MODEL FLYING NEW ZEALAND

MFNZ Members Manual

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Version	Clause	Date	Approved
0	First Issue	May 2018	

1.0 BACKGROUND

1.1 Purpose

The NZ Model Aeronautical Association (NZMAA) was formed in 1932. Its purpose was to ensure that sport of aeromodelling is run in an efficient manner and that those participants in the sport are able to enjoy their pastime knowing that there is an organisation working on their behalf.

In 2008 the Association was rebranded to Model Flying New Zealand (MFNZ) to give a more meaningful public image.

MFNZ is an association made up of approximately 2200 members of some 80 or so clubs spread throughout New Zealand. The Association is governed by a Council, elected by Members at the Annual General Meeting. The Council maintains links with key central government organisations such as the Radio Spectrum Management Service, the Civil Aviation Authority and the Ministry of Transport to ensure model flying retains appropriate recognition in rules and laws set by these organisations.

We contract the services of a secretariat to manage our relationships with individual members and clubs, maintain an up to date web site, and to do all the routine administration for the association.

The sport of aeromodelling also provides an avenue for serious competition, and we have 10 Special Interest Groups (SIGs) or technical committees covering the full range of specialist flying undertaken in New Zealand. Each has its own subset of enthusiasts, and communicates via bulletins and newsletters. Their rules, operations and codes of practice can be found on their dedicated pages on the MFNZ website.

MFNZ produces its own magazine to communicate with members, the "Model Flying World". When a member affiliates with MFNZ you automatically receive this 4 times a year. Everything important done by the Association is reported in the magazine. We also have a web site (www.modelflyingnz.org) where members can keep up to date with matters of interest. The magazine is also available on line.

Of necessity, the Association produces quite a bit of formal documentation – which can be downloaded from the website or requested from our Secretary. This documentation is, to a large degree focused on safety issues associated with operating models, and on the rules for competition flying. We cannot stress enough the importance of taking personal responsibility for safety.

Probably the most important thing that the Association offers both members and their clubs is a comprehensive insurance policy. In the event that disaster does strike, provided you have been flying in accordance with MFNZ rules, then the policy covers you for damage to 3rd party property.

Advice and guidance from MFNZ is there to be had, all you need to do contact someone on the Council.

Enjoy your aeromodelling and remember ***Safe Flying is No Accident***.

2.0 THE ASSOCIATION

2.1 Governance and Management

The Association (NZMAA trading as Model Flying New Zealand) is an Incorporated Society under the Incorporated Societies Act. The Constitution is available on the MFNZ website.

MFNZ is governed by a nationally elected Council of Management with a President, Secretary, Treasurer, Competition Manager, and five Area Councillors, who liaise with members and clubs in their area and represent their views at Council meetings. In addition there are ten Special Interest Groups who make and control contest rules, select International teams, and organise rallies and competitions for their various categories of modelflying.

2.2 National and International Standing

MFNZ negotiates with the Civil Aviation Authority of New Zealand on all aspects of Model Aviation. This usually involves ensuring the rights of model aircraft fliers are protected.

In the 1960's we had a very limited number of radio channels available for remote control and in the 1970's MFNZ obtained the frequencies currently used for R/C and has successfully negotiated several amendments since then.

MFNZ assists clubs in negotiations for acquisition or retention of flying sites. There have been many instances the involvement of the National organisation has benefited clubs negotiating with their local Authorities.

The Association is affiliated with the Royal New Zealand Aero Club (also FAI - the international aviation body, via Flying NZ {RNZAC}) and is a member of the New Zealand Aviation Federation. Through these relationships, MFNZ can raise aeromodelling concerns and issues with other operators in the aviation industry. Membership of FAI gives us an International voice and allows selected members to represent NZ at international events.

2.3 Roles and Responsibilities

The various roles and responsibilities of the elected officers (Council) are outlined in the Constitution.

Membership of MFNZ is by belonging to an affiliated club. To gain full benefit from your MFNZ membership it is important that you support, and work through, your club. As a senior member, you can use your vote to influence decisions made at General Meetings of the Association on policy, finance and the election of the Association's Council. Your club committee can prove a powerful influence for the benefit of model flying. The country is divided into five Areas and your address will fall into one of these. In each Area, your MFNZ Area Councillor will be keen to hear your viewpoint, and assist, should you have any concerns.

MFNZ assists groups with guidance and information on the formation and the incorporation of clubs. In the interest of their members, all clubs should be incorporated, particularly in these days of increasing claims for damages.

MFNZ promotes regular regional meetings, rallies and decentralised contests through the year and National Championships in the New Year period.

MFNZ provides third party insurance cover of $10,000,000 for all members in New Zealand and while overseas, and for bona-fide overseas visitors.

2.4 Regulations and Compliance

Model aircraft operate under the Civil Aviation Authority of New Zealand Rules part 101 and 102. MFNZ's rules and Codes of Practice have been developed and are reviewed regularly to ensure compliance with the CAA rules.

3.0 AIRSPACE

CAA has strict rules on airspace use by model aircraft. For a good overview of these and their application, the website www.airshare.co.nz is an excellent resource. Particular attention is directed to the requirements when flying in controlled airspace and in proximity to airfields and airports.

3.1 Regulations Specific to Model Aircraft

CAA Rule Part 101 applies if you are operating a model aircraft less than 15kg and you fly during the day and below 120m (400ft) while complying with the airspace rules. Aircraft can be flown under this rule if they are in the 15-25 kg range provided they are approved by MFNZ (a CAA approved organisation). MFNZ manages this through its Large Model Code of Practice as explained in its' CAA Exposition.

CAA Rule Part 102 applies if you are operating a model aircraft outside one or more of the restrictions of Rule Part 101, e.g. at night, above 120m (400ft) or an aircraft weighing more than 25kg. MFNZ has delegated authority as a Certified Unmanned Aircraft Operator under Rule Part 102 to manage these operations. Members are required to comply with the Large Model Code of Practice as explained in the CAA Exposition.

3.2 Delegated Authority

MFNZ is an approved organisation under the terms of CAA Rules which gives members special privileges to operate model aircraft. MFNZ is also a Certificated Unmanned Aircraft Operator under CAA Rule Part 102 for the purposes of safely managing the operation of member's models greater than 15kg under CAA Rules Parts 101 and 102. The CAA exposition details the way these operations are safely managed including the Large Model Code of Practice which is a key element. These documents are available on the MFNZ website.

3.3 Radio Frequencies

The MFNZ website details the frequencies currently approved for use by Aeromodellers in New Zealand. http://www.modelflyingnz.org/frequencies.html

Under the Radio communications Regulations (General User Radio Licence for Aeronautical Model Control Short Range Devices) Notice 2003, we are able to operate within the frequency and power restrictions of the regulations.

2.4 GHz radio equipment is permitted in NZ. The band 2.4 to 2.4835 GHz is a shared one with many other users, thus spread-spectrum systems are essential. The power emitted shall not exceed 1 Watt EIRP, however, higher gain antennas may be used, provided the peak power does not exceed 4 W EIRP. For other than 2.4GHz, most clubs (and all MFNZ sponsored events) may require you to use the pegboard and take a frequency peg. The purpose of this is to ensure that good frequency control habits remain in place. Some clubs and/or event/contest directors may impose additional restrictions, and these must be complied with.

4.0 CONTESTS AND RALLIES

4.1 Definitions

The following definitions are used in addition to those in Civil Aviation Rule 101

a) **Control Line** Flight during which the model aircraft is aerodynamically manoeuvred by:

   i) control surfaces in attitude and altitude by the pilot on the ground

   ii) by means of one or more inextensible wires or cables directly connected to the model.

No other means of controlling the model or the motor may be employed during the take-off and flight, except that exercised by the pilot through the line or lines.

b) **Free-Flight**. Means a model aircraft with a flight path that, once launched is uncontrollable

Gliders Model During flight aircraft which are not provided with a propulsive device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed except for changes in camber or incidence during flight

c) **Helicopter** A helicopter is a heavier-than-air model that derives all of its lift and horizontal propulsion from a power driven rotor system(s) rotating about a nominally vertical axis (or axes).

d) **Radio Control** Flight during which the pilot on the ground using radio control aerodynamically manoeuvres the model aircraft by control surface(s) in attitude, direction and altitude while maintaining direct visual contact with the model at all times.

   i) Models meeting anyone of the criteria below are considered large models.

Category 1: Models 15kg – 25kg
Authority is delegated to an Approved Authority by CAA to issue Permits to fly to owners of radio controlled model aircraft in the weight range 15kg – 25kg.MFNZ is an approved authority under the CAA regulations. It is illegal under NZ law for models of this weight to be flown without written permission from MFNZ. Such Models must have a MFNZ Permit to Fly, issued through the Large Model Controller. Weights are inclusive of fuel and demountable equipment.
Category 2: Models 25kg – 100kg
CAA authorizes MFNZ to manage the certification process of unmanned aircraft in the range 25kg – 100kg, to be flown for recreational use only. MFNZ has sole authority from CAA to inspect such aircraft and to issue Permits to Fly at Public Sites, relating to aircraft/pilot combinations.
Category 3: Models less than 15kg but with IC motors 75cc and larger.
Turbines of 130 kN and above, Turbo props or electric motors of 5,000 watts or larger must also have a MFNZ Permit to Fly as for 15kg – 25kg models.
Large Models in any of Categories 1, 2, and 3 may be flown only if the aircraft has been certificated under the Large Model Certification Process

The process for achieving certification in these categories is described in the Large Model Code of Practice which can be found on the website.

e) **Scale** A scale model is a replica (miniature copy) of a heavier-than-air aircraft.

4.2 The Contest Scene

MFNZ, through the Special Interest Groups, organises and fosters contests at venues all over New Zealand, covering all aspects of the sport, from indoor flying to R/C scale. Details of forthcoming competitions and events are published in Model Flying World, and on the MFNZ website. Newcomers are always welcome and are encouraged to participate. For some, model flying is a truly competitive sport, but even if you do not have a competitive streak, you will find that competition is an excellent way to improve your flying skills.

Taking part in competition events can add a great deal of enjoyment to model flying. As well as the social aspect, it will also give you the opportunity to see some of the country's best models and fliers in action. Selection trials are held regularly to pick teams to represent NZ at various World and Trans-Tasman Championships for many popular classes of model flying.

Through the National Decentralised Competition (NDC) local clubs have the opportunity to hold events while effectively competing in a national event.

4.3 Rallies

In addition to the contest schedule there is an active RC rally scene, particularly for groups such as Large Models and Warbirds as well as more general flying hosted by various clubs, often associated with memorials for members who have passed on. These offer the opportunity to catch up with fellow modellers from around the country and view their handiwork as well as flying in a relaxed atmosphere. These events are usually advertised in the Model Flying World as well as on the relevant Special Interest Group or Club website.

5.0 INSURANCE

5.1 Cover

From the time members pay the MFNZ affiliation fee, they are fully covered by the Association's third party insurance policy. It covers the entire normal and lawful model flying pursuits of Association members and presently provides third party cover up to $10,000,000 per claim. Like all insurance policies, an excess does apply. Provided you were complying with all the relevant regulations, rules and conditions at the time of the accident, the Association will contribute towards the cost of the excess. At present the Association pays 75% of the excess. As the excess is liable to change, you will need to contact the Secretary to obtain the current cost.

5.2 In the Event of an Incident:

DO NOT accept liability. Obtain the following details:

1. Name, address and telephone number of the person whose property has been damaged.
2. If they are insured, the name of their insurance company.

Make a note of the following:

1 Date and time of the incident;

2 Description of the property damaged;

3 Description of the amount of damage caused;

4 Name and address of any witnesses; and

5 If possible take a photo or, draw a sketch and write down the details of how the accident occurred.

5.3 To Make a Claim:

1. The MFNZ Secretary will assist you in making the claim;
2. MFNZ will contact the Association's Broker who will process the claim with our Insurance Company and
3. The MFNZ Secretary will contact you as to the acceptance/rejection of the claim and advise the amount of your contribution to the excess.

6.0 SAFETY

6.1 Safety Management

This section is designed to make you aware of SAFETY and provide a set of generic rules as a basis to safe operation. It is not intended to be a comprehensive list of rules. There are two reasons for this. Firstly, it is impossible to produce a fully comprehensive set of rules that cover all eventualities. Secondly, rules are not always appropriate for all conditions, and once a rule is ignored for a sound local reason, others tend to be ignored as well. You must have a commitment to the safest practicable operation of model aircraft at all times.

We share our environment with a wide variety of people, some of whom may be upset or disturbed by our activities. Noise, privacy and safety issues can be a concern to members of the general public, particularly to those who are unfamiliar with the sport of Aeromodelling. Safe operation is therefore vital to avoid the imposition of unreasonable rules and regulations from groups and authorities that see modellers as a threat or nuisance.

MFNZ cannot be aware of all local conditions and variations so it is important that clubs also have local guidelines for safe operations on their own sites. These local rules should be specific to the site, and could also include non-safety but other very important sections, typically those relating to noise limits, hours of operation, no-flying zones and directions on where car and foot access is not permitted, for example.

This section has a number of important safety principles that will assist all modellers to operate safely. Specific sections follow on: Free Flight, Control Line, Radio Control, R/C Gliders, First person view and Turbojets.

a) All members must at all times actively seek to identify aeromodelling hazards and reduce or eliminate them.

b) No modeller is to wilfully or negligently cause or permit a model aircraft to endanger any person or property.

c) No modeller is to do or say anything that would encourage another modeller to perform any unsafe act.

d) All model aircraft ***must*** be flown in accordance with CAA Rules Part 101. If you cause an incident whilst in breach of CAA Rules, you may be deemed to be criminally negligent. In particular, no person is to fly an R/C model within 4 km of a licensed airfield without either being qualified as proficient under the MFNZ wings program and having an observer, or being under the direct supervision of a wings qualification holder or MFNZ approved Instructor. Flying within 4km of an airfield can only be done with the agreement of the airfield users and/or controller.

e) Large R/C Models must meet the extra requirements of the Large Models Code of Practice.

f) No modeller is to operate a model while being intoxicated with drugs, alcohol, or any other substance.

g) No modeller is to operate a model: higher than the maximum permitted height for that site (Generally this will be 400 feet, but check with your local rules), further away than safe control can be maintained and within visual range, in cloud, or outside the legal hours of daylight unless specifically exempted. Models must be flown with Line of Sight (LOS) of the pilot in accordance with CAR 101

h) At rallies, demonstrations, advertised events, or any other flying event where large numbers of public spectators might reasonably be expected to attend, extra safety controls will be put into place and are to be observed by all participants. Local club regulations and rules must be followed at alltimes.

6.2 Free Flight (F/F)

The following requirements apply to the operation of all F/F model aircraft, be they sport, competition or Vintage:

a) F/F models must not be launched when manned aircraft are overhead.

b) F/F models must not be launched from an area where they could overfly buildings, major roads, aerodromes, active runways, power lines, railways, or similar places, on their expected flight paths.

c) F/F models, in particular all types of powered models, must be launched well away from, and downwind of, any spectators and vehicles. Tow launched models must be kept at least one towline length away from spectators, vehicles and buildings.

d) When a fuse type dethermaliser is used a snuffer tube must be used and extreme care should be exercised when lighting the fuse.

e) Flying surface alignment, dethermaliser operation and any automatic systems must be checked for correct operation before release.

6.3 Control Line (C/L)

The following requirements apply to the operation of all C/L model aircraft.

a) Steel lines of sufficient strength preferably stranded and for the C/L model being operated, must be used.

b) Before every flying session starts a C/L model and its lines must be subjected to a pull test of at least 10 times the model's weight and control lines and linkages shall be checked after a pull test (competition models must be pull tested as detailed in the C/L Rule book). If any damage is obvious the model MUST NOT BE FLOWN before the damage has been repaired and another pull test satisfactorily completed.

c) The control handle must never be released while a model is flying. When high line pulls are expected, or the type of flying might cause accidental release of the handle, a safety strap connecting the control handle to the operator's wrist should be used.

d) The centre of the flight circle must be clearly marked and pilots must remain at the centre of the flight circle when flying. Adjacent flight circles must be located so they have an adequate clearance between them. Spectators should be encouraged to stand up-wind of the circle and must not be in, or adjacent to, the circle when a control line model is hand-launched or released for take-off.

e) A C/L model must be ditched if there is an immediate risk of collision between the model and a person.

6.4 Radio Control Models

a) Only the frequencies specified on the MFNZ website may be used, and transmitters must comply with RFS27 or RFS29 specifications.

b) A system of frequency control must be used for other than 2.4GHz and other spread spectrum systems.

c) Many R/C equipment "defects" are caused by faulty batteries, connecting wires or switches. Battery failure will almost certainly cause an R/C model to crash and "Fail Safe" devices will not work if the battery fails. Therefore, modellers must take particular care of batteries, connecting wires and switches in their radio control equipment and:

   i) must ensure all batteries are fully charged before flying;

   ii) should use a monitor to check battery condition and/or a battery backup;

   iii) should use batteries less than 5 years old;

   iv) should cycle batteries at regular intervals, not exceeding 12 months; and

   v) should take care to detect the early stages of "black wire" corrosion.

d) No R/C model is to be flown without thorough pre-flight check as per the wings scheme requirements and a ground range test before the first flight of the day or the first flight of a new or repaired model, or after the RC equipment has been repaired or modified.

e) There have been some quite serious, and potentially fatal, accidents caused by starting large models. Positive and effective restraint is required for starting any larger models, and is recommended for anything with a 40 size or larger engine. Such restraints can take many forms depending on the model type and construction, and will generally be guided by local club practices, but can include:

   i) A dedicated helper

   ii) A rope or strap around or on the tail;

   iii) Wheel chocks;

iv) Metal rods (covered with foam); and

v) A safety starting table;

f) The flying field for all R/C flying (except Pylon and Soaring*) will conform to the following rules:

i) The Flying Area

The area reserved for R/C flying must be of sufficient size to enable safe control of the model types flown at the site. As a guide, the area is typically 300 meters by 100 meters but a larger area may be required for large or heavily loaded models, and a smaller area could be suitable for small models such as park fliers.

ii) No-Flying Areas

The area overflown by models must be free of pedestrians, cyclists, occupied vehicles, car parks, and buildings occupied by people. If a person or vehicle enters the area while a model is airborne, flying must cease until the area is free. If the usual landing area is obstructed by the people or vehicles, models must be landed elsewhere. The flight line in front of the pits must be at least 70 meters from any organised public activity not associated with model flying.

iii) The Pits Area

An area where models are stored between flights, and where maintenance and start-up procedures are normally carried out. The pits area should be behind a line at least 20m (an absolute minimum), and preferably 30m from, and parallel to, the side of the runway being used for R/C. Where the 20 meters separation cannot be met, a barrier at least 1metre high should be placed next to and in front of the pits to prevent a model on or near the ground entering the pits from the flying area.

iv) Spectator Line(s)

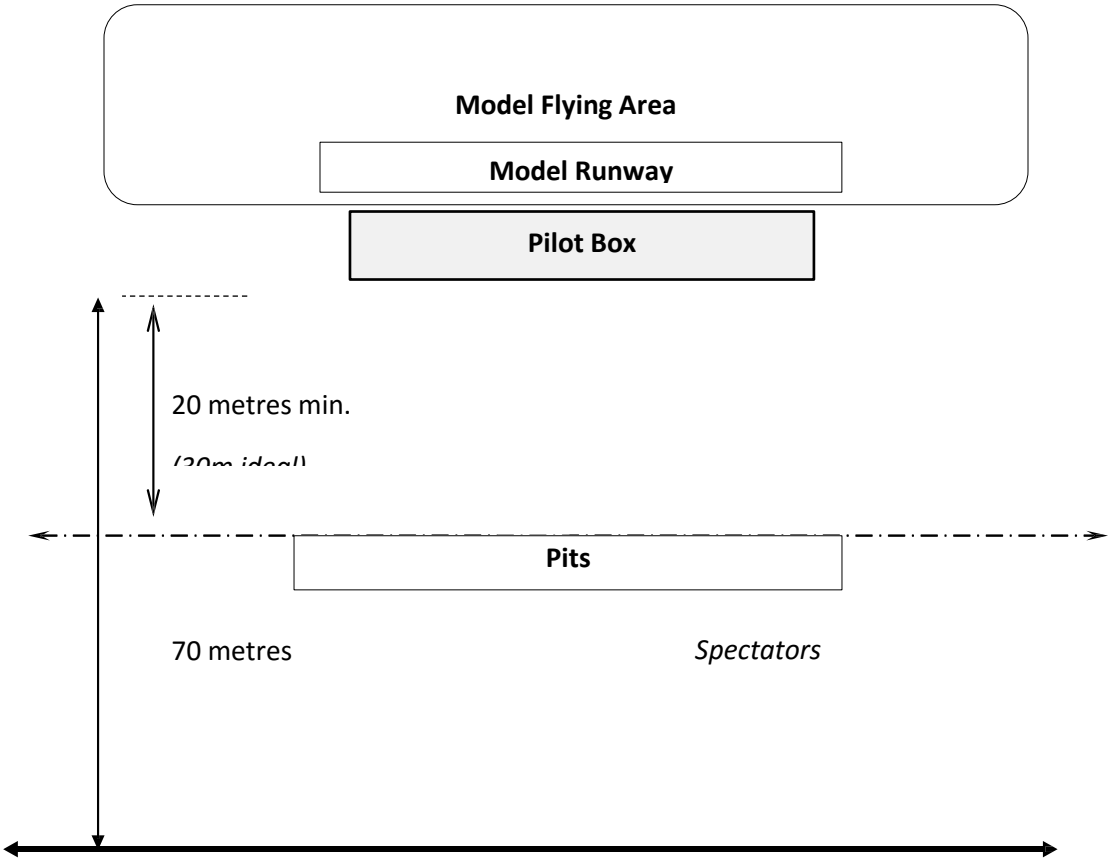
A line, or lines, established at least 70m from, and parallel to, the side of the runway being used for R/C models. The line(s) should extend at least 150m past either end of the runway.

v) Pilot Line(s)

A line(s) established between the runway in use and the spectator line, behind which R/C models must not be flown. This line shall bind an area where pilots are to stand in a relatively closely spaced group while operating their models.

*The proper flying field designs and safety rules for Pylon and Soaring flying are specified in the Codes of Practice of these SIGs.

Members are encouraged to ensure that their club publishes a map of each flying site, based on the diagram below.



6.5 First Person View

6.5.1 Introduction

First Person View (FPV) flying is a branch of the model aircraft hobby whereby the pilot controls the model using a video image transmitted from an on-board camera to a screen or goggles at ground level rather than directly observing the aircraft. FPV equipment can be fitted to any flying model including power glider, helicopter and multi rotor.

6.5.2 Regulatory Requirements

CAA regulations require that FPV flying takes place within the following constraints:

a) The model must remain within the height restrictions for the flying site.

b) The model must remain within the direct line of sight (LOS) of the pilot/observer.

c) The pilot using the FPV equipment must be accompanied by an observer who can maintain a lookout for other aircraft and assist the pilot with identification and orientation of the model in the event of any system.

6.5.3 MFNZ Recommendations for Successful FPV Flying

a) Safe Airframes: Where appropriate, pilots should use lightweight, low-speed models which will minimise impact forces if things go wrong. Faster, heavier aircraft should only be used when the FPV pilot is expert and is flying in a suitable and safe location (i.e. far away from people and property).

b) FPV aircraft should only use electric motors for propulsion. Liquid fuelled motors and Jet engines should not be used. Aircraft should not weigh more than 5 kg and not be capable of more than 100kph in level flight.

c) Safe Location: Pilots should make a considered judgement when choosing their FPV flying field and only fly from a safe location away from populated areas and busy roads. It is important to consider whether, in the event of something going wrong during a flight, the location is safe.

d) Suitable Conditions: Pilots should only fly when weather conditions are suitable for their aircraft and their level of ability. Nil wind is usually ideal (with the exception of slope soaring) and anything below approximately 10kph is suitable for beginners with most aircraft. Pilots should leave more challenging conditions until they have considerable FPV flight experience. Beginners should choose a bright day with a clear horizon so that they have a good attitude reference.

e) Quality Equipment: As with all R/C flying it is important to use good quality components. In addition to a good quality radio transmitter, receiver, servos, etc. a good quality camera should be used that has adequate resolution to easily see the plane's attitude, location, and proximity to other objects. Pilots should also ensure that a high quality video downlink and viewing system (e.g. video goggles) are used. Pilots should select high quality tried and tested components available from the dedicated FPV sources. The video link and the control link must use different frequencies. If using 2.4Ghz for the video link, interference may occur with other users of 2.4Ghz equipment at the flying site. This may result in loss of the video link for the FPV aircraft and loss of control for other pilots. When designing an FPV system it is best to choose R/C and video frequencies that are significantly separated. For example 35MHz R/C control and 2.4GHz video, or 2.4GHz R/C control and 5.8GHz video. Return to home/ Return to land systems, if fitted should not be used to assist with flight beyond the visual range of the pilot/observer.

6.5.4 Pre-Flight Checks

Pilots should:

a) Double check the centre of gravity location of their aircraft before flight.

b) Check R/C Tx/Rx range – as specified in the transmitter manual.

c) Repeat the R/C Tx/Rx range check with the video Tx switched on.

d) Check the video system range. On new set-ups this is best done by flying a LOS circuit whilst recording the FPV feed and then checking the quality before attempting to fly FPV. Alternatively this can be checked by someone else flying a LOS circuit with the newly configured aircraft whilst the pilot monitors the live video. Nb. Ground range tests of video will usually show 1/4 to 1/3 of air to ground range.

6.5.5 Battery Charge Status

Flying FPV can involve several more batteries than normal R/C flight.

All batteries should be checked for full charge before each flight.

Possible the pilot should power all ground equipment from a single, voltage/ capacity remaining monitored audio-alarmed high-capacity source (e.g. a large capacity gel cell).

Ideally the airborne equipment should similarly be powered from a single voltage/ capacity remaining monitored battery, or several if they can all be monitored through an OSD/ low battery display.

The batteries may include:

a) Video Receiver Battery

b) Video Transmitter/ Camera Battery

c) Aircraft (Motor) Battery

d) Video Goggles Battery

e) R/C Transmitter Battery

6.5.6 Training

First Person View flying means that the pilot controls the aircraft by reference to the horizon just as with full-sized aviation. It is recommended that novice FPV pilots practice on a radio control simulator with FPV mode and become proficient before attempting FPV flight for real. Before attempting a first flight it is a good idea for a novice FPV pilot to wear the goggles and view the video feed as a "passenger" whilst another pilot flies the aircraft. This will give the new pilot a feel for FPV flying and allow him to become familiar with the flying field and locality before taking control. Until the pilot is proficient at flying FPV, it is advisable that flights are carried out with an experienced person in charge who will carry out the take offs and landings by traditional line of sight flying.

6.5.7 Positional Awareness

FPV flying is different to line-of-sight flying. The pilot sees a completely different perspective, and during his first flights, it is easy to lose track of where the aircraft is relative to the flying field - especially when directly above it. Pilots should get to know the flying field and locality from the air by flying as a "passenger" and also by using tools such as OS maps, or Google Maps/ Google Earth to become familiar with the terrain, trees, buildings, roads, landmarks, etc. Equipment such as OSDs (on screen displays) which can overlay GPS data on to the pilot's screen and provide an arrow and distance back to the field ensure that positional awareness is

never lost. Flights should be planned to ensure that obstacles such as woods or terrain cannot come between the plane and the pilot thus disrupting control or vision. The observer should be able to see the entire area of operation and be able to spot full-size aircraft that may be entering the model flying area. The observer should establish an effective communication routine to inform the pilot of full-size activity and how to maintain separation between models and aircraft.

6.5.8 BEC Capacity

If the aircraft uses servos for a pan/ tilt camera mount, the pilot should ensure that the BEC on the ESC can drive the total number of servos in the system – or they should use a UBEC. Most BECs, especially when running off 3s LiPos, can only drive 3 or 4 servos. (Regulating the voltage down to 5v creates heat and supplying amps to servos creates heat: too many volts or too many servos can result in thermal overload which shuts down the BEC and the power to the Receiver). If 3 or 4 servos are already in use to fly the plane, adding 2 more for the pan/tilt mount could result in disaster. Pilots need to take care not to overload their BEC.

6.6 Helicopters

It is emphasised that model helicopter flying needs a high degree of safety awareness. The following additional requirements apply to R/C model helicopters:

6.6.1 A Helicopter must never under any circumstances be flown or run up:

a) With sharp leading edges on main or tail blades.
b) Within 10 meters of spectators.
c) In any fashion that might endanger spectators.
d) In the presence of spectators or at a competition, until properly tested and proven airworthy.
e) Until thorough maintenance checks are carried out as set out in b) and c) below; or
f) With a receiver battery pack which is not of welded or soldered construction.

6.6.2 Checks before Daily Flying Session:

a) Check all ball links for wear;
b) Check all main and tail rotor blades for damage, check root at blade pivot hole and check tip weight installation;
c) Check for signs of loose or missing nuts and bolts;
d) Check main drive system for integrity;
e) Check servos are secure and operating correctly;
f) Check fuel tank and piping is secure;
g) Check receiver aerial in good condition with no chafing or damage;
h) Check radio range; and

i) Ensure batteries have been fully charged. (Helicopters place heavy demands on servos, so an on-board battery monitor is recommended.

6.6.3 Checks before each flight:

a) If the helicopter on the previous flight suffered damage or a heavy landing, recheck all of b) above;

b) Check all controls before starting for correct operation, especially for binding links, or slowing servos;

c) Check all controls for correct operation

d) At operating RPM, just before lift-off, check for correct operation of controls; and

e) Check for abnormal vibration, and eliminate before flight;

f) Check main rotor blades for correct tracking in hover.

6.7 Turbojets

A Turbojet Engine is an engine where air drawn in at the inlet is compressed, heated by the burning of a fuel, the resulting hot gases are delivered to a turbine that drives the compressor. The hot gases leave the engine to provide thrust or the thrust is provided from a propeller driven from the turbine. This section does not cover rockets or pulse jets where a compressor and turbine is not part of the design. Turbojet engines have many unique inherent features, namely; continuous combustion, high temperatures, high energy release rates, and the potential for unconfined combustion, especially during the starting phase.

Gas turbine operation requires that operators must be aware of the flying characteristics which arise from the application of gas turbine power. Paying particular attention to:

(a) The delay in response to opening the throttle.

(b) The high speeds which can result from the available thrust not decreasing with increasing air speed.

(c) The residual thrust at engine idle speed which can make for difficulties in slowing the aircraft down for landing.

Reference must be made to the "MFNZ Turbine Code of Practice". Copies are available from the MFNZ Secretary, the New Zealand Jet Modellers Association (NZJMA) website www.nzjma.com or the MFNZ website www.modelflyingnz.org.

6.8 Observer Duties

6.8.1 Scope

EVERY pilot of a radio controlled model aircraft operating within 4km of an operational airfield is required by the Civil Aviation Regulations to have their own competent OBSERVER with them in the PILOT'S BOX while their model is in the air.

This is not a requirement invented by the MFNZ nor the local Club Committees – it is a requirement under the Civil Aviation Regulations. Non-compliance with these regulations could easily cost a Club use of a site

6.8.2 Primary Functions of an Observer

Ensuring the safety of the public, air traffic and other Club members is the paramount role of the OBSERVER. This is achieved by keeping the pilot fully informed of:

Other aircraft movements, both full size and other models, so that proper aircraft separation is always maintained;

The Observer should advise the model pilot of the location, track and height of a manned aircraft entering the flight area and help with recommending a flight path to ensure separation is maintained;

Other pilot's calls and flight intentions (take-off, landing, dead stick, low pass, etc.); and

Any other hazards that may appear during the flight (pedestrians on the strip, dogs, etc.).

Note:

Being an OBSERVER is not a social engagement in the PILOT'S BOX. While the duties are neither difficult nor onerous, full attention is required secondary functions

Additional input from an OBSERVER could be to:

a) Assist with safe engine start up and aircraft handling in the pit area and to the flight line; and
b) Ensure that all other pilots and OBSERVERS are aware of the pilot's flight plans (take- off, landing, dead stick, etc.).

6.9 Night Operations

6.9.1 Purpose and Scope

Model Flying New Zealand (MFNZ) may in accordance with our part 102 certification from time to time, carry out night operations involving various tasks such as:

a) Sporting Events;
b) Aerial Photography or videography; and
c) Public Events.

6.9.2 Special Approvals or Exemptions

a) Any event where night flying is to take place is to be notified to the National Secretary;
b) A flight line director is to be appointed to oversee the conduct of night operations;
c) The pilot in command is responsible for ensuring that any operation or procedures is safely conducted within normal Remotely Piloted Aircraft Systems (RPAS) operating parameters;
d) When engaged in night flying, especially a low flying operation, the pilot in command is not absolved from any action brought against them under common law in respect of noise, damage to property or injuries to persons caused by such operations; and
e) If flying from an aerodrome, it is to be closed to manned aviation and all Search and Rescue services are to be informed that night flying is taking place.

6.9.3 Operating Area Limitations

a) All night operations shall be flown in visual meteorological conditions and in accordance with the relevant Civil Aviation Regulations, flight rules and Airways procedures unless approval has otherwise been granted by CAA. Ceiling and Visibility minimums are as follows;
b) Minimum Ceiling of 1500' AGL;
c) Minimum Visibility of 5km;
d) If the above mentioned minimums are not present as per the forecast or by visual inspection, then no night operations are to commence; and
e) Prior to commencement of night flying, the pilot in command shall ensure that they have gained a proper understanding of the operational area.

6.9.4 Aircraft Operating Procedures

a) The pilot shall at all times have an observer present and continuous communications between the two parties shall be required; and
b) The RPAS is to be fitted with temporary illumination.

6.9.5 Crew Member Requirements

a) It is emphasized that ultimately the sole authority for the safety of the operation is the pilot in command who may cancel or terminate a sortie at any stage if he/she considers that it is not prudent to continue due to adverse weather or other factors affecting safety;
b) The pilot in command of an RPAS carrying out night flying must;
c) Have a proficiency qualification issued by MFNZ; and
d) Demonstrated competence in night flying to the event organiser. Before the event takes place, pilots should demonstrate to the organiser that the aircraft is fitted with adequate lighting and complete the basic wings test for the type of aircraft, undertake the test under twilight conditions. Particular attention should be given to the ability to land accurately in accordance with the test

parameters. Successful pilots should be given a written record of completion of the test. Previous qualification may be accepted by the organiser.

6.9.6 Spectators

The event organizer is to ensure that spectators are contained in a clearly defined area and that the distance of the spectator area is no less than 30 metres from the flying area.

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Appendices

Appendix 1 – Referenced MFNZ Documents e.g. COP's etc (To Follow)

Appendix 2 – Basic inspection check sheet (if desired or could be referenced) (To Follow)

Appendix 3 – Websites for CAA, Air share, and others (To Follow)