

CODE OF PRACTICE FOR THE SAFE OPERATION OF RC Vintage Models

INDEX Page	
Foreword
Definitions
Introduction

THE CODE OF PRACTICE

1. Design
 2. Control systems
 3. Frequency Control
 4. Flying Site
 5. Motors/Models
 6. Launching/Take Off
 7. Flying
 8. Maintenance
 9. Operator Qualifications
 10. First-aid Kit
 11. Competition Specific Points of Note
- Annex A: Suggested Field Layouts

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Foreword

Members of the NZMAA Vintage Special Interest Group have prepared this Code of Practice and it is submitted in good faith to promote the

NZMAA RC Vintage Code of Practice

safe operation of RC vintage model aircraft. The content of the Code is drawn from the collective knowledge of those individuals who have amassed significant experience in the building and operating of RC vintage model aircraft.

Whilst every effort has been made to avoid errors and omissions, the authors cannot be held responsible for any and every eventuality arising from the application of this Code. The safe operation of any vintage model shall remain the sole responsibility of the operator. The warnings, cautions and instructions discussed in this manual cannot cover all possible conditions and situations that may occur. It shall be understood by the operator that common sense and caution are factors that cannot be built into model aircraft but shall be supplied by the operator.

Definitions

Persons complying with the requirements of the Code must be aware that throughout the Code there are certain words which have specific meanings, defined as follows:-

'Shall' - indicates an absolute obligation to comply. (There are no circumstances under which the requirement could be relaxed).

'Should' - indicates an obligation to comply so far as is practicable but allows a relaxation of the requirement under exceptional circumstances. (There has to be a very good reason why the requirement is not complied with).

'May' - indicates a preferred course of action, based on collective experience. (Non-compliance is not expected to result in an unsafe situation)

Introduction

Radio controlled vintage models share many of the safety issues of other powered model aircraft. Those people choosing a vintage model as an entry to the sport of radio controlled models should first make

NZMAA RC Vintage Code of Practice

themselves familiar with these general safety issues, as detailed in Chapter 4 of the NZMAA Members Handbook.

Specific safety issues relating to vintage model aircraft in particular are as follows:

- a. Danger of structural failure during high speed climbs.
- b. Likelihood due to the generally older design of the model of a high increase in speed due to unusual manoeuvres and consequent structural failure
- c. An increased risk due to the nature of competition spot landings and the risk of being hit by a landing model

To prevent or minimise risk from all of these possibilities there are various approaches.

- i. Ensure that operators and pilots have a level of skill, knowledge and experience to enable them to avoid dangerous situations.
- ii. Ensure that failures and incidents happen as infrequently as possible by paying attention to reliability, appropriate model structural strengthening, operational procedures and maintenance. It should be noted that the structure (not the outline) of vintage models may be altered to impart more strength to make it more suited to its use as an RC model.
- iii. Provide fail safe areas and mechanisms whenever practicable to ensure that most failures follow a "low risk" path.
- iv. Pay attention to where and when we fly to ensure the safety of people, property and the environment.

THE CODE OF PRACTICE

1. Design

- 1.1 All vintage models, however designed and constructed, should be subject to testing before operation in flight to ensure that all components will sustain the expected stresses arising from the models operation.
- 1.2 Where a design has been published or a kit being manufactured commercially, no inferior materials or techniques should be substituted for those specified. Appropriate modifications to increase strength are permitted, but unless you have a rudimentary engineering knowledge be careful that such changes do not simply cause failure-prone zones or other problems elsewhere. Should pilots have any concerns about the expected strength of repairs they should contact the Vintage SIG for advice.
- 1.3 Pilots must ensure a new model is designed for the flight speeds to be used. Advice may be sought from other operators of similar type to establish service reliability. New models should be examined carefully for defects that could lead to structural failure, and if defects are found, then have these assessed by experienced persons to determine serviceability or repair/replacement.
- 1.4 Pilots should ensure that their motor starting technique minimises and risk of personal or clothing contact being made with the rotating propeller.

2. Control systems

- 2.1 The pilot of the model is to ensure the integrity of control linkages before use.
- 2.2 Radio installations should have the battery and receiver protected from shock and vibration and all servos should be fully screwed into place with control arm screws fitted. Control linkages should be as short as practical and of a suitable stiffness for the expected flight loads, taking into account the size of model.
- 2.3 It is recommended that pilots use a voltmeter/load tester to ensure the on-board battery is suitably charged for the expected duration of the flight.
- 2.4 Faulty or incorrectly charged batteries cause more crashes than all other radio equipment failures. Transmitter and receiver batteries shall be maintained in good condition and be correctly charged before use. It is very strongly recommended that good quality rechargeable batteries be used.

Note:

NZMAA RC Vintage Code of Practice

Some modellers consider it is prudent to replace battery packs after three or four years of use, even if they appear to be functioning correctly.

- 2.5 Pilots are to check before flying each day that controls are moving freely in the correct direction and carry out a transmitter range check.
- 2.6 Battery leads, plugs, and switch contacts should be examined regularly to detect early stages of 'black wire' corrosion and should be replaced if any doubt exists as to the leads suitability.

3. Frequency Control

- 3.1 Every pilot intending to fly should provide him or herself with a standard NZMAA peg for use on the pegboard. The pilot's name should be clearly marked on the peg and may also include the frequency number.
- 3.2 When flying operations, or ground testing of radio equipment is in progress, the pegboard should be used, and shall be used if more than three pilots are present and intending to fly. In informal gatherings pilots should check with other visible pilots and perhaps use pen/paper if numbers warrant it to keep track of frequency use if no peg board is available.
- 3.3 Each pilot shall place his/her peg in the appropriate slot in the pegboard and remove the pegboards peg before switching on, and shall ensure that his/her equipment is switched off before removing his peg.
- 3.4 Only the pilot him/herself, or a person he/she authorises, is permitted to remove a peg from the pegboard, except that a pilot's peg may be removed if, after a thorough investigation, those present agree that he/she is no longer at the field or in its vicinity.
- 3.5 All radio control equipment used shall be operated in accordance with the NZMAA rules and on NZMAA approved frequencies. In addition it is recommended that radio transmitters be range checked:
 - a. Immediately after purchase.
 - b. When changing to a previously untested frequency.
 - c. Whenever there is doubt that they are functioning correctly.
 - d. After the radio equipment has been repaired or modified.
 - e. Before each flying session.

Note:

The ceramic filters in receivers are very prone to impact damage and subsequent intermittent operation. It is recommended that these are replaced after a crash. Some modellers consider it prudent to replace receiver crystals after a crash even if the equipment appears to be functioning correctly

NZMAA RC Vintage Code of Practice

- 3.6 For large events/gatherings the organisers are recommended to use of a controlled transmitter impound system.

4. Flying site

- 4.1 The pilot will not fly above 400ft from the ground within 4km of an aerodrome or above the altitude limit for the particular site, or at such a height or distance as renders the models attitude and speed difficult to detect, given due regard to weather conditions of the day.
- 4.2 The flying site should be laid out similar to that shown in Annex A, taking into account local rules and variations. The site layout shown in the Soaring SIG Code of Practice could also be used. Parking areas should where possible be located near natural shelter such as a tree line or power lines to discourage low flying over the area.

5. Motors/Models

- 5.1 All models shall have been test flown before attempting competition flights.
- 5.2 The pilot shall ensure that in the motor in all models, except for the 1/2A Texaco class, can be stopped from the radio transmitter.

6. Launching /Take Off

- 6.1 Designated areas for launching should be allocated.
- 6.2 Launching preparations should include a control check for full and free movement and in the right sense and a check that transmitter battery indicator is in the operating zone.
- 6.3 Flying models have right of way over launching models.
- 6.4 Immediately before launch the pilot shall check to ensure that there are no people or objects in, or dangerously near to, the intended path of the aircraft and that the receiver is switched on.

7. Flying

- 7.1 Pilots shall maintain visual contact with their aircraft at all times.
- 7.2 Model aircraft shall keep well clear of all man carrying aircraft.
- 7.3 Landings should be carefully planned, and be carried out at least 30 metres from the pits giving due regard to local obstacles such as trees, powerlines and fences.
- 7.4 Pilots should stand on the upwind side of the intended landing spot.
- 7.5 The pilot should lose excess height well away from the landing spot rather than use high speed passes low over the field.
- 7.6 Models should not be flown over parked cars, spectators or pit areas. Landing approaches should take this into consideration.

NZMAA RC Vintage Code of Practice

- 7.7 In competitions more than one landing spot should be employed if it is likely that several pilots may be attempting landings at the same time.
- 7.8 Ideally, each club should produce a map to show its members safe flying areas, no-go areas and suggested pit locations.

8. Maintenance

- 8.1 As well as before flight checks, model owners should periodically inspect their models for fine cracks, delamination and other signs of extreme stress and rectify before flying again.
- 8.2 After a heavy landing, the model should be checked for damage including full movement of controls to indicate broken servo gears or loose hinges, cracked wing joints, damaged undercarriages, etc. It may be necessary to disassemble a model for a full inspection

9. Operator Qualifications

- 9.1 No person shall undertake a flight, or other associated activity, for which he is not properly prepared and competent. If in doubt, seek help from someone with appropriate experience.
- 9.2 Operators of vintage models should have attained a recognised standard of flying proficiency (Wings Badge) before attempting to fly an aircraft unsupervised. Persons supervising flying activities shall also be qualified to this standard.
- 9.3 Operators in NZ shall comply with the requirements of the Civil Aviation Authority publication CAR 101 and the current issue of the NZMAA Members Handbook.

10. First-aid Kit

- 10.1 A basic first-aid kit should always be available. The overwhelming number of injuries are lacerations, bad cuts and even amputations from propellers. The first aid kit should be optimized for dealing with this type of injury. I.e Alcohol/disinfectant, sterile pads, bandages and safety pins.

NB; I (the Competition Manager) will come up with a list for this kit and supply the list to you, hopefully before Christmas.

11. Competition Specific Points of Note

Organiser responsibility

There is an issue with complacency within the flying fraternity, most of the pilots have been in the sport for a long time and take for granted that everyone is aware of possible risks or assume that all will be well, just like it was last time.

NZMAA RC Vintage Code of Practice

Organisers are to ensure that all competitors hold current NZMAA membership for insurance purposes and that they preferably hold a proficiency badge for the type of model being flown.

This is where it falls to the organisers, in particular the contest directors, to give a full safety briefing, and to make sure that any visitors to the field are aware of possible risks and precaution's that should be taken.

A safety briefing would need to include:

- * Launch safety procedures; including stop, look, and listen.
- * Safety zones.
- * No fly zones.
- * Correct use of the peg board and radio equipment.
- * Spectator safety.
- * The role of helpers/timers working as the eyes and ears for pilots whilst they are flying.
- * Equipment standards and suitability.

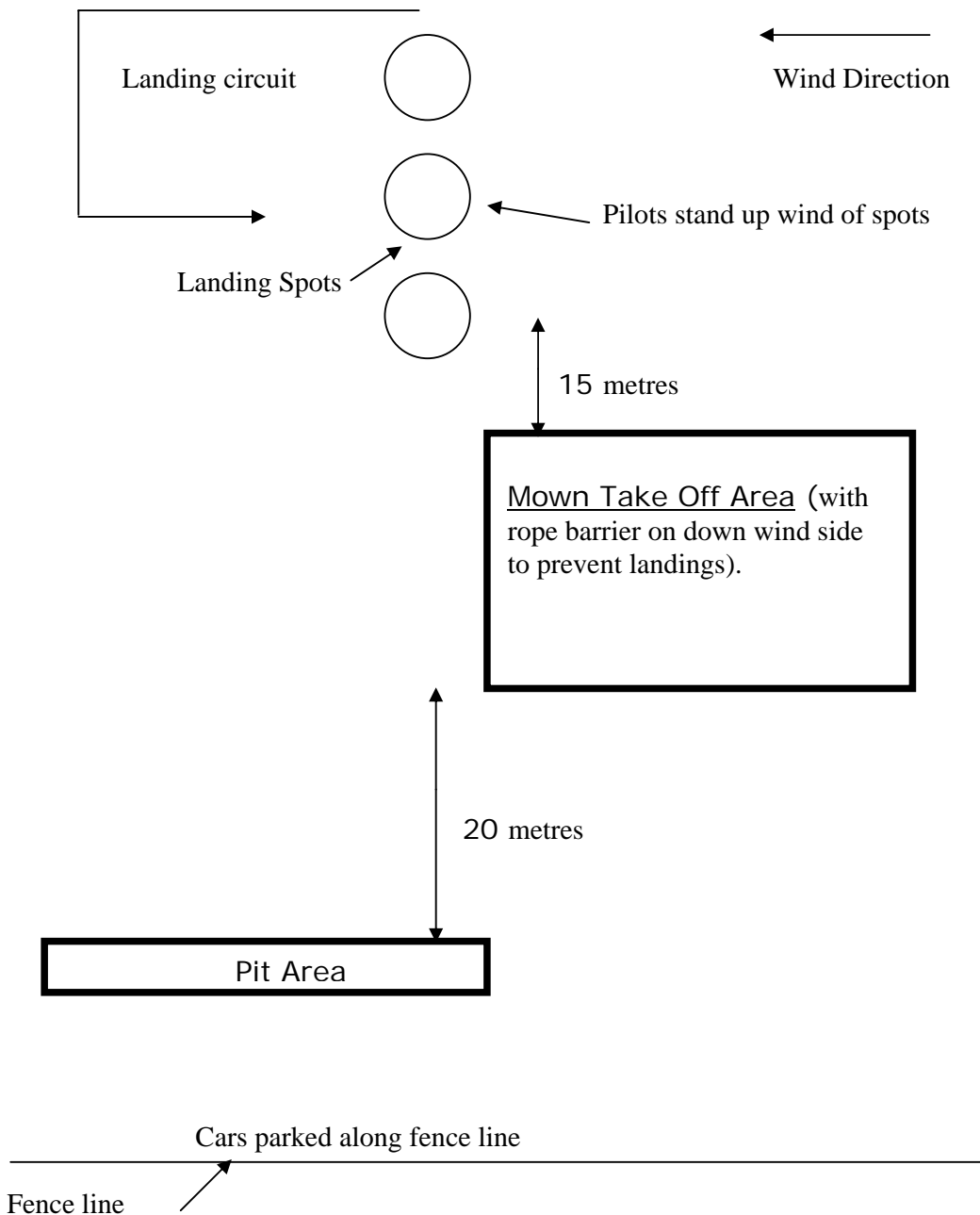
Personal responsibility

It is the pilots responsibility to make sure that;

- * Their models are sound, and suitable for the conditions.
- * Radio gear is in working order, eg no black wire disease etc
- * To make sure batteries are fully charged.

It is the responsibility of all on the field to be aware of what's going on and to keep eyes and ears open at all times.

Annex A Suggested Field Layout (not to scale)



Notes.

The field should be arranged such that the sun direction will be from the pit area towards the landing area. The layout should be reversed for the opposite wind direction.

The pilot positions should be in line with the down wind side of the take off area and on the up wind edge of the 20 metre diam. landing spot.

The centre of the first landing spot should be 15 metres from the edge of the take off area and the landing spot centres should be 25 metres apart.