonably accurate touchdown on the landing area.

If the candidate opens the throttle and climbs away during the approach then they should have a very good reason, such as people walking out on to the runway. Any reasons offered by the candidate for an unscheduled overshoot **cannot** include not being lined up correctly or anything similar. However, if they do have good reason to perform an unscheduled overshoot and they handle the situation well then it would be fair for you to take this into consideration when summing up their flight.

If the test is taken with an electric powered model then you should be aware that 'appropriate use of the throttle' allows for different patterns of throttle use during the approach and landing and this will very much depend on the type of motor speed controller fitted to the model. With some controllers it is quite likely that the prop will be stopped at some points in the approach and also during the actual landing.

This is quite allowable but you must bear in mind that you are testing a rectangular circuit and power on landing so it is expected that the pattern flown by the model will equate closely with that which would be flown by an i/c powered aircraft.

**If the engine stops during the landing the model may be retrieved and the engine restarted to enable the remaining parts of the test to be completed.**

Unless otherwise agreed the candidate should NOT take their transmitter with them when retrieving their model and it should be left with a competent person. The transmitter should not be laid on the ground and if no one is available to hold it then you should offer. When the model has been retrieved and returned to the pits area the transmitter should be returned to the pilot.

If the landing was good, the candidate should give the model a quick visual check prior to restarting the engine and all the normal engine starting safety procedures should be followed, exactly as for the initial engine start.

Anything other than a good landing should mean that the candidate makes a more thorough check of the aircraft, possibly up to a full pre-flight check of the model if, for instance, it has turned over at the end of the landing run (which can happen even on the best landings).

**(e) Take off and complete a left (or right) hand circuit and overfly the take-off area**

If the engine remains running after the landing in (d), and the candidate is confident of their ability to do so, the model may be taxied back to the take-off point although this is not a requirement. If the engine stops during this manoeuvre the candidate should not be penalised and the normal retrieval and restart procedure should be followed.

If the model with its engine running is retrieved and replaced for take-off by a helper then it should be done with due regard for field safety. If no helper is available then you should offer to do this for the candidate.

**(f) Fly a rectangular circuit at a constant height in the opposite direction to the landing circuit in (d) above.**

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots, as the manoeuvre produces a flight path opposing the normal circuit direction. Any initial turn to position for this manoeuvre shall be away from the pilot box area.

Watch once again for parallel legs with reasonable turns and level flight. A common mistake is to turn on to the final crosswind leg (the upwind one) too soon. The result of this will almost inevitably be that the final turn of the manoeuvre will be too close to the pilot and may finish up as a 'panic' turn. Make sure that candidates give themselves plenty of room upwind, especially if the wind is at all strong.

**(g) Perform a simulated deadstick landing with the engine at idle, beginning at a safe height (approx. 200 feet) over the take-off area, the landing to be made in a safe manner on the designated landing area.**

The manoeuvre does not specify any particular type of circuit so the main thing to watch out for here is sensible circuit management with the model not being dived steeply or held off in too flat a glide. The pilot should do as many circuits as they feel comfortable with although this will very seldom be more than two. If there is any wind at all then they may be in trouble if they plan more than one. If they have not practised this manoeuvre it will be very obvious and if a safe controlled into wind landing is not achieved then the candidate should fail.

The pilot must call DEADSTICK when the examiner initiates the manoeuvre but watch carefully that they have visually checked the landing area before calling (look for head movements). They should be capable of taking their eyes off the model for a second or so in safety.

Pilots flying electric powered models are able to stop and start their motor at will and they have the ability to re-start their motor and climb away from a baulked motor-off landing if necessary. They are therefore able to safely perform a 'genuine' deadstick landing and this is what you should expect to see. They must, of course, call DEADSTICK immediately prior to starting the manoeuvre.

Be aware that many electric models will have propellers that sometimes 'windmill' on the glide. This is normal and acceptable and it should be obvious to you that no power is being applied to the propeller at the time.

**(h) Remove model and equipment from the take-off/landing area.**

The candidate should agree with the examiner beforehand whether they intend to take the transmitter with them when retrieving their model or choose to leave it with a competent person. The candidate must explain the safety considerations behind their decision, which must be agreed with the examiner. If the candidate elects not to take the transmitter and no one else is available to hold it then you should offer. Whatever process is agreed, it must also be in accordance with any relevant club rules, as appropriate. Generally, for 2.4GHz operations and with suitable consideration, candidates should be able to give a robust safety based argument for taking their Tx with them to recover the model, if it has landed on the normal landing/take-off area. Conversely, it is difficult to see how any such argument could be made for candidates using 35MHz or 27MHz equipment.

Remember that electric models must be assumed to be 'live' until the flight battery has been disconnected and the handling of the aircraft by the candidate must reflect this during retrieval and in the pits area.

**(i) Complete post-flight checks as required by the BMFA Safety Codes.**

These are set out clearly in the handbook but you should watch particularly that the Rx off, Tx off, frequency system cleared sequence is followed correctly.



## The 'B' Test

### **(a) Carry out pre-flight checks as required by the BMFA Safety Codes.**

The pre-flight checks are laid out clearly in the BMFA handbook. The candidate should also go through the pre-flying session checks, also laid out in the handbook. Ask the candidate to go through their checks as if the test flight was their first flight of the day. Particular attention should be given to airframe, control linkages and surfaces.

Points to look for are that the candidate has a steady and regular ground routine, especially when starting and tuning the engine. Nerves should not play a part in the pits and you should satisfy yourself that the candidate is fully in control of what they are doing when preparing their aircraft for flight.

A neat ground layout makes a good impression and is to be expected from 'B' certificate candidates.

A poor performance in this area is not grounds for failing the candidate, however, but it is inevitable that you will be making mental notes of all aspects of the candidates competence and this is one that might have an effect on a real 'borderline' case.

Pay particular attention to the way the candidate uses the local frequency control system and make sure that they fully understand it and use the correct sequence appropriate to their model. For 35 MHz, this is usually 'get the peg, Tx on, Rx on'. For 2.4 GHz, the candidate should be aware of any local transmitter usage limitations and if a flight peg is required, it must be obtained before the usual Tx on, Rx on sequence. Some radio equipment and, occasionally, a specific model requirement requires that the Rx be switched on first and, if this is the case, the candidate should explain this clearly to you.

With electric powered models, take note that the candidate is aware that the model is 'live' as soon as the flight battery is plugged in and that they take appropriate safety precautions. If a separate receiver battery is fitted, the candidate should have the opportunity to check the operation of the radio equipment before the flight battery is plugged in.

Watch carefully and take note that the transmitter controls, trims and switches are checked by the pilot.

All candidates are required to be aware of the local the frequency control system and anyone who is required to use it but switches their radio on before doing so should be failed on the spot.

If there is no one else available then there is nothing to stop you aiding the candidate by holding the model for the power check, carrying it out for take-off etc. but any such actions must be performed by you directly on the instructions of the candidate. You must not prompt them or carry out any actions of your own accord.

**The pilot must stand in the designated pilot area for the entirety of the flying part of the test.**

### **(b) Take off and complete a left (or right) hand circuit and overfly the take-off area.**

Take off must be done with the model a safe distance from the pits area and on a line which does not take the model towards the pits, other people or any other danger area.

The model may be carried out by the candidate or a helper or it may be taxied out from a safe position in front of the pits/pilots area. **Taxiing out of the pits is an instant fail.** Prior to carrying or taxiing out, the pilot should inform other pilots flying that his model is going out onto the active area.

Take off should be straight with the model not being pulled off the ground too soon. Abandoning the take-off for genuine reasons should not be penalised. It's far better that the candidate shows that they are thinking about what they are doing rather than trying to coax a model with a sick engine into the air. If a take-off is aborted in a safe manner you should immediately reassure the candidate that they will not be penalised for taking correct actions, even though these may conflict with what the test requires.

Climb out should be at a steady angle and straight until operational height is reached when the throttle should be brought back to cruise power, the model levelled out and the first turn of the circuit started.

The type of circuit is not stated so either racetrack, rectangular or circular is acceptable. This choice of circuit type applies to the rest of the flight as well except when a type of circuit is specified for a manoeuvre.

On completion of the circuit, the model will be flying into wind past the front of the pilot and, for safety reasons, just over the far edge of the take off area. Tell the candidate prior to the flight the line that you want them to be following.

You must make sure that the candidate is clear on this, the line will be set by the model flying across in front of them on a heading which should be agreed before the flight (usually, but not always, into wind) and passing over a set point. This first pass in front of the pilot is extremely important as it sets the standard height and line for the rest of the test and this standard height and line will be referred to often in these notes.

**(c) Fly a "figure of eight" course with the cross-over in front of the pilot, height to be constant. The examiners will expect this manoeuvre to be flown more accurately than the similar manoeuvre in the 'A' Certificate test.**

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots as part of the manoeuvre will produce a flight path opposing the normal circuit direction.

The manoeuvre should be flown slightly better than as shown in the 'A' Certificate diagrams in the handbook. The crossover point must always be in front of the pilot and, after a run in at standard height and line, the model **MUST** be turned through ninety degrees in the first turn so that it is flying exactly away from the pilot.

The first circle must also end with the model flying exactly away from the pilot, through the crossover point before it is turned into the second circle. Both circles should be of the same diameter as seen from the ground and this implies that they will be flown at varying bank angles.

The main problems with this manoeuvre nearly always happen on the first circle and if they do not get it right they will either finish up with the crossover way downwind, fly too near the pilots line or panic as the model accelerates towards them as it begins to come downwind and pull far too much bank (vertical!) to get the crossover point correct. This is not a sign that they have thought about the manoeuvre or practised it.

The second circle (3/4 circle actually) is rarely a problem. The manoeuvre finishes, as in the 'A' certificate diagrams, with the model flying at standard height and line across the front of the pilot, not with another turn away.

**(d) Fly into wind and complete one inside loop,**

Run in height and line in should be standard and the manoeuvre should be performed exactly in front of the pilot. A perfect loop is not required but the exit height and line should be very close to the original.

Skewing out is a sign that the model has not been trimmed correctly or that the wings were not level at the start of the manoeuvre. The pilot should not get into this situation to start with but if they do then they must be able to compensate; if they cannot then you have to draw your own conclusions. Watch that the throttle is used during the manoeuvre and penalise the pilot if they fly the manoeuvre at a constant high throttle setting.

**(e) Fly downwind and complete one outside loop downwards from the top i.e. a bunt.**

The climb to an appropriate height for the manoeuvre should be executed neatly and, after tracking in on the standard line, the bunt should be executed directly in front of the pilot. A perfect bunt is not required but the exit height and line should be very close to the original.

Skewing out is a sign that the model has not been trimmed correctly or that the wings were not level at the start of the manoeuvre. The pilot should not get into this situation to start with but if they do then they must be able to compensate; if they cannot then you have to draw your own conclusions.

The throttle should be closed for the first part of the manoeuvre but don't expect it to stay off for too long. Many models will not complete this manoeuvre if throttle opening is delayed to the bottom of the bunt.

**(f) Complete two consecutive rolls into wind.**

These should be performed from standard height and line and must be continuous rolls with no straight flight between them. The model should be half way through the two rolls when it passes in front of the pilot although you may allow a little leeway here.

There should be no serious loss of height or direction during the manoeuvre although slight barrelling of the rolls is permissible. The speed of the rolls should be such that the pilot has to make noticeable elevator inputs to maintain the model's height.

'Twinkle rolls' that are so fast that no visible elevator input is required are **NOT** acceptable, you have to be sure that the pilot is using the elevator. Slow rolls which require elevator and rudder input are acceptable if the pilot can perform them but are **NOT** a requirement.

Don't forget to note which way the model rolls.

**(g) Complete two consecutive rolls downwind using the opposite direction of roll rotation to that use in (f).**

All the comments in (f) above apply but you can allow a little more leeway on the centring of the manoeuvre as the model will be travelling faster over the ground. You should, however, be satisfied that the pilot is making a reasonable effort to centre the manoeuvre. Make sure that the model rolls in the opposite direction to (f).

### **(h) Complete a stall turn either left or right.**

This should be flown from standard height and line but not directly in front of the pilot. The model should be flown past the pilot for about 100 yards before the manoeuvre is performed, returning past the pilot at standard height and line when the manoeuvre is complete.

The direction of the stall turn should be nominated by you and it should be performed away from the flight line, i.e. if the wind is from the right, the model is flown past the pilot from left to right, pulled up and stall turned to the LEFT.

Although you should not expect a perfect manoeuvre, it should be a recognisable stall turn, not a chandelle or a wing over. The 'vertical climb and dive' should be near vertical, the throttle should be used in the appropriate manner and the model should not 'fly' over the top in a semi-circle.

### **(i) "Gain height and perform a three turn spin, the initial heading and the recovery heading must be into wind and the model must fall into the spin (no 'flick' spin entry)."**

The spin should be performed in front of the pilot but a little further out than the other manoeuvres. The height should be appropriate to the type of model being flown and the pilot should gain that height in a smooth and neat manner.

The model must be flown into wind and decelerated smoothly following a horizontal flight path, until the spin is entered at a point approximately in front of the pilot.

Ailerons may be used in the spin (and some models will not stay in a spin without aileron being used) but they must **NOT** be applied until the model has begun to fall. Note that this does not mean that the model must actually be **spinning** before the ailerons are applied but it must at least be **falling** into the spin.

A 'flick' entry, which is not allowed, will always result in one wing of the model **rising** as the manoeuvre is entered and part of the first rotation will take place in the horizontal plane instead of the vertical. In most cases it will then be very difficult to decide exactly when to start counting the turns of the spin, especially if the manoeuvre has been entered at too high a speed. Look carefully for all these points and insist on a correct low speed 'falling' entry to the manoeuvre.

After an appropriate time (depending on the model) controls must be centralised, any anti-spin actions taken (sometimes necessary) and the model recovered onto the same heading it had when the manoeuvre was started.

Allowances should be made for the heading of the model to be slightly off line (no more than ten or fifteen degrees) as the spin finishes but this should be corrected during the pull out. Do not accept a manoeuvre which requires more correction than this during the pull out.

If the pilot cannot take the model at least through the beginning of the spin in a competent fashion it is a sure sign that they have not practised the manoeuvre. If they make a good job of the entry but are not accurate enough on the exit, you might consider allowing another attempt at the manoeuvre as the spin can, on some occasions, be a difficult manoeuvre to predict, depending sometimes on the model as much as the pilot.

If the model shows a genuine inability to spin you should fail the candidate on the basis of attempting the test with an inappropriate model.

Do not accept any excuses from the pilot that his model is too fragile to spin; the section on the suitability of models applies.

**(j) Fly a rectangular landing approach and overshoot from below 10 ft. Note that this manoeuvre is a baulked landing, not a low pass.**

Watch out for the downwind leg not being flown parallel to the upwind leg and the turns being flown either too tight or too wide (most will try to fly them too tight and almost try to put a ninety degree 'snap' turn in, which is not a requirement). Throttle should be reduced either just before or just after the last crosswind turn with the crosswind leg descending into the turn on to final approach.

Once established on final approach, on line and descending, the throttle should be closed to idle to set up the final descent rate. The aim of all this is to have the model at a speed, position and rate of descent which will guarantee an accurate touchdown on the landing area. Only when this is **QUITE CLEAR** and the model is below 10 feet should the throttle be opened and the model climbed straight ahead back up to circuit height. Watch out for correct throttle control.

The pilot should call this manoeuvre out loudly as an **OVERSHOOT** and you should take note that he has visually checked the active area before and during the manoeuvre (watch for head movements).

Anything less than this is not satisfactory. Discuss this with the candidate before the flight as, if the overshoot is simply flown as a low pass, the candidate should fail.

Note that electric models are expected to follow typical 'i/c' flight patterns and that they can sometimes quite easily do that with propellers stopped. Don't be surprised if this happens, just take note that the flight path the model takes is what you would expect of an i/c model. These comments apply to the landing too.

**(k) Fly a rectangular circuit in the opposite direction to that in (j) at a constant height of not more than 40 feet.**

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots as part of the manoeuvre will produce a flight path opposing the normal circuit direction.

The comments above about parallel upwind and downwind legs and the type of turns required all apply. Height control should be good with no wavering and 40 feet is just over one house high.

**(l) Fly a rectangular landing approach and land (wheels to touch within a pre-designated 30 metre boundary).**

All the comments in (j) above apply except that the pilot should call **LANDING**. The visual checks of the active area are very important and as in (j) you should watch for head movement.

If the candidate opens the throttle and climbs away then they should have a very good reason, such as people on the runway. Any reasons offered by the candidate for an unscheduled overshoot cannot include not being lined up correctly or anything similar. At this stage they should be capable of getting it right.

**(m) Complete the post flight checks as required by the BMFA safety Codes.**

The candidate should NOT take their transmitter with them when retrieving their model. If no one else is available to hold it then you should offer. When the model has been retrieved and returned to the pits area the transmitter should be returned to the pilot.

The post flight checks are set out clearly in the handbook but you should watch particularly that the 'Rx off, Tx off, frequency system cleared' sequence is followed correctly.

## The Questions

Having successfully completed the safety and flying elements of the test, the candidate must then answer correctly five mandatory questions based on legal compliance, as well as a **minimum** of five further supplementary questions on safety matters, based on the BMFA Safety Codes for General Flying and local flying rules etc. for the for 'BPC' and 'A' certificate and a minimum of eight further questions on safety matters, based on the BMFA Safety Codes for General Flying and local flying rules and the 'Safety Code for Model Flying Displays' for the 'B' certificate.

Remember that on **no account** can a good performance on the questions make up for a flying test that you considered a failure. If you have failed the candidate's flying you should not even start to ask the questions. On the other hand the achievement scheme is a test of both flying ability and knowledge. It doesn't matter how well the candidate can fly, if they cannot answer the questions they should not pass.

### Mandatory Questions

From April 2016 it is a requirement of all tests that candidates must answer correctly 5 questions taken from the list of mandatory questions based on legal aspects of model aircraft flying. (See Appendix 5) The examiner should only ask 5 questions and if the candidate does not know the answer to any question the test must be considered as a fail.

**The examiner should indicate on the test form which questions have been asked.**

It is expected that examiners will select questions that are appropriate to the test being taken, however candidates should familiarise themselves with all of the questions on the list. Candidates are not expected to be "word perfect" with their answers but they should be able to demonstrate that they are fully aware of the legal controls for model aircraft flying. For example if a candidate gives the answer to Question 4 (What does article 138 of the ANO state?) when asked Question 3 (What does article 137 of the ANO state?) it is likely they are aware of both answers and the examiner should point out they have answered the wrong question and ask for the correct answer.

### Supplementary Questions

How many supplementary questions you should actually ask will depend on the circumstances at the time. For instance, if the candidate has done a good flying test and answers the first five questions (eight for B certificate) with confidence then you need go no further. An acceptable test but with some rough edges can be offset to an extent by the candidate performing well in the first five questions.

A candidate who has done a test which you found only just acceptable and who hesitates on the questions should be asked a few more than five/eight and if you are not satisfied that they have actually read the safety codes, you should not hesitate to fail them.

As an examiner, however, you should prepare yourself thoroughly for any testing that you do and you may wish to sort out your own personal and private list of sensible questions. Don't forget that you can use any local rules which you know and which the candidate should be aware of.

Remember that the majority of questions you ask are to be BASED on the BMFA Safety Codes; you are not expected to ask them 'parrot fashion' and the candidate is not expected to answer that way either.

This opens up the possibility of asking a candidate if they can think of reasons behind specific rules. For instance, why is the club frequency control system operated as it is and what might go wrong?, or why should models not be taxied in or out of the pits area? There is always the possibility that the examiner may use the supplementary questions to further explore the candidates understanding of the mandatory questions.

## Administration

There are specific forms for Examiners to use during the Fixed Wing tests, and if you do not have one then a call to the BMFA Leicester office will have some in the post to you by return.

**For the 'BPC' or 'A' certificate examiners must clearly indicate on the pass forms which certificate has been awarded.**

**Examiners must also indicate in the area provided which 5 of the mandatory legal questions have been asked.**

Completed forms should be sent to the Leicester office within seven days of the test and, whilst they must be filled in by the Examiner, they may be sent in to the office by either the Examiner or the Candidate. You should take great care that all the details are filled in correctly, especially the successful candidates **NAME** and their **BMFA number** (this can save a great deal of confusion). If the candidate is not a BMFA member then it is especially important that you get their name and address correct and in full.

This is very important as what is seen on the pass form is what will appear on the final certificate. It is embarrassing for you to have to send one back to be re-done and it gives the candidate a definite impression of sloppy work by someone.

**Please note that the A4 Certificate(s) and updated membership card are not routinely sent directly to the individual tested.** However, the Leicester office will send the documents directly to the individual, upon direct and specific request from the Examiner concerned.

## Appendix 1

### Examiners and Candidates 'BPC' and 'A' Test Check List

The following is a short checklist of matters to discuss with the candidate taken from this document. This checklist can be used to ensure that all points raised above have been discussed with the pilot prior to any flights:

- 1 Has the candidate read: -  
The BMFA handbook  
Local site rules (if applicable)  
'Safety Code for General Flying'  
and 'Operational Guide, All Models and Radio Control'.
  
- 2 Discuss whether the model is suitable in "these conditions"
  
- 3 Any "no fly zones" need to be identified
  
- 4 Remind candidate to talk you through anything that the helper may do for them as the test progresses
  
- 5 Agree any Airspace requirements that need to be pre-determined by the Examiner and Candidate prior to the commencement of the test flights
  
- 6 Clearly identify the landing area and agree with the candidate the required landing pattern that he will be flying and you will be looking for.



## Appendix 2

### Examiners and Candidates 'B' Test Check List

The following is a short checklist of matters to discuss with the candidate taken from this document. This checklist can be used to ensure that all points raised above have been discussed with the pilot prior to any flights:

- 1 Has the candidate read: -  
The BMFA handbook  
Local site rules (if applicable)  
'Safety Code for General Flying'  
'Operational Guide, All Models and Radio Control'  
Code of Practice for Model Flying Displays
  
- 2 Discuss whether the model is suitable in "these conditions"
  
- 3 Any "no fly zones" need to be identified
  
- 4 Remind candidate to talk you through anything that the helper does for them as the test progresses
  
- 5 Agree any Airspace requirements that need to be pre-determined by the Examiner and Candidate prior to the commencement of the test flights
  
- 6 Discuss the various manoeuvres and any options that may be available so that there can be no misunderstanding during the test
  
- 7 Clearly identify the landing area and agree with the candidate the required landing pattern that he will be flying and you will be looking for.

**Appendix 3**

**‘A’ CERTIFICATE (FIXED-WING)  
Examiners Test Flight Check List**

Candidates Name	BMFA Number	Date	Examiners
FLIGHT TASK		COMMENTS	
(a)	Carry out pre-flight checks as required by the BMFA Safety Codes.		
(b)	Take off and complete a left (or right) hand circuit and overfly the take-off area.		
(c)	Fly a ‘figure of eight’ course with the cross-over point in front of the pilot, height to be constant.		
(d)	Fly a rectangular circuit and approach with appropriate use of the throttle and perform a landing on the designated landing area.		
(e)	Take off and complete a left (or right) hand circuit and overfly the take-off area		
(f)	Fly a rectangular circuit at a constant height in the opposite direction to the landing circuit flown in (d).		
(g)	Perform a simulated deadstick landing with the engine at idle, beginning at a safe height (approx. 200 ft) over the take-off area, the landing to be made in a safe manner on the designated landing area.		
(h)	Remove model and equipment from take-off/landing area.		
(i)	Complete post-flight checks required by the BMFA Safety Codes.		
Answer five questions from the list of mandatory questions on legal aspects of model aircraft flying.			
Answer a minimum of five questions on safety matters from the BMFA Safety Codes and local flying rules.			

**Appendix 4**

**'B' CERTIFICATE (FIXED-WING)  
Examiners Test Flight Check List**

Candidates Name	BMFA Number	Date	Examiners
FLIGHT TASK		COMMENTS	
(a)	Carry out pre-flight checks as required by the BMFA Safety Codes		
(b)	Take off and complete a left (or right) hand circuit and overfly the take-off area.		
(c)	Fly a 'figure of eight' course with the crossover point in front of the pilot, height to be constant		
(d)	Fly into wind and complete one inside loop		
(e)	Fly downwind and complete one outside loop downwards from the top (a bunt).		
(f)	Complete two consecutive rolls into wind		
(g)	Complete two consecutive rolls downwind using the opposite direction of roll rotation to that used in (f) above		
(h)	Complete a stall turn either left or right		
(i)	Gain height and perform a three turn spin		
(j)	Fly a rectangular landing approach and overshoot from below 10 ft		
(k)	Fly a rectangular circuit in the opposite direction to that in (j) at a constant height of not more than 40 feet		
(l)	Fly a rectangular landing approach and land (wheels to touch within a pre-designated 30 metre boundary)		
(m)	Complete post-flight checks as required by the BMFA Safety Codes.		
Answer five questions from the list of mandatory questions on legal aspects of model aircraft flying.			
Answer satisfactorily a minimum of eight questions on safety matters based on the BMFA Safety Codes for General Flying and Model Flying Displays and local flying rules.			

## Appendix 5

### Mandatory Question List

- Q(1) Who Regulates all civil flying activities over the United Kingdom, including model aircraft ?**  
A The Civil Aviation Authority
- Q(2) How are the rules and regulations for flying established in law by Parliament (statute) ?**  
A As a series of Articles contained within in the Air Navigation Order (ANO).
- Q(3) What does Article 240 (previously 137) of the ANO state ?**  
A 'A person must not recklessly or negligently act in a manner likely to endanger an aircraft, or any person in an aircraft.'
- Q(4) What does Article 241 (previously 138) of the ANO state ?**  
A 'A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property.'
- Q(5) Who is legally responsible to ensure that a model is flown safely ?**  
A The pilot in command
- Q (6) Which Civil Aviation Publication (CAP) relates specifically to the use of model aircraft, and for which specific purposes only?**  
A CAP 658, for sport and recreation purposes only
- Q(7) According to CAP 658, which model aircraft are required to have an operating failsafe and what is the minimum setting ?**  
A  
1) Any aircraft >7kg  
2) Any Gas Turbine powered aircraft  
3) Any powered model aircraft fitted with a receiver capable of operating in failsafe mode  
As a minimum, reduce the engine(s) speed to idle on loss or corruption of signal.
- Q(8) What does Article 94 (previously 166) of the ANO say about the responsibilities of the person in charge of a small unmanned aircraft ?**  
A The person in charge of a small unmanned aircraft may only fly the aircraft if reasonably satisfied that the flight can safely be made.
- Q(9) What does Article 94 (previously 166) of the ANO say about visual contact with small unmanned aircraft ?**  
A The person in charge must maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions.
- Q(10) What does Article 94 (previously 166) of the ANO say about small unmanned aircraft above 7kg ?**  
A The person in charge of a small unmanned aircraft which has a mass of more than 7 kg must only fly the aircraft:  
• Clear of controlled airspace unless with Air Traffic Control (ATC) permission.  
• Clear of any Aerodrome Traffic Zone (ATZ) unless with ATC permission.  
• At less than 400 ft above the point of launch except with permission as above.
- Q(11) What does Article 94 (previously 166) of the ANO say about 'commercial operation' (previously referred to as aerial work) for small unmanned aircraft ?**  
A The person in charge of a small unmanned aircraft must not fly the aircraft for the purposes of aerial work except in accordance with a permission granted by the CAA.

**Q(12) How is a flight for the purpose of 'commercial operation' (previously referred to as aerial work) defined ?**

A Any flight for which 'valuable consideration' is given or promised in respect of the flight or the purpose of the flight. Essentially any gain you may make from the work undertaken.

**Q(13) How is 'a small unmanned surveillance aircraft' defined ?**

A An aircraft which is equipped to undertake any form of surveillance or data acquisition. (this includes all camera equipped aircraft)  
NOTE: The provision of data solely for the use of monitoring the model is not considered to be applicable to the meaning of 'surveillance or data acquisition'.

**Q(14) What are the separation requirements of Article 95 (previously 167) - for small unmanned surveillance aircraft - when operating over or within a congested area or organised open-air assembly of more than 1,000 persons ?**

A The aircraft must not fly over or within 150 metres of a congested area or organised open-air assembly of more than 1,000 persons

**Q(15) What are the separation requirements of Article 95 (previously 167) - for small unmanned surveillance aircraft - in respect of any vessel, vehicle or structure which is not under the control of the person in charge of the aircraft ?**

A The aircraft must not fly within 50 metres of any vessel, vehicle or structure not under the control of the person in charge of the aircraft.

**Q(16) Except during take-off and landing, what are the separation requirements of Article 95 (previously 167) - for small unmanned surveillance aircraft – excluding the person in charge of the aircraft or anyone under their control ?**

A The aircraft must not fly within 50 metres of any person

**Q(17) What must be obtained before any flight within controlled airspace or an ATZ of an aircraft over 7kg?**

A Obtain permission from the appropriate air traffic control unit.

**Q(18) CAA General Exemption E 4049 - permits FPV flight without a buddy box, but with a competent observer. (a) How must the competent observer monitor the flight and (b) What is the maximum mass of aircraft that may be flown under this exemption?**

A

- (a) The competent observer must maintain direct unaided visual contact with the model at all times
- (b) The aircraft must be below 3.5kg including batteries and fuel

**Q(19) Who has legal responsibility for the safety of an FPV flight a) conducted with a buddy box lead and b) conducted without a buddy box lead ?**

A

- (a) The person in charge who must maintain direct unaided visual contact with the model at all times
- (b) The person piloting the aircraft (SUA)

**Q(20) According to CAP 658 what are the 8 'Only fly if' checks for an FPV flight of an aircraft over 3.5kg ?**

A

- The activity is solely for 'sport and recreation' purposes;
- Two pilots take part;
- A Buddy Box system is employed;
- The person in charge operates the master transmitter;
- The person in charge does not wear the headset or view a screen;
- The aircraft remains within the natural unaided visual range of the person in charge;
- Reliable operation of the Buddy Box is established; and
- A clear handover protocol is established.





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