MFNZ '*Wings*' Proficiency Scheme

Fixed Wing Power, Basic and Advanced

1. Aim

1.1. To provide certification of a basic proficiency level for Radio Control model pilots enabling them to operate unsupervised. Pilots achieving the required level are entitled to hold the MFNZ '*Wings*' qualification, endorsed to one or more of 10 disciplines, plus 3 specialist qualifications.

1.2. To meet the requirements of Civil Aviation Rule 101.205 for flying within 4km of aerodromes.

1.3. To provide a way of demonstrating a higher level of skill by completing an advanced test, with 'advanced' certification.

2. Method

2.1. MFNZ encourages all clubs to ensure that members follow this proficiency scheme and to ensure that all Radio Control pilots to obtain their '*Wings*'.

2.2. Many club flying sites, rallies and contests are on or near aerodromes and this qualification is mandatory to fly at those sites. The qualification provides ready proof of the holder's skill level.

2.3. Within 4km of an aerodrome all pilots must either hold a '*Wings*' qualification or operate under direct supervision of a '*Wings*' qualification holder or an approved Instructor. Away from aerodromes trainees should not be considered safe to fly on their own until they have reached the '*Wings*' standard.

2.4. The '*Wing's* Qualification is compulsory for:

(a) all new flying members joining MFNZ.

(b) all members who fly at sites within 4km of an aerodrome.

Members are encouraged to gain '*Wings*' qualifications at the earliest time.

2.5. Clubs should keep records of all the members holding '*Wings*' qualification certification and forward to the MFNZ membership administrator the name(s) of members attaining the certification in the various disciplines.

3. Examiners and Instructors

3.1. Instructors

Instructors will be proficient *'Wings'* certified holders with the same discipline qualification that is being instructed. Instructors will be appointed by the club(s). Clubs will assess their membership and select their instructors to meet the above criteria. Clubs will forward the name and MFNZ number of each appointed instructor to the MFNZ membership administrator for recording in the Association's database and the issue of a Instructors endorsement to the instructors membership card.

Instructors should be:

(a) Experienced proficient flyers that exhibit well-disciplined flying and operate in a safety conscious manner and are committed to training students to '*Wings*' standard.

(b) Be willing to spend considerable time training without letting their own skills suffer.

(c) Have empathy with the student and be able to guide the student through the learning process.

The MFNZ Members Manual for students is available on the MFNZ web site. This manual is structured to guide students through training to '*Wing*s 'standard and also acts as a prompt to instructors and has a check list for the student to keep as a record of training progress.

3.2. Examiners

Examiners will be Basic '*Wings'* qualification holders. It is not required for the Examiner to be proficient in the skill being tested but they should be familiar with the requirements of the qualification being tested and may conduct 'dummy tests' with a qualification holder to understand the manoeuvres fully. Clubs will assess their membership and select their examiners to meet the above criteria. Clubs should keep a register of 'Approved' examiners and forward to MFNZ on an annual basis. To ensure a common standard among Examiners, Area Representatives will conduct Examiner workshops whereby methods and ideas can be exchanged. The membership secretary will issue an Examiner's endorsement to the examiners membership card.

4. Qualification

There are 10 disciplines of Qualification:

Basic fixed wing Powered (**BP**)
Glider (**GD**)
Helicopter (**HP**)
Advanced Power (**AP**)
Advanced Glider (**AG**)
Advanced Helicopter (**AH**)

Multirotor (**MR**)
Basic Jet Turbine (**BT**)
Advanced Multirotor (**AM**)
Advanced Jet Turbine (**AT**)

There are additional specialist qualifications for the following categories:

Large fixed wing powered (**LM**)
First Person View (**FP**)
High Speed (**HS**)

5. Certification

5.1. The proficiency qualification gained will be issued by MFNZ in the form of an endorsement on the membership card. Applications should be made through Club Secretaries on the official form, signed by the examiner. Annual membership cards will show the details of all qualifications held, including 'Instructor' and 'Examiner'. Members attaining a new qualification within the membership year may request the issue of a replacement membership card.

5.2. A pilot must be a current financial member of MFNZ to be the holder of a '*Wings'* qualification and issue / retention of a '*Wings*' qualification is at the discretion of the MFNZ Council.

5.3. Any qualification may be withdrawn by a club if the pilot is considered to be no longer able to satisfactorily meet the required standard. The *'Wings'* qualification will be reissued upon the satisfactory passing of a full wings test. You can have your 'Wings' certification taken away if you become incapable of flying safely due to an ongoing medical condition such as failing eyesight.

If you do not renew your MFNZ membership for 3 consecutive years you will be required to retake your qualification upon re-joining.

Holders of qualifications from overseas organisations must take the MFNZ '*Wings*' qualification in order to comply with CAA regulations to be familiar with NZ airspace law.

Testing Procedure

5.5. There are four parts to each basic proficiency '*Wing*s' test:

(a) The oral test
(b) Pre flight inspection of the model
(c) Pre flight procedures test
(d) The 'flight test'

It is suggested that the 'oral' testing be done first.

5.6. Each part is marked on a competent/not yet competent basis and <u>total mastery</u> is required to qualify.

5.7. Retesting is permitted. The examiner may decide if a retest can be carried out on the same day or if there needs to be some retraining or consolidation before the retest.

5.8. A full guide to each test as well as test sheets and oral questions are included elsewhere in this manual

6. General test guidance

6.1. The *Wings* Proficiency Scheme is run by MFNZ as a National Scheme and it is open to all financial MFNZ model flyers.

6.2. The Basic 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 level of competence expected of a candidate should be based on the criterion; 'is this person fit to be allowed to fly unsupervised'.

6.3 A candidate wishing to take the 'Advanced' qualification must already have passed the 'Basic' qualification in that discipline.

6.4. The candidate should have studied the MFNZ Members Manual; any local site rules (if applicable) and be familiar with the MFNZ Safety Code. 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 MFNZ Members Manual.

6.5. Also, Examiners 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.

7. Buddy Box Systems

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

8. Hand Launching

The MFNZ Members Manual 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 test under the 'suitable model' requirements.

9. Height and Speed

9.1. The 'Basic' certificate candidate should be a reasonably confident pilot, even though they may only have been flying for a few months. 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; any higher could be a sign of lack of confidence.

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

10. Consistency

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 it should be noted if the height flown varies significantly.

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.

Slightly varying height and somewhat inconsistent lines are not necessarily reasons to fail the candidate but they do give a good indication of the pilot's general level of competence and could influence the final decision. Very poorly flown height or lines are a sure sign that the pilot has not practiced the test and are a legitimate reason to fail them.

11. 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 **NOT** what is expected. The normal flight will have at least one positioning circuit between each manoeuvre and the examiner should discuss this with the candidate before the flight. He/She, of course, should be watching any extra circuits just as carefully as the rest of the flight as they can tell a lot about the competence of the flyer. A pilot who transitions directly from one manoeuvre to the next is attempting to fly to a higher standard than required. This is quite acceptable if they are competent but watch out for the pilot who hasn't practiced enough. Trying to fly the test in this way can get them into some very awkward positions.

12. Trim

12.1. 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 there are obvious signs that the model is out of trim and the candidate does not make any attempt to rectify the matter the examiner should seriously question their basic competence.

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

13. Nerves

Quiet competence is what is required during the flight but most candidates will be nervous and allowance should be made for this. If the flyer is very nervous the examiner 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.

14. Repeating Manoeuvres

14.1. At 'Basic' certificate level the manoeuvres are simple and the candidate should be competent to fly them with very few errors. If there are 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 the examiner is not fully satisfied, he may consider asking for the manoeuvres to be repeated.

14.2. Some judgment is called for here. A major mistake is grounds for failing the candidate, especially if loss of control has occurred or a dangerous situation has arisen. The examiner should definitely not let them have multiple attempts at each manoeuvre until they get it right but must give themselves the best chance of assessing the competence of the pilot being tested. Examiners should be extremely careful about using this option, however, as it could very easily be degrading the worth of the test. It must not, under any circumstances, degenerate into a series of 'practice' manoeuvres.

15. Repeating the Test

There maybe two attempts at the test in a day. If the candidate fails the first of these the examiner 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 that on many occasions that the pilot being tested is simply not ready for the test they are taking. In this situation it is better that to tell them so quite clearly. It could then be extremely useful to offer to fly a demonstration test for them 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.

16. Interruptions to the Test

16.1. 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 the examiner 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.

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

16.3. 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 manoeuvres in which the problem occurred.

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

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

the day. Obviously, the examiner will have to use judgment on this matter as there will rarely be black and white situations but how they handled the emergency should be of great interest when reviewing the candidate's overall standard of flying.

17. Designated Landing Area

17.1. Both the power-on and the dead stick 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. Normally, the area for landing will be directly opposite the point where the pilot is standing and within a set distance either side of an imaginary line across the runway.

17.2. A point to bear in mind is that the fixed wing 'Advanced' certificate test requires that the power-on landing be performed with the wheels to touch within a pre-designated 20 metre boundary. Any decision made on the landing area for the 'Basic' test must obviously not be more restricted than this but if it is felt that the site and conditions warrant some relaxation of this distance then it can certainly be allowed. However, the '20 metre boundary' does give a useful starting point.

17.3. At the examiners discretion they may allow a larger 'designated landing area' for the simulated dead stick landing than for the power on landing. If in doubt, it should remembered 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 this is discussed with the candidate before the test begins so that both in no doubt where and how big the designated landing areas are for both landings.

18. Intermediate Landing

18.1. 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 Examiner. 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 Examiner.

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

19. Helpers for Disabled Candidates, Young Candidates and Others who have requested help During the Test

19.1. 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 the Examiner, will think 'how much can the test requirements be relaxed for this person'.

19.2. 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 Proficiency scheme as a true

national scheme then we must consider how we can accommodate candidates, not how we can stop them from participating.

19.3. The answer, of course, is that the Examiner, must make on-the-spot decisions about what will be allowed during the test and, in such cases, the examiner is within their 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 the examiner that they know what they are doing or what is happening for the full duration of the test.

19.4. 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 the candidate should be expected to do as much of the work as possible themselves and they should be able to talk through anything that the helper does for them. Examiners should be sure to discuss all this with the candidate before starting the test.

19.5. All of these comments can apply to younger flyers too but there is an added complication with engine starting. Many parents are 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 is a case where a helper can be used. If this situation does occur with younger candidates however, the examiner 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.

19.6. 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) The Examiner 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 the briefing that both the candidate and the helper are fully aware of both of these points.

20. Administration notes for Examiners

There are specific forms for Examiners to use during the tests (included in this document); further copies can be downloaded from the MFNZ website. Completed forms should be sent to the local Club Secretary within seven days of the test and, whilst they must be filled in by the Examiner, they may be sent in to the local Club Secretary 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 **MFNZ number** (this can save a great deal of confusion).

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.

Club secretary's should collate the information and pass on the original or copied forms to the MFNZ membership administrator promptly for the issue of an updated membership card showing the qualification(s) achieved.

Basic Fixed Wing Power (BP) and Advanced Fixed Wing Power (AP)

Fixed Wing Power, Basic (BP)

The Model

The test 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, it is expected that the test will be done with an aircraft that has an undercarriage or flies off a dolly.

The minimum weight of a model used to take the test is 1 kg (2.2 lbs.) without fuel but with batteries.

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.

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. 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 their ability you are testing, not the model.

(a) Carry out pre-flight checks as required by the MFNZ Safety Code.

The pre-flight checks are laid out clearly in the MFNZ Members Manual. The candidate should also go through the pre-flying session checks also laid out in the Members Manual. 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 'basic' 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

candidate's competence and this is one that might have an effect on a '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 'long wire' frequencies 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. Talk this over with the candidate in your pre-flight briefing.

If local site flying rules require 'observers' to assist the pilot during flight, the examiner may assume this role, however the pilot may make use of an 'observer' of their choice during the test if they wish.

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 the 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 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 by the candidate or a helper/observer 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 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.

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.

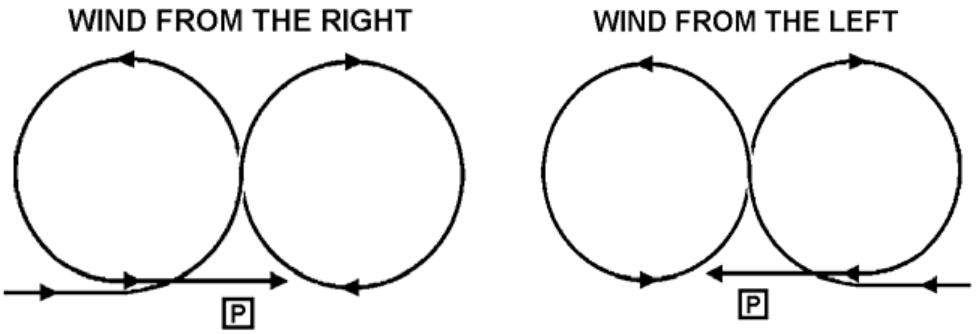
Climb out should be at a steady angle and straight until operational height is reached when the throttle should be brought back to cruise power, the model leveled out and the first turn of the circuit started.

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 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 "horizontal 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.

The model is flown on the standard line and height into wind across the landing area, a ¼

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 ¾ 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 practiced 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 posses.

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.

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 penalized 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.

Watch once again for parallel legs with reasonable turns and level flight. A common mistake is to turn onto the final cross wind leg (the up wind one) too soon. The result of this will almost inevitably is 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 stall and recovery

The model should decelerate whilst flying straight and level. At the point of stalling the nose should drop. The model should accelerate with the application of power and recover to straight and level flight, maintaining the original heading.

(h) Perform a simulated dead stick landing with the engine at idle, beginning at a safe height (approx. 200 feet) heading into wind 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 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 practiced 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 LANDING before they start 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.

If the engine stops during the manoeuvre then the pilot should call DEADSTICK so that everyone will be aware that a genuine forced landing is taking place.

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' dead stick 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. The examiner should clarify if the electric motor has an active 'brake' configured prior to the test.

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

The candidate should ensure that it is safe to go onto the runway before leaving the pilot box. The model should be rendered safe as soon as possible by activating failsafe or shutting down combustion engines.
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.

(j) Complete post-flight checks as required by the MFNZ Safety Code.

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

The Questions (Basic BP)

The candidate must answer correctly a minimum of **five** of the **Mandatory Questions** (**Annex I**, **questions 1-15**; attached to this document) on safety matters, based on the MFNZ Safety Code for general flying and local flying rules.

The candidate must **also** answer correctly a minimum of **five** questions from the **General** and **Specific Discipline Questions** (**Annex I, questions 16-29 and 30-44**; attached to this document) on safety matters, based on the MFNZ Safety Code for general flying and local flying rules.

It is suggested that the 'questions' are asked before the flying test.

Prior to the 'flying test' the examiner should also ask a minimum of three 'Local site/club Rules'.

Such questions should query the maximum altitude models can fly over the flying site as well as the boundaries of the site together with site 'etiquette' and pilot safety.

Remember, the Proficiency 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 safety questions they should not pass.

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 questions you ask are to be BASED on the MFNZ Safety Code; 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? Why operating transmitters should not be taken out when retrieving models from an active flying area? Or why should models not be taxied in or out of the pits area?

Examiners and Candidates Checklist

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 Members Guide** ☐

   and aware of any '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 the candidate to talk you through anything that the helper/observer** ☐

   may do for them as the test progresses.

5. **Agree any Airspace requirements that need to be pre-determined by** ☐

   Both 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 being looking for.

Examiners Check List. Basic Fixed Wing Power (BP)

Candidates Name	MFNZ Number	Date	Signature
Examiner's Name	**MFNZ Number**	**Date**	**Signature**

	FLIGHT TASK	COMMENTS
(a)	Carry out pre-flight checks as required by the MFNZ Safety Code.	
(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 circuit and approach with appropriate use of the throttle and perform a landing on the designated landing area (wheels to touch within a pre-designated 20 metre boundary).	
(e)	Take off and complete a left (or right) hand circuit and overfly the take-off area	
(f)	Fly a circuit at a constant height in the opposite direction to the landing circuit flown in (d).	
(g)	Perform a stall and recovery.	
(h)	Perform a simulated dead stick 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.	
(i)	Remove model and equipment from take- off/landing area.	
(j)	Complete post-flight checks required by the MFNZ 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 MFNZ Safety Code and local flying rules.		

Fixed Wing Power, Advanced (AP)

General

The *'Wings'* Proficiency Scheme is run by the MFNZ as a National Scheme and it is open to all members.

The aim of the **advanced certificate** is to give the club flyer a personal attainment goal beyond the Basic Certificate; a demonstrated level of competence, skill and safety which is attainable by the average pilot with a little thought and practice. The Advanced Certificate is designed to recognize the pilot's more advanced ability and a demonstrated level of safety which may be considered by an event organizer as suitable for flying at a public display.

The long term strategy behind this is that if enough club flyers qualify for their advanced certificates then the general standard of flying both within your club and nationally cannot help but rise.

A candidate wishing to take the 'advanced' test must already have passed the Basic test in that discipline.

The candidate for the advanced test should have studied the MFNZ Members Manual. Most of the questions asked at the end of the test will be from the Members Manual.

The model

It is a common misconception that the candidate for the Advanced 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.

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 the examiner should check that this has

been done.

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.

The minimum weight of a model used to take the test is 1 kg (2.2 lbs.) without fuel but with batteries.

(a) Carry out pre-flight checks as required by the MFNZ Safety Code.

The pre-flight checks are laid out clearly in the MFNZ Members Manual. The candidate should also go through the pre-flying session checks, also laid out in the Members Manual. 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 Advanced 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 candidate's 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 'long wire' frequencies, 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 penalized. 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 penalized 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 leveled 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 "horizontal 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 Basic Certificate test.

The manoeuvre should be flown slightly better than as shown in the Basic Certificate diagrams. 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 problem 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 Basic 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 barreling 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 used in (f).

All the comments in **(f)** above apply but you can allow a little more leeway on the centering 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 metres 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 recognizable 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.

There is only one way to perform the spin.

The model must be flown into wind and before it reaches a point in front of the pilot the throttle must be closed. As the model slows down, level flight must be maintained by steadily increasing amounts of up elevator until, at a point approximately in front of the pilot, full up elevator is reached **(the model should be slow and nose up at this point but not climbing).**

Full rudder must then be applied and the model allowed to fall into the spin. The model should not stall and then spin but it should be flying close enough to the stall so that applying full rudder will cause one of the wings to stall and initiate the spin

Ailerons may be used in the spin (and many 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 centralized, any anti-spin actions taken (sometimes necessary) and the model recovered onto the same heading it had when the manoeuvre was started. An 'aerobatics' spin which finishes in a vertical dive is not required but is acceptable.

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 pullout.

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 practiced 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 feet. 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 at a constant height of not more than 50 feet.

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.

(l) Fly a rectangular landing approach and land with wheels to touch within a pre designated 20 metre boundary.

All the comments in **(j)** above apply accept 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 MFNZ safety Code.

The candidate should ensure that it is safe to go onto the runway before leaving the pilot box. The model should be rendered safe as soon as possible by activating failsafe or shutting down combustion engines.

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

Note should also be taken of the intermediate landing Test Section below and the recommended actions.

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 Examiner. 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 Examiner.

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.

The Questions (Advanced AP)

The candidate must answer correctly a minimum of **five** of the **Mandatory Questions** (**Annex I**, **questions 1-15**; attached to this document) on safety matters, based on the MFNZ Safety Code for general flying and local flying rules.

The candidate must **also** answer correctly a minimum of **eight** questions from the **General** and **Specific Discipline Questions** (**Annex I, questions 16-29 and 30-44**; attached to this document) on safety matters, based on the MFNZ Safety Code for general flying and local flying rules.

It is suggested that the 'questions' are asked before the flying test.

Prior to the 'flying test' the examiner should also ask a minimum of three 'Local site/club Rules'.

Such questions should query the maximum altitude models can fly over the flying site as well as the boundaries of the site together with site 'etiquette' and pilot safety.

Remember, the Proficiency 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 safety questions they should not pass.

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 questions you ask are to be BASED on the MFNZ Safety Code; 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? Why operating transmitters should not be taken out when retrieving models from an active flying area? Or why should models not be taxied in or out of the pits area?

Examiners and Candidates Checklist

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 Members Manual** ☐

   and aware of any '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 the candidate to talk you through anything that the helper/observer** ☐

   may do for them as the test progresses.

5. **Agree any Airspace requirements that need to be pre-determined by** ☐

   both 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 being looking for.

Examiners Check List. Advanced Fixed Wing Power (AP)

Candidates Name	**MFNZ Number**	**Date**	**Signature**
Examiner's Name	**MFNZ Number**	**Date**	**Signature**

	FLIGHT TASK	**COMMENTS**
(a)	Carry out pre-flight checks as required by the MFNZ Safety Code	
(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 20 metre boundary)	
(m)	Complete post-flight checks as required by the MFNZ Safety Code.	
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 MFNZ Safety Codes for General Flying and Model Flying Displays and local flying rules.		

Annex I Oral questions

Mandatory Questions for all Disciplines (1-15)

1. Describe the airspace class you are currently flying in?

2. Where would you find information about the airspace class?

3. What are the requirements and limitations of the airspace?

4. What is the altitude limit for the current site?

5. Explain the requirement of consent from the property owner prior to flying

6. What are the requirements for flying with 4km of an aerodrome?

7. What are local flying field rules? Noise Requirements?

8. What would you do if a person walked into the flying area?

9. What frequency control, including for FPV, is currently in place?

10. What are the requirements for an observer? What is their role?

11. Describe “Line of Sight” operation

12. What is required for flying in controlled airspace?

13. Describe the legal requirement s for aircraft between 15-25kg? 25kg+?

14. Can you fly at night?

15. How would you respond to a manned aircraft entering the airspace you are operating in?

General Questions (16-29)

16. What is the purpose of a transmitter range check before flying?

17. Describe the pre-flight checks that should be done on an airframe before flying

18. Why do we not fly behind the flight line or over the pits?

19. Describe the importance of the correct centre of gravity on an aircraft

20. Why is it good practice to balance propellers/blades/fans?

21. What do you look for when checking the condition of propellers/blades/fans?

22. Explain the precautions associated with charging batteries

23. Describe the power on/power off sequence of your model

24. How do you check the centre of gravity of a model whilst on the ground?

25. What is meant by dual rates on a transmitter and how does this affect the control surfaces?

26. What is meant by exponential function on a transmitter?

27. Describe the failsafe function of your radio/flight controller

28. What are the hazards associated with carbon fibre used in construction?

29. Describe Pitch / Roll / Yaw of an aircraft

Pilot Specific Questions (30-44)

30. Why models should be restrained whilst starting?

31. How should the receiver battery status be checked before flying?

32. Describe safe tools that can be used to start an IC engine

33. Why do we check the control surface integrity and direction before flying?

34. Why is it good practice to disconnect the motor pack on an electric model whilst in the pits?

35. Why is it good practice to test a receiver battery using a load tester?

36. Why it is good practice to cycle NiCad or NiMh receiver battery packs?

37. Describe flight line etiquette

38. What happens when a model stalls and the best way to attempt to correct a stall?

39. What is the best action to take when experiencing an engine failure on take-off?

40. What is the best action to take when an engine stops in mid-flight?

41. When starting an engine (IC or electric) where should you insist bystanders position themselves in relation to the model?

42. How do you find out if a receiver battery pack has reduced capacity?

43. What is aileron differential?

44. What is the effect of low airspeed on control surfaces?

Multirotor Specific Questions (45-56)

45. Why is calibrating accelerometers and gyros important?

46. Why do we use lock nuts, or reverse threaded shafts, to secure blades?

47. How do controller gain settings affect the model?

48. Describe various flight modes

49. Describe the failsafe settings currently in use

50. How is flight pack voltage monitored?

51. What is HDOP and how can it affect GPS based flight?

52. Describe how your aircrafts configuration would respond to a motor/esc/propeller failure

53. What would cause your multirotor develop oscillations in a specific axis?

54. Why should you not take off and land in non-GPS modes?

55. Why should you not use exponential on the flight controller and your radio?

56. What is compass calibration and why is it important?

Glider Specific Questions (57-63)

57. Describe some ways to get your glider down safely from a thermal when it is getting carried away?

58. What is wash in and wash out. What are the advantages and disadvantages of each?

59. What might happen if you over speed your glider and describe some ways you could avoid it if you are up high and getting carried away?

60. Where should a tow-hook be situated in reference to the centre of gravity? What are the problems with having it too far forward and too far back?

61. The elevator compensation required for flaps down is elevator up/down?

62. Why do you wind down the line after a winch launch?

63. What other dangers are associated with winches? (Line breaks, chutes through turnarounds, locking pins)

Heli Specific Questions (64-72)

64. How do you check tail compensation direction?

65. What ESC startup setting should be enabled and why?

66. How and why do you check CG?

67. How tight should main blades be?

68. Why is heli blade tracking important?

69. Explain the purpose of throttle hold and 2 occasions you use it

70. How do you check the state of flight packs and/or RX packs in flight and before/after?

71. Give 5 examples of pre-flight checks required before any flight?

72. What is the recommended distance to fly away from the pilot when throwing down?

Large Model Specific Questions (74-83)

74. State the purpose of the Large Model certification scheme

75. Define Category 1, 2 and 3 aircraft.

76. Which Wings badge/s must be held when operating large models?

77. Are redundant Receivers and batteries mandatory for all categories?

78. Describe the two methods of choosing suitable servos for certified aircraft.

79. Define the 3 sequential parts of the certification process and give brief description of each process.

80. Where must test flights be performed, who may be present during the test flights and how many aircraft are allowed in the air during test flights.

81. How long is a Category 1, 2 & 3 permit valid for and which Category aircraft require a flight log book be kept?

82. When must checks of a certified aircraft be carried out and to what level?

83. Explain what validates a Permit to Fly at Public sites.

FPV Specific Questions (84-92)

84. What VTx frequencies and power levels are legal to use in New Zealand?

85. What are the requirements of FPV flying in New Zealand in regards to observers?

86. Can you mix and match right hand and left hand polarization antennas between VTx and VRx?

87. What tests should be performed before flying an FPV model each day?

88. Can you show me how to change your VTx to another frequency?

89. Briefly describe the difference between direction and non-directional antennas and how they would be used

90. What does a diversity VRx provide?

91. If you are using RTH or similar technologies what important steps should be done each day you go flying?

92. What happens with most VTx's during power on or channel change and how might you deal with this?

High Speed Specific Questions (93-101)

93. What is the extent of the flying area?

94. What is flutter, what causes it, and how is it avoided

95. What noise regulations exist at the flying area

96. What is the ceiling of the flying area?

97. Why is a throttle lock a good idea on a high performance electric model?

98. Why is an independent control & power system required?

99. What is 2.4Ghz carbon shielding and how is it avoided

100. What failsafe exist on the model, and why?

101. Why is a separate battery pack powering the Rx desired on the high-performance electric?

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