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

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

GUIDANCE for TEST CANDIDATES

**THE SILENT FLIGHT ELECTRIC CERTIFICATES
(A & B)**

2022 ISSUE

(Jan 2022)

The Achievement Scheme Review Committee strongly recommends taking the "on line" BMFA Registration Competency Certificate (RCC) in advance of the test. This RCC test is updated in line with legal requirements, which helps to ensure all model pilots are both informed and current and is standardised for all candidates. As a test candidate if you can evidence a pass of the latest RCC version to the examiner there will be NO requirement to answer the 5 mandatory questions.

Achievement Scheme Information & Communication

The BMFA Achievement Scheme provides every RC flyer the opportunity to set themselves an achievement target to aim for, and then have their progress assessed and confirmed by an examiner.

It is important that All those involved in training, examining and preparing for the tests, are well informed and up to date with all that the scheme has to offer. To this end, and to aid communication, important information regarding scheme developments, as well as details of all of the tests and their associated guidance documents, are made available to everyone via a number of sources, which include:-

- The Achievement Scheme website - <http://achievements.bmfa.org/>
- The BMFA website - <http://bmfa.org>
- The BMFA News
- The Achievement Scheme closed Facebook group

It's important to appreciate that **ALL** of the scheme documents are reviewed and updated on an annual basis. Whichever document you are using, you will know if you have the right one, simply by looking at the date on the front cover. If it's not dated with the current year, it's the wrong one!

Most BMFA Clubs have Club Instructors/Examiners who will be familiar with the scheme and what is expected of anyone thinking of participating. If your club does not have a club examiner then each BMFA Area has an Achievement Scheme Coordinator (contact details can usually be found on the BMFA Area website) who can usually help in coordinating tests, or answering queries about tests etc. All BMFA Areas have Area Chief Examiners who would normally undertake Club Examiner tests, but are also available to help out with club tests, if requested. Importantly, they are also very knowledgeable about the scheme and its requirements. Area coordinators can often find an ACE that is close to your club, if you are having difficulty arranging for a test.

All BMFA Achievement Scheme & training documents are available to download from the BMFA Achievement Scheme website <http://achievements.bmfa.org/>. You can also register your email address with the Achievement Scheme website and receive email notification of any news flashes, notification of scheme events and updates to documentation etc. as soon as they are published.

The Achievement Scheme also has a closed Facebook group (you just have to apply to be included) where comment and queries can be posted and examiners/instructors and members of the Achievement Scheme Review Committee can answer questions, or offer clarification.

If you have any query about the scheme or constructive comment on the scheme you can contact the Power/Silent Flight Scheme Controller (RCPAS@bmfa.org), or the Achievement Scheme Review Committee, via the BMFA Office.

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 an 'A' Certificate may be taken on application to any BMFA Examiner. The examination for a 'B' certificate may be carried out by:

(a) Two BMFA Club Examiners (the 'lead' must be a Silent Flight Examiner).
or

(b) A BMFA Silent Flight 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.

Legal Responsibilities

Only pilots with a suitable model that are operating legally are eligible to take the test.

There are clearly defined legal requirements for the operation of Small Unmanned Aircraft (model aircraft), from passing a CAA (or BMFA) legal & safety knowledge test before piloting a model, to registering with the CAA as an SUA Operator (can also be done via the BMFA) if the pilot is also the owner and operator of the model aircraft, then ensuring the SUA Operator identity number is appropriately attached to the model. There are also restrictions on where a model can be flown and the heights and distances from people, property, vehicles or structures that the model can be operated. Finally, there is a legal requirement to operate the model safely e.g. ensuring the model is 'fit for safe flight' and the pilot is in a fit state to undertake that flight, as well as the site and weather conditions being suitable.

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.

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'.

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 candidate should have studied the BMFA Member's Handbook and the associated Annexes and safety codes. As well as 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 sources.

Remember that the Member's Handbook and associated annexes etc. are now 'active' documents published on the BMFA website. <https://handbook.bmfa.uk>

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.

Please note that Basic Proficiency Certificates are not applicable to silent flight tests.

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 Model

The test can be performed with virtually any Electric Powered Glider model, but not an Electric Powered Sports model as the Powered Flight Certificates would be more appropriate to that type of model.

The use of a gyro or autopilot is not allowed during the test. If any such system is fitted to the model it must be disabled during the test and you should check that this has been done.

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

Electric Powered Gliders must be treated as if the motor is running as soon as the system is armed (i.e. main flight battery connected irrespective of Radio state). The arming sequence should be clearly understood and discussed/demonstrated to the examiner. Also, some planes use a switched system (100% or nothing) and if the system being switched is powerful it can cause a significant torque roll. The candidate should be aware if this is the case and discuss it before the test flight(s) as it may cause issues in some of the manoeuvres and they will have to correct the flight path smoothly and you will need to allow for deviations.

Buddy Box Systems

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

Launch Height, Flight Time and Weather

The '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.

As gliders are far more affected by the conditions than most models even full launch height may not give sufficient flight time for the full test. If conditions are difficult the Examiner should discuss whether the model is suitable in "these conditions" and thus whether the test should be attempted. Remember the use of a "suitable model" is the candidate's responsibility and so it is their decision whether to attempt the test. For example a fast flying Hot-liner style may easily cope with a day which would be impossible with a simple lightweight Rudder/Elevator design.

However, the test is not about performance, it is about aircraft handling and a well flown model in conditions not really suitable for it does deserve credit.

Consistency

The combination of reasonable launch height and good speed control should mean that the model will be flying at a gently decreasing height throughout the first section of the test and you should note if height is lost unnecessarily.

It is a requirement that "All manoeuvres must be carried out in airspace pre-determined by the Examiner and Candidate prior to the commencement of the test flights". Thus any "no fly zones" need to be identified and discussed prior to the flight. This conversation is also the examiners chance to clearly identify the landing target and agree with the candidate the required landing pattern that is being looked for.

Somewhat inconsistent flight paths 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 poor positioning is a sure sign that the pilot has not practised the test and is a legitimate reason 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 required. The candidate may opt to fly the test in this way, but it is not mandatory. However, the manoeuvres must be flown in the order specified for the test i.e. (a), (b), (c) etc. – see individual test checklist. Most flights will have a combination of direct transitions and positioning circuits between manoeuvres and it 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.

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 if necessary. If you see obvious signs that the model is out of trim and the candidate does not make any attempt to rectify the matter you should seriously question their basic competence.

On the other hand, if they do need to re-trim and are making attempts to do so, you should make allowances for a short time of flight with a somewhat erratic flight path. This should not be penalised unless it puts the model in any danger or unless the model flies into any unsafe area.

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 '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 tries 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. Also be aware of the height of the model and the remaining manoeuvres required.

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 plane 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.

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, 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 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.

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 Flights

PREAMBLE

Some sites have very specific rules about sharing with other users e.g. airspace sharing with hang gliders, para gliders, or other full-size aircraft, and ground based activities like walkers or riding. The examiner must ensure that he, as well as the candidate, is fully aware of these requirements before commencing the test.

Any failure by the candidate to observe these rules during the flight should result in a failure.

For all these reasons, it is good practice for the examiner to ask the candidate for his assessment of the risks observed at the site before preparing to fly and to be clear how the candidate will conduct the flight so as to minimise any such risks. An insufficient grasp of these factors will normally be grounds to postpone the test, assisted by some mentoring from the examiner and further work with the candidate's trainer or club colleagues using that site.

Alignment and/or track of the manoeuvres should be discussed and agreed before commencement of the test, taking into account the existing/forecast wind direction, position of the Sun on bright days and any site restrictions and/or no fly areas. Where the test includes reference to wind direction (e.g. "into wind") this will form an important part of the discussion.

The 'A' Test

(a) Carry out pre-flight checks as required by the BMFA Safety Codes. Particular attention should be given to airframe, control linkages and surfaces.

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, which should include inspecting the propeller, the motor mounting and the physical battery condition. Nerves may play a part but you should satisfy yourself that the candidate is actually in control of what they are doing when preparing their aircraft for flight.

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 and releasing it for the launch phase 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.

The candidate must be fully familiar with any failsafe 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 on - receiver on' sequence.

Electric powered models MUST be considered live as soon as the flight battery is plugged in. Great care should be taken at this point and any help available to the candidate should be used in the interests of safety.

(b) After complying with the site frequency control system, prepare the model for launch. The motor start and stop switch/speed controller sequence must be demonstrated to the examiner

After complying with the site frequency control system, prepare the model for launch. The motor start and stop switch/speed controller sequence must be demonstrated to the examiner

The correct power on sequence is critical to the safe operation of Electric Powered Aircraft. After the normal 'transmitter on - receiver on' sequence (if a separate Rx pack is used) the Candidate should clearly check the radio is operational and the throttle is closed (or control switch is in the off position) before the flight battery is connected. The motor start and stop switch/speed controller sequence must be demonstrated to the examiner and the arming sequence of the controller (if any) should also be discussed to prove the candidate understands their equipment.

As always any infringement of the site frequency control system should result in a test failure.

(c) Check that the launch area and landing area are clear both on the ground and in the air. If a helper is used to launch the model they should be fully briefed as to what is required.

Check that the launch area and landing area are clear both on the ground and in the air. If a helper is used to launch the model they should be fully briefed as to what is required.

A helper may launch the aircraft. The normal helper rules apply and the candidate must clearly be in charge.

(d) Clearly announce, “launching” and launch the model under full control. Any deviation from the expected launch path must be corrected smoothly and quickly. Climb to approximately 400 ft. Switch off power and transition to glide without stalling.

The Launch should be clearly under control and any deviations smoothly and swiftly corrected. The launch should appear competent and it is acceptable to discuss the 400ft height during the launch (As heights are very hard to estimate) and agree when to terminate the climb phase.

Depending on the climb performance of the aircraft a number of circuits may be needed to reach the desired 400ft. With more powerful types a straight climb out may be used. Whatever the flight profile it must be smooth and controlled. Watch out for the pilot with a very powerful aircraft as it may go towards (or even beyond) the vertical in the climb. The pilot must remain in control and you need to judge if the pilot is in charge of the model or it is just flying itself in the correct general direction.

A smooth transition to gliding flight is required and again a candidate with a more powerful type may have problems here.

REMEMBER NO POWER TO BE USED DURING THE NEXT 3 MANOEUVRES

(e) Stall the model into wind and recover smoothly with a minimum loss of height.

At the Examiners call the model should be stalled into wind and recovered smoothly with minimum loss of height, tracking into wind.

The examiner should call this manoeuvre clearly (and calmly) and the candidate then slows the model to a stall and recovers with a minimal loss of height. A severe pitch up is NOT wanted and should be avoided as it demonstrates that the candidate is not familiar with stall procedures.

Some gliders will drop a wing no matter how straight and level the stall itself is. So long as the candidate recovers to their original track in a smooth, controlled and timely manner this should not be penalised.

(f) Perform 3 consecutive 360 degree thermal turns to the right or left ending on the same track as the entry with minimum loss of height. The turns should be under control with no tendency to stall or enter a spiral dive.

The turns should be of a consistent rate and the model should be allowed to drift with whatever wind is present. We are not looking for nice circles from the ground but for a steady rate of turn as would be needed to stay with thermal lift.

If the pilot is lucky enough to find lift this is a bonus but it certainly is not required. Any turbulence caused by the lift should be allowed for when judging the turns. If the air is extremely turbulent it may be easier for all concerned to ask the candidate to fly away from it and demonstrate the turns in more stable air.

Make sure you note the direction of the turn and watch for any excessive height loss or erratic movements that cannot be attributed to turbulent air.

(g) Perform 3 consecutive 360 degree thermal turns in the opposite direction to above ending on the same track as the entry with minimum loss of height. The turns should be under control with no tendency to stall or enter a spiral dive.

As with the first set of turns a drift with the prevailing wind at a steady rate of turn is required. It may be necessary to fly the model back up wind to a safe position before this section is started. Allow the candidate to nominate when he is ready and in position to start. Of course we are looking for the opposite direction turns with the rest of the requirements as outlined in (f).

FROM THIS POINT ON, POWER SHOULD BE USED AS REQUIRED

(h) Fly the model up wind to prepare the model for the overshoot/landing phase. The model should be flown with no tendency to stall and with minimum loss of height.

A reference point should have been agreed before the flight for a suitable upwind position. Reaching the point exactly is not critical but you are looking for the pilot to fly smoothly into the agreed area and then position themselves at a suitable height for landing.

Watch head movements that show the candidate is checking the landing area is clear.

(i) Call "landing" and prepare the model for a landing with a down wind leg, followed by a base leg and final approach.

When the candidate is happy the landing area is clear they should make a clear call of "Landing" loud enough to be audible to the other flyers.

Lift or sink in the circuit can cause any pilot to be too high or too low. How the candidate adjusts circuit lines and speed will tell you a lot about their competence.

(j) Overshoot from below 10 ft and climb back to circuit height. Note that this manoeuvre is an aborted landing, not a low pass.

The model should have followed a normal landing circuit and should not be being flown too fast. The overshoot should be smooth and controlled. The position to be flown to should have been agreed with the candidate before the test.

(k) Again, call “landing” and prepare the model for a landing with a down wind leg, followed by a base leg and final approach.

When the candidate is happy the landing area is clear they should make a clear call of "Landing" loud enough to be audible to the other flyers.

(l) Land the model into wind within 20 metres of a predetermined spot.

This is probably where a weak candidate will fail the flying tests, especially if they are flying a glider without airbrakes or one where the airbrakes have a strong pitching effect. Remember the circuit should remain out in front of the pilot and thus allow them to keep the landing area in view at all times. A pilot should not fly around themselves.

You are looking for a smooth landing and not a 45 degree dive into the ground. The judgement of height on the landing circuit will have been critical to this phase. A step approach is acceptable where the model has strong brakes and so does not speed up excessively, but the plane must round out and land smoothly.

Things to watch out for are the pilot who realises he is too high and then dives rather than slows down (thus covering more ground, the opposite of what he wants) and conversely the pilot who is too low and slows the model down. Both examples show a fundamental lack of understanding and whilst not enough to fail the test on their own, they are a good pointer to a weak candidate.

(m) Retrieve the model from the landing area, informing other pilots that the landing area is clear.

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.

When the model has been retrieved and returned to the launching area the transmitter should be returned to the pilot. There is no requirement to turn off the model and transmitter (and then clear frequency control, etc.) if the next flight will be made immediately. If the system remains armed then you should note proper handling of the model until it is disarmed.

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

What is required here will be dependant on how smooth a landing was achieved. Any abrupt stop or collision with a fixed object would warrant a full structural and control surface check. A smooth landing will only need a visual and control movements check.

As safety is the main driver the candidate may choose to perform a full check after each flight and this should not be discouraged.

(o) Repeat the above test, giving a total of two flights.

If the model has sufficient power left there is no requirement to power off Rx then Tx and return to the pits. The second flight can either be completed immediately or after a delay whilst batteries are swapped or recharged. The only hard requirement is that the frequency control system of the site must be complied with and the frequency cleared if the model will not be re-flown immediately.

Once the two flights are complete return to the pits.

After test point (m) has been completed for the second flight the candidate and examiner should return to the pits area. The post-flight checks (n) should be completed in the pits and the frequency control system cleared.

Check that the pilot observes the correct motor disarming, power Rx off sequence and clears the frequency control system in a timely manner.

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, propeller, control linkages and surfaces.

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

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 and launching it 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.

The candidate must be fully familiar with any failsafe 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 on - receiver on' sequence.

(b) After complying with the site frequency control system, prepare the model for launch. The motor start and stop switch/speed controller sequence must be demonstrated to the examiner

The correct power on sequence is critical to the safe operation of Electric Powered Aircraft. After the normal 'transmitter on - receiver on' sequence (if a separate Rx pack is used) the Candidate should clearly check the radio is operational and the throttle is closed (or control switch is in the off position) before the flight battery is connected. The motor start and stop switch/speed controller sequence must be demonstrated to the examiner and the arming sequence of the controller (if any) should also be discussed to prove the candidate understands their equipment.

As always any infringement of the site frequency control system should result in a test failure.

(c) Check that the launch area and landing area are clear both on the ground and in the air. If a helper is used to launch the model they should be fully briefed as to what is required

Many pilots prefer a helper to launch the aircraft. The normal helper rules apply and the candidate must clearly be in charge.

(d) Clearly announce, "Launching" and launch the model under full control. Any deviation from the expected launch path must be corrected smoothly and quickly. Climb to approximately 400 ft. Switch off power and transition to glide without stalling.

The Launch should be clearly under control and any deviations smoothly and swiftly corrected. The launch should appear competent and it is acceptable to discuss the 400ft height during the launch (As heights are very hard to estimate) and agree when to terminate the climb phase.

Depending on the climb performance of the aircraft a number of circuits may be needed to reach the desired 400 ft. With more powerful types a straight climb out may be used. Whatever the flight profile it must be smooth and controlled. Watch out for the pilot with a very powerful aircraft as it may go towards (or even beyond) the vertical in the climb and this should be marked down.

A smooth transition to gliding flight is required and again a candidate with a more powerful type may have problems here.

REMEMBER NO POWER TO BE USED DURING THE NEXT 2 MANOEUVRES

(e) Fly the model on a thermal search pattern. The model is to pass over three points, agreed with the Examiner prior to the start of the flight (e.g. corners of the field).

This manoeuvre should be flown above the minimum flight speed of the model and as stated pass over three pre agreed points. If lift is found during the search then a smooth transition into the next task is allowed but this is not mandatory. If the lift is found early in the task then the search phase can be re-flown between steps (h) and (i) on the way upwind.

(f) Fly the model through consecutive 360 degree thermal turns to a position a minimum of 100m down wind of the pilot. The model should gain height if in lift or be flown with minimum loss of height if no lift is found.

This manoeuvre should focus on a smooth rate of turn. The model will appear to speed up (downwind) and slow down (upwind) if there is a breeze. This is to be expected and is the correct result.

A weak pilot may try to slow the model whilst it flies downwind and speed it up into wind rather than allowing it to fly smoothly. If this results in an erratic motion or stalling of the plane then the examiner should mark the pilot down.

If this manoeuvre is flown in rising air it will rarely be smooth and so the examiner should make allowance for turbulence affecting the model. The gaining of height is desirable and shows the strength of the pilot, however it is not a mandatory requirement and smooth descending circles are allowed (a pilot who avoids lift to fly in smooth air must be suspect).

POWER MAY NOW BE USED AS REQUIRED TO POSITION THE MODEL.

(but only to position the model and not during test manoeuvres)

(g) Fly the model through either a half loop or half roll to inverted, hold straight, controlled inverted flight for a minimum of five seconds and then half loop or half roll back to level flight.

This manoeuvre should be as smooth as possible. A thermal soaring glider with a large amount of dihedral will not track straight when inverted and this should be allowed for. As long as the flight path whilst inverted is corrected back to the starting track after any deviation then that is OK. The Examiner should probably agree to count the five seconds or at least indicate that they feel the five seconds is complete to avoid any confusion with the candidate.

(h) Fly the model a minimum of 150m up wind of the pilot with minimum loss of height. Gain speed and perform a stall turn into wind.

This manoeuvre should be a smooth flight (normally above the minimum flying speed of the aircraft) forwards to an agreed position approximately 150m upwind. Verbal agreement between the examiner and candidate during the flight is allowed as distance judgement at height is very subjective.

The statement "Minimum loss of height" may cause some confusion as it can be argued the best speed to penetrate is quite fast (especially if it is windy). The examiner should look for a positive move upwind. The choice of actual speed is the candidate's decision but any excessive dive or conversely any very slow flight should be penalised.

This Stall Turn manoeuvre should include gaining speed in a gentle dive, followed by a flat entry (to establish the starting height) and then a pull up into a vertical climb. A degree of yaw will need to be achieved before the speed decays too much (as there is no Prop Wash, the glider must be yawed over before it stalls). The model should then rotate to the down vertical (there may be a tendency for gliders with high dihedral to roll as well at this point, which is acceptable if smoothly corrected) and then accelerate and pull out at the entry height.

Many efficient soarers will struggle to do a proper stall turn, and can only manage a sort of wingover which is acceptable if the model remains under control. However, if it cannot even do this then the wrong model has been selected for the test. Remember this is not an aerobatic competition, and the objective is to assess if the candidate still has full control of the model in an unusual vertical situation.

(i) Fly the model into wind and perform one inside loop.

The loop should show the candidate understands the energy retention (or lack of it) that their model possesses. The Loop should be as round as possible and reasonably large, but for some lightly loaded gliders it will need to be kept quite tight to stop the rapid speed decay causing the glider to stall out of the manoeuvre.

(j) Fly the model across wind and perform an unpowered stall, recover with minimum loss of height, still tracking across wind.

This manoeuvre should be a gentle reduction of speed until the stall occurs and then a straight dive and recovery with minimal height loss. A lot of gliders (due to the high Aspect ratio wing) will drop a wing in the stall and this should be smoothly corrected. The dropping of a wing should not be an issue if the correct track is maintained as much as possible.

(k) Turn the model down wind and perform an unpowered stall, recovering with minimum loss of height on the same track down wind.

This manoeuvre should be a gentle reduction of speed until the stall occurs and then a straight dive and recovery with minimal height loss. A lot of gliders (due to the high Aspect ratio wing) will drop a wing in the stall and this should be smoothly corrected. The dropping of a wing should not be a issue if the correct track is maintained as much as possible.

(l) Fly the model up wind to prepare the model for the overshoot/landing phase.

A reference point should have been agreed before the flight for a suitable upwind position. Reaching the point exactly is not critical but you are looking for the pilot to fly smoothly into the agreed area and then position themselves at a suitable height for landing.

Watch head movements that show the candidate is checking the landing area is clear.

(m) Call "landing" and prepare the model for a landing with a down wind leg, followed by a base leg and final approach.

When the candidate is happy the landing area is clear they should make a clear call of "Landing" loud enough to be audible to the other flyers. The circuit should remain out in front of the pilot and thus allow them to keep the landing area in view at all times. A pilot should not fly around themselves.

Lift or sink in the circuit can cause any pilot to be too high or too low. How the candidate adjusts circuit lines and speed will tell you a lot about their competence.

The crosswind leg may be a continuous turn if preferred and it may be stretched past the centre line of the landing approach to allow control of height but the model must be flown back to the centre line for the final approach. The whole approach should be flown smoothly with no stalling and the turns should have reasonably large radii.

(n) Overshoot from below 10 ft and climb back to circuit height. Note that this manoeuvre is an aborted landing, not a low pass.

The model should have followed a normal landing circuit and should not be being flown too fast. The overshoot should be smooth and controlled. The position to be flown to should have been agreed with the candidate before the test.

(o) Again, call "landing" and prepare the model for a landing with a down wind leg, followed by a base leg and final approach.

When the candidate is again happy the landing area is clear they should make a clear call of "Landing" loud enough to be audible to the other flyers.

(p) Land the model into wind within 10 metres of a predetermined spot.

This is probably where a weak candidate will fail the flying tests, especially if they are flying a glider without airbrakes or one where the airbrakes have strong secondary effects. The circuit should remain out in front of the pilot and thus allow them to keep the landing area in view at all times. A pilot should not fly around themselves.

You are looking for a smooth landing and not a 45 degree dive into the ground. The judgement of height on the landing circuit will have been critical to this phase. A step approach with strong brakes deployed is allowed, but a smooth round out and landing is expected.

Things to watch out for are the pilot who realises he is too high and then dives rather than slows down (thus covering more ground, the opposite of what he wants) and conversely the pilot who is too low and slows the model down. Both examples show a fundamental lack of understanding and whilst not enough to fail the test on their own, they are a good pointer to a weak candidate.

(q) Retrieve the model from the landing area, informing other pilots that the landing area is clear.

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.

When the model has been retrieved and returned to the launching area the transmitter should be returned to the pilot. There is no requirement to turn off the model and transmitter (and then clear frequency control, etc.) if the next flight will be made immediately. If the system remains armed then you should note proper handling of the model until it is disarmed.

(r) Complete post-flight checks required by the BMFA Safety Codes.

What is required here will be dependant on how smooth a landing was achieved. Any abrupt stop or collision with a fixed object would warrant a full structural and control surface check. A smooth landing will only need a visual and control movements check.

As safety is the main driver the candidate may choose to perform a full check after each flight and this should not be discouraged.

(s) Repeat the above test, giving a total of two flights.

If the model has sufficient power left there is no requirement to power off Rx then Tx and return to the pits. The second flight can either be completed immediately or after a delay whilst batteries are swapped or recharged. The only hard requirement is that the frequency control system of the site must be complied with and the frequency cleared if the model will not be re-flown immediately.

Once the two flights are complete return to the pits.

After test point (q) has been completed for the second flight the candidate and examiner should return to the pits area. The post-flight checks (r) should be completed in the pits and the frequency control system cleared.

Check that the pilot observes the correct motor disarming, power Rx off sequence and clears the frequency control system in a timely manner.

The Questions

Having successfully completed the safety and flying elements of the test, the candidate, if they do not hold a current (post 1/1/2021) RCC must then answer correctly five mandatory questions based on legal compliance, as well as a **minimum** of five (A test) or eight (B test) further supplementary questions on safety matters based on the BMFA Member's Handbook, associated Annexes, safety codes and local flying rules. Questions based on the Members Handbook Annex A (Flying displays) should only be asked for a B test.

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

The Achievement Scheme Review Committee strongly recommends taking the "on line" BMFA Registration Competency Certificate (RCC) in advance of the test.

This RCC test is updated in line with legal requirements, which helps to ensure all model pilots are both informed and current and is standardised for all candidates.

As a test candidate if you can evidence a pass of the latest RCC version to the examiner there will be NO requirement to answer the 5 mandatory questions.

From January 2021 it is a requirement of all tests that candidates who do not hold a current (post 1/1/2021) RCC must answer correctly 5 questions taken from the list of mandatory questions based on legal aspects of model aircraft flying. (See Appendix) 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, either, which questions have been asked or the date the Registration Competency Certificate was passed. The candidate should present with their Registration Competency Certificate, either as a hardcopy or electronically. (The certificate clearly shows the date it was passed)

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.

Supplementary Questions

How many supplementary questions you should actually ask will depend on the circumstances at the time. For instance, if the candidate has performed well on the flying elements and answers the first five questions (eight for 'B' certificate) with confidence then you need go no further. An acceptable flight performance with perhaps some rough edges can be offset to an extent by the candidate performing well when answering the questions.

A candidate whose flying performance you found only just acceptable and who hesitates on the questions should be asked a few more than the minimum five or eight, and if you are not satisfied that they familiar with the BMFA Member's Handbook and the associated Annexes and 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 Member's Handbook and the associated Annexes and 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 taxed 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 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.

Examiners must indicate in the area provided which 5 of the mandatory legal questions have been asked or the date the current (post 1/1/2021) RCC was passed.

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. Pass forms can also be submitted online by examiners via the Achievement Scheme website at <https://achievements.bmfa.uk/> under the menu item "The Tests". Passwords for the Achievement Scheme Website form submission are available to current registered examiners from the BMFA Office. 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.

Examiners and Candidates 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: -
BMFA Member's Handbook, associated Annexes and safety codes
Achievement Scheme Handbook
Local site rules (if applicable)

- 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 model position after the launch and straight flight tasks (d & e for A test or d for B test) are completed and also the position at the end of the overshoot task (j for A test or n for B test)

- 6
Agree any Airspace requirements that need to be pre-determined by the Examiner and Candidate prior to the commencement of the test flights

- 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. (This includes the upwind position from which the manoeuvre starts).

‘A’ CERTIFICATE (SILENT FLIGHT - ELECTRIC)

Examiners Test Flight Check List

Candidates Name	BMFA Number	Date	Examiner
FLIGHT TASK		COMMENTS - FLIGHT 1	COMMENTS - FLIGHT 2
(a)	Carry out pre-flight checks as required by the BMFA Safety Codes		
(b)	Prepare the model for launch		
(c)	Check that the launch area and landing area are clear		
(d)	Call “launching” and launch the model, climbing to approx. 400 ft. Switch off power		
(e)	Stall the model into wind and recover		
(f)	Perform 3 consecutive 360° thermal turns to the right or left		
(g)	Perform 3 consecutive 360 ° thermal turns in the opposite direction to above		
	From this point on, power should be used as required		
(h)	Fly up wind to prepare for the overshoot/landing phase		
(i)	Call “landing” and fly an approach		
(j)	Overshoot from below 10 ft and climb back to circuit height		
(k)	Call “landing” and fly an approach		
(l)	Land the model within 20 metres of a preselected spot		
(m)	Retrieve the model from the landing area		
(n)	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 satisfactorily a minimum of five questions on safety matters from the BMFA Member’s Handbook, associated Annexes, safety codes and local flying rules.	
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‘B’ CERTIFICATE (SILENT FLIGHT - ELECTRIC)

Examiners Test Flight Check List

Candidates Name	BMFA Number	Date	Examiners

FLIGHT TASK
COMMENTS - FLIGHT 1
COMMENTS - FLIGHT 2

(a)	Carry out pre-flight checks as required by the BMFA Safety Codes		
(b)	Prepare the model for launch		
(c)	Check that the launch area and landing area are clear, ground and air		
(d)	Call “launching” and launch the model. Climb to approx. 400 ft. Switch off power		
(e)	Fly a thermal search pattern, the model to pass over agreed three points		
(f)	Fly consecutive 360° thermal turns to 100m down wind		
	From this point on, power may be used		
(g)	Fly a half loop or half roll to inverted, hold straight, controlled inverted flight for a minimum of five seconds and then half loop or half roll back to level flight		
(h)	Fly 150 metres up wind of the pilot and stall turn		
(i)	Fly into wind and complete one inside loop		
(j)	Perform an unpowered stall across wind		
(k)	Perform an unpowered stall downwind		
(l)	Fly up wind and prepare for the overshoot/landing phase		
(m)	Call “landing” and fly an approach		
(n)	Overshoot from below 10 ft		
(o)	Call “landing” and fly an approach		
(p)	Land within 10 metres of a predetermined spot		
(q)	Retrieve the model from the landing area		

(r)	Complete post-flight checks required by the BMFA Safety Codes		
This is a two flight test, all items must be completed on each flight			
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 from the BMFA Member's Handbook, associated Annexes, safety codes and local flying rules.			

Mandatory Questions List

May 2021

1. Can you fly your model aircraft or drone out of sight behind trees?
 - No, because you must be able to see your aircraft at all times.
2. You should never fly above what height without appropriate permission or an authorisation?
 - 400ft
3. What is the main reason for not flying above 400ft without permission or an authorisation?
 - Because the airspace above 400ft is used by other aircraft.
4. When do you need permission from an airport to fly a model aircraft or drone?
 - When you wish to fly in a flight restriction zone.
5. If you are flying your glider, which has a mass of more than 7.5kg but less than 14kg, from the top of a 150 ft high hill, how high can you fly from where you are standing?
 - 400ft
6. You arrive at a site and want to get ready to fly your model aircraft. What four things must you check?
 - That the weather is going to be suitable for your flight.
 - That you are 'fit to fly'
 - That you make sure there are no airspace restrictions where you intend to fly.
 - That your aircraft is in a safe condition to complete the flight safely.
7. When can you fly your model aircraft or drone using First Person View equipment without a competent observer?
 - If you are flying at a drone racing event within a 'sterile area' and you do not fly above 160 feet (50m).
8. You are flying your model aircraft or drone using FPV equipment accompanied by a competent observer, what four conditions must you comply with?
 - The take-off mass of your aircraft must be less than 3.5kg
 - You must not fly above 1000 feet
 - You must not fly above 400 feet if you are flying a rotorcraft with more than one propellor.
 - Your competent observer must maintain direct unaided visual contact with your aircraft.

9. You are flying your model aircraft or drone safely at a safe height but there are other people in the vicinity. You notice an air ambulance flying in your direction. What should you do?
- Quickly fly your aircraft out of the way of the air ambulance and either wait or land safely.
10. You want to fly in an empty field near to an airport. The field is outside the airport boundary fence, so is it OK to fly there?
- You must check that the field is outside the airport's flight restriction zone before you fly.
11. Who is directly responsible for the safe operation of an aircraft?
- The Remote Pilot
12. Before any flight can take place in the Flight Restriction Zone of a Protected Aerodrome, permission must be obtained from whom?
- The Air Traffic Control unit or owners of the Protected Aerodrome
13. Whilst flying, as a Remote Pilot, you should always comply with what two conditions?
- Comply with the limitations of the Article 16 Authorisation or CAP 722
 - Comply with any airspace restrictions
14. Whilst flying, as a Remote Pilot, you should always avoid what?
- Any risk of collision with any manned aircraft
 - Flying close to or inside any area where an emergency response is taking place, without permission to do so
 - Continuing a flight if it may pose a risk to other aircraft, people, animals, environment or property
15. The Article 16 Authorisation stipulates that model aircraft with a Maximum Take Off Mass between 250g and 7.5kg cannot be operated within what separation distances?
- Within a horizontal distance of 30m of assemblies of people.
 - Within 30m of any uninvolved person (this may be reduced to 15m for take-off and landing).
16. The Article 16 Authorisation stipulates that model aircraft with a Maximum Take Off Mass between 7.5kg and 25kg cannot be operated within what separation distances and above what height?
- Within a horizontal distance of 50m of assemblies of people (this may be reduced to 30m for take-off and landing).
 - Within 30m of any uninvolved person
 - At an altitude of more than 400' without permission from the CAA.

17. Serious Incidents or other Occurrences must be reported to the CAA as a condition of our Authorisation, if they involve any of what four circumstances?

- Incidents involving manned aircraft.
- Operating above 400 feet
- Operating less than 50m from uninvolved people.
- Any instances of flight beyond the visual line of sight of the Remote pilot.

18. Any Model Aircraft or drone Operator making use of the Article 16 Authorisation must ensure that they comply with what three requirements?

- They must be registered with the CAA.
- They must clearly display their Operator ID on (or in) their aircraft.
- They must be a current BMFA member.

19. The Article 16 Authorisation permits you to give a 'trial flight' to a non-member providing you meet what three conditions?

- They are under your direct instruction and supervision.
- You meet the competency requirements and a valid Operator ID is on the aircraft.
- You must be a current BMFA member.

20. What does the Article 16 authorisation state with regards to the dropping of articles from a model aircraft or drone?

- The Remote pilot must not cause or permit any article or animal to be dropped from an unmanned aircraft so as to endanger persons or property.

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