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1 INTRODUCTION

1.1 PHILOSOPHY

Flying model designs of another era is of nostalgic appeal. It does not attempt to advance the state of the art of aeromodelling, rather to preserve the progress of model flying within the Vintage, Nostalgia, Classic, and Classical periods defined by these rules.

The satisfaction of building, trimming, and flying designs from another era is enhanced by testing these models, and their flier's abilities, through a range of competitive tasks, each with a distinct goal.

The rules that follow create classes suitable to New Zealand conditions and heritage. Their evolution is chronicled in Appendix B.

1.2 SAFETY

Vintage flying conforms to the safety requirements specified in the MFNZ Members Handbook. This Handbook is available from the MFNZ Secretary or MFNZ website.

1.3 CODE OF PRACTICE

The building and flying of RC Vintage Models is guided by the 'Code of Practice for the Safe Operation of RC Vintage Models', which is available from the Vintage SIG Secretary or MFNZ website, and is included as Appendix A to these Rules.

2 RADIO CONTROL GENERAL RULES

2.1 DESIGNS AND MODELS

2.1.1 Types of Design

Power Models: Models powered by engines that obtain energy by combustion or by expansion of a fluid or gas acting on a piston, or motors which convert electrical energy into mechanical energy.

Rubber Models: Models originally powered by extensible motors that convert stored energy into mechanical energy.

2.1.2 Periods of Eligible Designs

Vintage: up to 31st December 1950

Classical: from 1st January 1951 to 31st December 1975

2.1.3 Authentication of Designs

Authentication of both model design and its date of origin are the responsibility of the contestant. Authentication is achieved through any of the following:

- a. Evidence of publication or kit release *within* the relevant period, which also establishes the date of origin. This evidence may be obtained from SAM USA or NFFS listings, or from other sources.
- b. Evidence of publication or kit release *later* than the relevant period together with evidence that a model from the design was flown within the relevant period in a specified year, which is thereby established as the date of origin. This evidence may be obtained from SAM USA or NFFS listings (including NFFS publication of the plan), or from other chosen sources such as magazine references.
- c. In the absence of evidence of publication or kit release, by written approval of the Vintage SIG Committee on the basis of submitted evidence.

Design name and authenticated date are clearly displayed on the model.

2.1.4 Scaling of Designs

Models may be scaled up or down from the original design.

2.1.5 Wing Area Calculation

Where the rules for a class require calculation of wing area, the following applies:

- a. Wingspan: the distance from tip to tip without considering dihedral i.e. as it appears on the plan.
- b. Tip shape: rounded or tapered tips are ignored.
- c. Area of constant chord wings is calculated as Chord x Wingspan.
- d. Area of tapered or elliptical wings (where either or both leading or trailing edge taper or curve from the wing root or fuselage junction) is calculated as Chord at 25% of Wingspan x Wingspan.

2.1.6 Wing Loading

Unless otherwise stated, the minimum wing loading is 8 oz/sq ft.
See Rules 5.6.3 and 5.9.3 for exemptions.

2.1.7 Modification of Design and Construction

The following aspects of reasonable fidelity to the original design are required:

- a. Proportions of whole design
- b. Wing and tail surface outlines
- c. Fuselage shape
- d. Dihedral angles
- e. Moments
- f. Airfoil sections

The following modifications are allowed:

- a. Fitting of radio control
- b. Minor changes to the thrust line
- c. Wing in more than one piece
- d. Removable tail surfaces, undercarriage, and other parts
- e. Strengthening of structure
- f. Lightening of structure
- g. Sheeting of wing and tailplane centre sections.

The following modifications are not allowed:

- a. Additional sheeting on the front third of the airfoil top surface.
- b. Additional spars that touch the top covering in the front third of the airfoil.

2.1.8 Moveable Control Surfaces

Control surfaces are limited to rudder and elevator (or elevons in the case of a v-tail design) unless the original design specified other moving surfaces such as ailerons, flaps, spoilers or variable-camber. If such surfaces are present in the design they may be radio controlled.

Exemptions:

- a. A model in the Vintage or Classical Scale Texaco class may have optional additional control surfaces (see 5.9).
- b. A model constructed before 28/02/2011 that is equipped with ailerons when these were not specified in the original design is eligible for use in competitions if the ailerons are locked. (The three models registered as exempt from this rule as a transition provision implemented in 2011 may use active ailerons).

2.1.9 Construction Materials

Modern materials may be used in construction and covering, but the finished model must comply with the appearance of the original.

2.1.10 Propellers

Propellers are fixed pitch, have two blades, and are non-folding.

The exception for Vintage E Rubber Texaco is noted in Rule 5.6.4.

2.1.11 Undercarriages

Undercarriages, including wheel-mounting and skids, have the original dimensions. One wheel gear may be changed to two but not vice versa. A skid may be replaced by one or more wheels. Gear that retracted may be operated by radio or presented as locked in either the retracted or extended position.

2.1.12 Builder of the Model

A contestant need not be the builder of the model used in a contest. Only one contestant may fly a particular model in a given event.

2.2 ENGINES AND MOTORS

2.2.1. Permitted IC (Internal Combustion) Engines

The engine types permitted are:

- a. Ignition two-stroke, defined as using spark plugs to initiate combustion and using fuel mixtures that are petrol or alcohol based without performance-enhancing additives.
- b. Diesel
- c. Glow two-stroke cross flow
- d. Glow two-stroke Schneurle-ported with front intake and side exhaust with standard muffler
- e. Four-stroke glow, ignition, or diesel

2.2.2 Vintage Engines

Any of the types listed in 2.2.1 qualify as Vintage Engines if they were first manufactured before 1st Jan 1951. Replicas of engines produced at a later date with no performance-enhancing modifications are considered vintage.

2.2.3 Converted Engines

An engine converted to a mode of operation different to that it was manufactured for (e.g. Glow to Diesel, Glow to Ignition) is categorised in its converted state.

2.2.4 Maximum Engine Capacity

- | | | |
|----|----------------------|--------------------------|
| a. | Vintage engines: | 1.0 cubic inch (16 cc) |
| b. | Four stroke engines: | 1.0 cubic inch (16 cc) |
| c. | Other engines: | 0.65 cubic inch (11 cc) |

2.2.5 Mufflers

The use of mufflers is strongly encouraged on non-vintage motors.

2.2.6 Permitted Electric Motors

All types of electric motors are permitted. There is no limitation on electric motor size. Selection of motor type and size is influenced by the specification of motor batteries in classes that require or allow electric motors.

2.3 FLIGHT RULES

2.3.1 Contest Director (CD)

The CD oversees each competition and ensures compliance with relevant Rules. The CD locates the launching and landing areas to provide best use of the site with regard to safety and wind direction. The CD may re-designate launching and landing areas due to changes in wind direction or safety requirements. If practicable, finishing time is extended by the time taken to relocate. The CD specifies areas that must not be over-flown.

2.3.2 Timekeeper

A flier may not time his own contest flight - this is the job of the timekeeper. The timekeeper is also responsible for timing engine or motor run for flights with a limited power phase.

2.3.3 Number of Models

In each event, a contestant may use a maximum of two models to complete official flights and fly-offs.

2.3.4 Age Bonus

A design age bonus is added to each flight score in all Vintage classes. The Age Bonus is calculated as one point for each full year the design predates the Vintage cut-off date, as per the following

1950	0	1943	7	1936	14
1949	1	1942	8	1935	15
1948	2	1941	9	1934	16
1947	3	1940	10	1933	17
1946	4	1939	11	1932	18
1945	5	1938	12	1931	19
1944	6	1937	13	1930	20 (max)

2.3.5 Landing Bonus

When specified in the rules for a class, a landing bonus of 20 points is awarded if the nose of the model comes to rest within 15 meters of a specified spot. The nose is defined as the most forward part of the model on the centre line.

2.3.6 Method of Launching

Models may rise off ground (ROG) or be hand launched.

2.3.7 Timing of Engine and Motor Runs

Engine or motor run times are not rounded down.

A run time over the stipulated maximum is an over-run.

If an over-run occurs on a contestant's first or second attempts, that flight may be taken as a no-flight. Refer to the first paragraph of Rule 2.3.9

Timing starts when one of the following occurs:

- a) The model leaves the hand when hand launch is used
- b) The model leaves the ground when ROG is used.

Timing stops when one of the following occurs:

- a) The timekeeper hears the engine or motor stop
- b) The timekeeper sees the propeller stop rotating
- c) The timekeeper sees the flyer fully cut the RC throttle.

2.3.8 Timing of Flights

Flight times are rounded to the nearest whole second below the watch reading, eg 55.3 seconds = 55 seconds, 55.9 seconds = 55 seconds.

Timing starts when one of the following occurs:

- a) The model leaves the hand when hand launch is used
- b) The model leaves the ground when ROG is used.

Timing stops when one of the following occurs:

- a) The model first touches the ground at the end of its flight
- b) There is a collision with an obstruction and the model ceases forward motion
- c) The model goes out of sight of the timekeeper.

Collision with an obstruction is when the model flies into an obstruction and does not instantly glance off it and continue flying normally. Examples of collisions are flying into a building then remaining fixed or sliding down a wall or roof slope, or flying into a tree and either becoming lodged or falling through it, or flying into power wires and either remaining on them or falling through. In all such cases the watch shall be stopped when the collision occurs and not when the model stops moving under the influence of gravity.

Goes out of sight of the timekeeper is when the model is still flying but becomes indistinct from the background, or flies into cloud or ground mist, or flies behind ground obstructions such as buildings, trees, people, or behind hills or local ridges.

In all such cases the timekeeper continues to look for the model and starts a verbal count to 10 seconds when visual contact with the model is lost. If the count reaches 10 the watch is stopped. The flight time is the time recorded on the watch minus 10 seconds. If visual contact is again made with the model before a count of 10 is reached, timing continues normally.

Timing continues if the model performs a "touch and go" after becoming airborne from ROG or hand launch and resumes flying immediately. If flying does not resume, then timing stops.

Timekeepers may move within the launching area to keep the model in sight

The timekeeper may advise the elapsed time of the flight to assist the flier to judge motor run or flight time.

2.3.9 No-flights

A no-flight entitles the competitor to a repeat attempt. Each competitor may have two no-flights per round. A third no-flight in a round may be recorded as an official flight except when this is caused by a motor over-run, in which case the flight is recorded as zero. A no-flight is recorded

- a. If the flight total is 60 seconds or less in Precision and Duration events.
- b. If the flight total is 120 seconds or less in Texaco events.
- c. If the motor run exceeds the stipulated maximum.
- d. If any part of the model becomes detached during the flight.
- e. If the model collides with a person or other obstruction at launch, or with another model. If this occurs, the competitor may opt to have this flight recorded, but must do so before his next official flight.
- f. If the timekeeper makes an error that affects a flight score, the contestant may claim an additional attempt.

2.3.10 Fly-offs

Ties for first place are broken by a fly-off that will normally be held during a pre-announced 15 minute period at the end of the contest. When an event has specific fly-off requirements, these are noted in the rules for that event.

If RC frequency clashes prevent a common fly-off, the CD draws names for equal sized groups for a series of fly-offs. In adverse conditions the CD may postpone or cancel the fly-off.

For NDC events, if a maximum score is achieved for all normal rounds of an event, a single fly-off round is flown to the fly-off rule for that event. Points for the normal rounds (i.e. maximum score), the fly-off round score (and for the R/C Precision event, the age bonus) are notified to the MFNZ (NZMAA) NDC Recording Officer. Note that for all unlimited Duration fly-offs the competitor adds the age bonus before sending the results to the Recording Officer. If NDC scores are tied after the fly-off the NDC points are shared between the tied contestants.

2.3.11 Binoculars

Binoculars are permitted.

2.3.12 Thermal Detectors

Streamers are the only artificial aid to indicate of wind direction or thermal activity.

2.3.13 Adverse Weather Conditions

The CD may interrupt a contest if wind speed exceeds 6m/sec (21.6 kph) at 2 metres above ground; if visibility does not allow fair observation of the models; or if the CD considers conditions to be unsafe.

3 RADIO CONTROL PRECISION CLASSES

3.1 RC Vintage Precision

Purpose: To enjoy RC flying of Power Model designs from the Vintage period through achieving a specified flight time and landing bonus. The motor run is generous, so that 'sport' designs compete equally with duration types. Motors may be either IC or electric.

- 3.1.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 3.1.2 All Radio Control General Rules (see Section 2) apply.
- 3.1.3 Power is either IC or electric. An IC engine may be of any type and size, subject to Rule 2.2.4 Maximum Engine Capacity. An electric motor may be of any type and size and the drive battery capacity is unlimited. If an electric motor is used, it is fitted with an electronic propeller brake function that is engaged when the motor is off.
- 3.1.4 Maximum motor run is 60 seconds.
- 3.1.5 Age bonus applies (see Rule 2.3.4).
- 3.1.6 Landing bonus applies (see Rule 2.3.5).
- 3.1.7 Score is the aggregate of 3 flights, each scored at one point per second up to 180 seconds, with one point deducted for each second over 180, and bonuses for age and landing added up to maximum of 200.
- 3.1.8 If scores are tied, fly-off flights proceed according to the scoring in 3.1.7, but without age bonuses, until there is a clear winner, or until the CD declares joint winners. (See Rule 2.3.10 for NDC fly-offs.)

3.2 RC Classical Precision

Purpose: To enjoy RC flying of Power Model designs from the Classical period through achieving a specified flight time and landing bonus. The motor run is generous, so that 'sport' designs compete equally with duration types. Motors may be either IC or electric.

- 3.2.1 Eligible models are from the Classical period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 3.2.2 All Radio Control General Rules (see Section 2) apply.
- 3.2.3 Power is either IC or electric. An IC engine may be of any type and size, subject to Rule 2.2.4 Maximum Engine Capacity. An electric motor may be of any type and size and the drive battery capacity is unlimited. If an electric motor is used, it is fitted with an electronic propeller brake function that is engaged when the motor is off.

- 3.2.4 Maximum motor run is 60 seconds.
- 3.2.5 Age bonus does not apply.
- 3.2.6 Landing bonus applies (see Rule 2.3.5).
- 3.2.7 Score is the aggregate of 3 flights, each scored at one point per second up to 180 seconds, with one point deducted for each second over 180, and bonus for landing added up to a maximum of 200 points.
- 3.2.8 If scores are tied, fly-off flights proceed according to the scoring in 3.2.7 until there is a clear winner, or until the CD declares joint winners. (See Rule 2.3.10 for NDC fly-offs.)

4 RC DURATION CLASSES

4.1 RC Vintage IC Duration

Purpose: To enjoy RC flying using IC engines with Power Model designs from the Vintage period through achieving maximum flight time from a limited engine run.

- 4.1.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 4.1.2 All Radio Control General Rules (see Section 2) apply.
- 4.1.3 Power Loading
Maximum engine capacity is limited to 0.1 cu in per 225 sq in of wing area calculated according to Rule 2.1.5. For the purposes of this calculation, the capacity of vintage ignition, vintage diesel and four stroke engines is 60% of their rated capacity.
- 4.1.4 Maximum engine capacity is determined by Rule 4.1.3 Power Loading, subject to the over-riding limits specified by Rule 2.2.4 Maximum Engine Capacity.
- 4.1.5 The types of engine permitted are vintage ignition, vintage glow/diesel, non-vintage ignition, two-stroke cross flow, two-stroke Schneurle-ported plain bearing, two-stroke Schneurle-ported ball bearing sport engines (front intakes and side exhausts with standard mufflers), and four stroke.
- 4.1.6 Maximum engine runs are:
- | | | |
|----|--|------------|
| a. | Vintage ignition | 40 seconds |
| b. | Vintage glow/diesel | 30 seconds |
| c. | Two-stroke cross-flow glow or diesel, two stroke Schneurle ported plain bearing glow or diesel, non-vintage ignition, and pre-1987 four stroke | 25 seconds |
| d. | Post-1986 four-stroke, and two stroke Schneurle ported ball bearing sport glow or diesel engines (front intake and side exhaust with standard muffler) | 20 seconds |
- 4.1.7 Age bonus applies (see Rule 2.3.4).
- 4.1.8 Landing bonus applies (see Rule 2.3.5).
- 4.1.9 Score is the aggregate of 3 flights, each scored at one point per second up to 240 seconds and both age and landing bonuses added up to maximum of 260. Landing bonus is zero if flight exceeds 6 minutes.
- 4.1.10 If scores are tied, rounds of fly-off flights proceed with 480 seconds maximum flight time with both age and landing bonuses added up to a maximum of 500, until there is a clear winner, or until the CD declares joint winners. (See Rule 2.3.10 for NDC fly-offs.)

4.2 RC Vintage E Duration

Purpose: To enjoy electric RC flying with Power Model designs from the Vintage period through achieving maximum flight time from a limited motor run. The battery has maximum capacity – and hence current draw - specified by a formula based on model size (measured by wing area).

- 4.2.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 4.2.2 All Radio Control General Rules (see Section 2) apply.
- 4.2.3 Drive battery chemistry is one of LiPo, LiFePo, and NiMH.
- 4.2.4 Maximum manufacturer's rated battery capacity for the drive battery is:
 - for LiPo cells: $(220 \times WA) / (S \times C)$ mah
 - for LiFePo cells: $(250 \times WA) / (S \times C)$ mah
 - for NiMH cells: $(665 \times WA) / (S \times C)$ mahwhere WA is wing area in square inches,
S is number of cells connected in series, and
C is manufacturer's stated standard discharge rating (not short-duration peak rating). If C is not stated, it will be taken as 50.
- 4.2.5 The motor runs continuously from launch for 20 seconds maximum.
- 4.2.6 Age bonus applies (see Rule 2.3.4).
- 4.2.7 Landing bonus applies (see Rule 2.3.5).
- 4.2.8 Score is the aggregate of 3 flights, each scored as one point per second up to 300 maximum flight time, with age bonus and landing bonus added up to a maximum of 320.
- 4.2.9 If scores are tied, rounds of fly-off flights proceed according to 4.2.8 but with 600 seconds maximum flight time, with age bonus and landing bonus added up to a maximum of 620, until there is a clear winner or until the CD declares joint winners. (See Rule 2.3.10 for NDC fly-offs.)

4.3 RC Classical IC Duration

Purpose: To enjoy RC flying using IC engines with Power Model designs from the Classical period through achieving maximum flight time from a limited engine run.

- 4.3.1 Eligible models are from the Classical period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 4.3.2 All Radio Control General Rules (see Section 2) apply.
- 4.3.3 Power Loading
Maximum engine capacity is limited to 0.1 cu in per 225 sq in of wing area calculated According to Rule 2.1.5. For the purposes of this calculation, the capacity of vintage ignition, vintage diesel and four stroke engines is 60% of their rated capacity.

- 4.3.4 Maximum motor capacity is determined by Rule 4.3.3 Power Loading, subject to the over-riding limits specified by Rule 2.2.4 Maximum Engine Capacity.
- 4.3.5 The types of engine permitted are vintage ignition, vintage glow/diesel, non vintage ignition, two-stroke cross-flow, two stroke Schneurle ported plain bearing, two stroke Schneurle-ported ball bearing sport engines (front-intake, side-exhaust with standard muffler), and four stroke.
- 4.3.6 Maximum engine runs are:
- | | | |
|----|--|------------|
| a. | Vintage ignition | 40 seconds |
| b. | Vintage glow/diesel | 30 seconds |
| c. | Two-stroke cross-flow glow or diesel, two stroke Schneurle ported plain bearing glow or diesel, non-vintage ignition, and pre-1987 four stroke | 25 seconds |
| d. | Post-1986 four-stroke, and two stroke Schneurle ported ball bearing sport glow or diesel engines (front intake and side exhaust with standard muffler) | 20 seconds |
- 4.3.7 Age bonus does not apply.
- 4.3.8 Landing bonus does not apply.
- 4.3.9 Model is required to land within the boundaries of a field defined by the CD.
- 4.3.10 Score is aggregate of 3 flights, each scored at one point per second up to 300. The score for any flight is zero if the model fails to land within the field boundaries defined according to 4.3.9.
- 4.3.11 If scores are tied, rounds of fly-off flights proceed according to 4.3.10 but with 600 seconds maximum flight time, until there is a clear winner, or until the CD declares joint winners. (See Rule 2.3.10 for NDC fly-offs.)

4.4 RC Classical E Duration

Purpose: To enjoy electric RC flying with Power Model designs from the Classical period through achieving maximum flight time from a limited motor run. The battery has maximum capacity – and hence current draw - specified by a formula based on model size (measured by wing area).

- 4.4.1 Eligible models are from the Classical period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 4.4.2 All Radio Control General Rules (see Section 2) apply.
- 4.4.3 Drive battery chemistry is one of LiPo, LiFePo, and NiMH.
- 4.4.4 Maximum manufacturer's rated battery capacity for the drive battery is:
- | | |
|-------------------|------------------------------------|
| for LiPo cells: | $(220 \times WA)/(S \times C)$ mah |
| for LiFePo cells: | $(250 \times WA)/(S \times C)$ mah |
| for NiMH cells: | $(665 \times WA)/(S \times C)$ mah |
- where WA is wing area in square inches,

S is number of cells connected in series, and
C is manufacturer's stated standard discharge rating (not short-duration peak rating). If C is not stated, it will be taken as 50.

- 4.4.5 The motor runs continuously from launch for 20 seconds maximum.
- 4.4.6 Age bonus does not apply.
- 4.4.7 Landing bonus does not apply.
- 4.4.8 Model is required to land within the boundaries of a field defined by the CD.
- 4.4.9 Score is aggregate of 3 flights, each scored at one point per second up to 300. The score for any flight is zero if the model fails to land within the field boundaries defined according to 4.4.8.
- 4.4.10 Score is the aggregate of 3 flights, each scored as one point per second up to 300.
- 4.4.11 If scores are tied, rounds of fly-off flights proceed according to 4.4.10 but with 600 seconds maximum flight time, until there is a clear winner, or until the CD declares joint winners. (See Rule 2.3.10 for NDC fly-offs.)

5 RC TEXACO CLASSES

5.1 RC Vintage 1/2A Texaco

Purpose: To enjoy IC-powered RC flying with Power Model designs from the Vintage period through using a specified engine and fuel tank to achieve maximum flight time.

- 5.1.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 5.1.2 All Radio Control General Rules (see Section 2) apply.
- 5.1.3 Engine is a stock Cox reed valve 0.049 cu in that may be modified only as follows
 - a. Fuel pick-up moved to bottom of tank.
 - b. Tank vents changed or replaced.
 - c. Improved needle valve assembly.
 - d. Addition of muffler.
- 5.1.4 Fuel tank is a Cox Babe Bee or Texaco Jnr.
- 5.1.5 Fuel mixture may include only oil, methanol and nitromethane
- 5.1.6 Age bonus applies (see Rule 2.3.4).
- 5.1.7 Landing bonus applies (see Rule 2.3.5).
- 5.1.8 Score is the aggregate of 3 flights, each scored at one point per second up to 480 with both age bonus and landing bonus added up to a maximum of 500.
- 5.1.9 If scores are tied, fly-off has no maximum and both age and landing bonus apply. (See Rule 2.3.10 for NDC fly-offs.)

5.2 RC Vintage A Texaco

Purpose: To enjoy IC-powered RC flying with Power Model designs from the Vintage period through managing a fuel supply from a tank of fixed size, with engines from a specified capacity range, to achieve maximum flight time.

- 5.2.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 5.2.2 All Radio Control General Rules (see Section 2) apply.
- 5.2.3 Nominal engine size is 1.5cc to 3.5cc (0.09 to 0.21 cu in).
All motors have an RC operated cut-out, which may be a throttle.
- 5.2.4 Maximum fuel tank size is 14cc (a Humbrol 14cc paint tin) and is visible to the CD.
- 5.2.5 A throttle may be used.

- 5.2.6 Age bonus applies (see Rule 2.3.4).
- 5.2.7 Landing bonus applies (see Rule 2.3.5).
- 5.2.8 Score is the aggregate of 3 flights, each scored at one point per second up to 600 with both age bonus and landing bonus added up to a maximum of 620. No points are deducted for exceeding the maximum.
- 5.2.9 If scores are tied, fly-off has no maximum and both age and landing bonus apply. (See Rule 2.3.10 for NDC fly-offs.)

5.3 RC Vintage Open Texaco

Purpose: To enjoy IC-powered RC flying with Power Model designs from the Vintage period through managing a fuel supply that is limited by a formula based on model size (measured by wing area) to achieve maximum flight time.

- 5.3.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 5.3.2 All Radio Control General Rules (see Section 2) apply.
- 5.3.3 Engines are spark ignition, glowplug, or diesel of any capacity and type, subject to 2.2.4 Maximum Engine Capacity. All engines have an RC operated cut-out, which may be a throttle.
- 5.3.4 A throttle may be used.
- 5.3.5 Maximum fuel tank capacity is 0.1cc per 5 sq in wing area. Wing areas are rounded *down* to the next 5 or 10, (eg. 508 sq in is rounded down to 505 sq in, 504 sq in is rounded down to 500 sq in.)
The fuel tank is visible to the CD and the contestant is responsible for verifying fuel tank capacity if the CD requests.
The recommended fuel tank is made from a plastic syringe sold by vets, usually in 35cc and 65 cc sizes, with capacity markings on the side. Install and fix the plunger at the allowed capacity, cut off the surplus barrel and plunger stem, and drill a filler hole in the plunger. The tube at the bottom is the fuel feed.
- 5.3.6 Age bonus applies (see Rule 2.3.4).
- 5.3.7 Landing bonus applies (see Rule 2.3.5).
- 5.3.8 Score is aggregate of 2 flights, each scored at one point per second up to 900 with both age bonus and landing bonus added up to a maximum of 920. No points are deducted for exceeding the maximum.
- 5.3.9 If scores are tied, fly-off has no maximum and both age and landing bonus apply. (See Rule 2.3.10 for NDC fly-offs.)

5.4 RC Vintage 1/2E Texaco

Purpose: To enjoy electric RC flying with Power Model designs from the Vintage period with battery power of specified chemistry and maximum capacity, which parallels the spirit and flight performance of the single motor type specified in 1/2A Texaco rules.

- 5.4.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 5.4.2 All Radio Control General Rules (see Section 2) apply, except Rule 2.1.6. There is no wing loading rule.
- 5.4.3 'Dry weight' is the weight of the model without the drive battery.
- 5.4.4 Maximum dry weight is 18 oz and maximum wing area is 350 sq in.
- 5.4.5 The drive battery is LiPo with maximum manufacturer's rated capacity chosen from one of the following:
 - a. 44 mAH per oz dry weight if 1 cell is used (1S)
 - b. 22 mAH per oz dry weight if 2 cells in series (2S)
 - c. 14 mAH per oz dry weight if 3 cells in series (3S)
- 5.4.6 The motor may be stopped and started in flight and its speed may be adjusted.
- 5.4.7 Age bonus applies (see Rule 2.3.4).
- 5.4.8 Landing bonus applies (see Rule 2.3.5).
- 5.4.9 Score is aggregate of 2 unlimited flights, each scored as one point per second with age bonus and landing bonus added.
- 5.4.10 If scores are tied, that is the result.

5.5 RC Vintage E Texaco

Purpose: To enjoy electric RC flying with Power Model designs from the Vintage period through managing battery energy supply that is limited by a formula based on model size (measured by wing area) to achieve maximum flight time.

- 5.5.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.
- 5.5.2 All Radio Control General Rules (see Section 2) apply, except Rule 2.1.6. There is no wing loading rule.
- 5.5.3 'Dry weight' is the weight of the model without the drive battery.
- 5.5.4 There is no upper or lower limit on dry weight.

- 5.5.5 The drive battery is LiPo with maximum manufacturer's rated capacity chosen from one of the following:
 - a. 34 mAH per oz dry weight if 1 cell is used (1S)
 - b. 17 mAH per oz dry weight if 2 cells in series (2S)
 - c. 11 mAH per oz dry weight if 3 cells in series (3S)
- 5.5.6 The motor may be stopped and started in flight and its speed may be adjusted.
- 5.5.7 Age bonus applies (see Rule 2.3.4).
- 5.5.8 Landing bonus applies (see Rule 2.3.5)
- 5.5.9 Score is aggregate of 2 unlimited flights, each scored as one point per second with age bonus and landing bonus added.
- 5.5.10 If scores are tied, that is the result.

5.6 RC Vintage E Rubber Texaco

Purpose: To enjoy electric RC flying with Rubber model designs from the Vintage period through managing battery energy supply that is limited by a formula based on model size (measured by wing area) to achieve maximum flight time. The class can be regarded as a simplified version of the SAM US 'Spirit of SAM.'

- 5.6.1 Eligible models are from the Vintage period (see Rule 2.1.2). They are Rubber Model free flight designs (see Rule 2.1.1).
- 5.6.2 Radio Control General Rules (see Section 2) apply, except Rules 2.1.6 and 2.1.10 which do not apply.
- 5.6.3 There is no minimum wing loading.
- 5.6.4 Propeller design is at the discretion of the contestant. Propellers have either one or two blades and may fold, freewheel, or remain fixed when the motor is stopped.
- 5.6.5 Drive battery chemistry is one of LiPo, LiFePo, and NiMH.
- 5.6.6 Maximum manufacturer's rated battery capacity for the drive battery is:
 - for LiPo cells: $1.8 \times WA/S$ mah
 - for LiFePo cells: $2.1 \times WA/S$ mah
 - for NiMH cells: $5.5 \times WA/S$ mahwhere WA is wing area in sq in
S is number of cells connected in series.
- 5.6.7 The motor may be stopped and started in flight and its speed may be adjusted.
- 5.6.8 Age bonus applies (see Rule 2.3.4).
- 5.6.9 Landing bonus applies (see Rule 2.3.5).

5.6.10 Score is aggregate of 2 unlimited flights, each scored as one point per second with age bonus and landing bonus added.

5.6.11 If scores are tied, that is the result.

5.7 RC Classical 1/2E Texaco

Purpose: To enjoy electric RC flying with Power Model designs from the Classical period with electric battery power of specified chemistry and maximum capacity, which parallels the spirit and flight performance of the single motor type specified in 1/2A Texaco rules.

5.7.1 Eligible models are from the Classical period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC without aileron control.

5.7.2 All Radio Control General Rules (see Section 2) apply, except Rule 2.1.6. There is no wing loading rule.

5.7.3 'Dry weight' is the weight of the model without the drive battery.

5.7.4 Maximum dry weight is 18 oz and maximum wing area is 350 sq in.

5.7.5 The drive battery is LiPo with maximum manufacturer's rated capacity chosen from one of the following:

- a. 44 mAH per oz dry weight if 1 cell is used (1S)
- b. 22 mAH per oz dry weight if 2 cells in series (2S)
- c. 14 mAH per oz dry weight if 3 cells in series (3S)

5.7.6 The motor may be stopped and started in flight and its speed may be adjusted.

5.7.7 Age bonus does not apply.

5.7.8 Landing bonus does not apply.

5.7.9 Model is required to land within the boundaries of a field defined by the CD.

5.7.10 Score is aggregate of 2 unlimited flights, each scored as one point per second.

5.7.11 If scores are tied, that is the result.

5.8 RC Classical E Texaco

Purpose: To enjoy electric RC flying with Power Model designs from the Classical period through managing battery energy supply that is limited by a formula based on model size (measured by wing area) to achieve maximum flight time.

5.8.1 Eligible models are from the Classical period (see Rule 2.1.2). They are Power Model free flight designs and IC-powered designs originally intended for RC Without aileron control.

- 5.8.2 All Radio Control General Rules (see Section 2) apply, except Rule 2.1.6. There is no wing loading rule.
- 5.8.3 'Dry weight' is the weight of the model without the drive battery.
- 5.8.4 There is no upper or lower limit on dry weight.
- 5.8.5 The drive battery is LiPo with maximum manufacturer's rated capacity chosen from one of the following:
 - a. 34 mAH per oz dry weight if 1 cell is used (1S)
 - b. 17 mAH per oz dry weight if 2 cells in series (2S)
 - c. 11 mAH per oz dry weight if 3 cells in series (3S)
- 5.8.6 The motor may be stopped and started in flight and its speed may be adjusted.
- 5.8.7 Age bonus does not apply.
- 5.8.8 Landing bonus does not apply.
- 5.8.9 Model is required to land within the boundaries of a field defined by the CD.
- 5.8.10 Score is aggregate of 2 unlimited flights, each scored as one point per second.
- 5.8.11 If scores are tied, that is the result.

5.9 RC Vintage and Classical Texaco Scale

Purpose: To enjoy IC and electric powered RC flying with a Vintage or Classical scale model design through managing a limited energy supply to achieve maximum flight time.

- 5.9.1 This class combines the Vintage and Classical design periods (see Rule 2.1.2). Eligible models are built from Vintage or Classical scale model plans originally intended for IC-powered free flight, or rubber-powered free flight, or IC-powered RC. The model is a recognisable scale replica of a specific full-size aircraft type. Plans may be scaled up or down.
- 5.9.2 A reasonable effort is made to use colours and markings typical of the type of full-size aircraft modelled. There is no restriction on the materials used for colours and markings.
- 5.9.3 All Radio Control General Rules (see Section 2) apply, with the condition that Rule 2.1.6 applies only to monoplanes, and that the minimum wing loading for multiplanes is 6 oz per sq ft.
- 5.9.4 There is no restriction on the flight controls fitted.
- 5.9.5 There are two separate options for engines and fuel tank capacity:
 - Option 1: Motor is a stock Cox reed valve 0.049 cu in.
Motor may be modified only as follows:
 - a. Fuel pick-up moved to bottom of tank.

- b. Tank vents changed or replaced.
- c. Improved needle valve assembly.
- d. Addition of muffler.

Fuel tank is a Cox Babe Bee or Texaco Jnr.

Option 2: Multiple engines are allowed if specified by the design.
The engine(s) is (are) of any IC type.
Rule 2.2.4 applies to the aggregate capacity of the engines(s).
All engines have an RC operated cut-out, which may be a throttle.

A throttle may be used in flight.

Maximum fuel tank capacity is 0.1cc per 5 sq in wing area, rounded down (eg 504 sq in allows 10cc). The fuel tank is visible to the CD and the contestant is responsible for verifying fuel tank capacity if the CD requests.

Option 3: Any electric motor (or multiple motors) using drive battery Chemistry that is one of LiPo, LiFePo, and NiMH and where the maximum manufacturer's rated battery capacity is:

for LiPo cells: $1.8 \times \text{WA/S mah}$

for LiFePo cells: $2.1 \times \text{WA/S mah}$

for NiMH cells: $5.5 \times \text{WA/S mah}$

where WA is wing area in sq in

S is number of cells connected in series.

The motor may be stopped and started in flight and its speed may be adjusted.

5.9.6 Age bonus does not apply.

5.9.7 Landing bonus applies (see Rule 2.3.5).

5.9.8 Models using Option 1 in Rule 5.9.5 have a bonus of 120 points for each flight.

5.9.9 Score is aggregate of 3 flights, each scored at one point per second up to 540 with bonuses added up to a maximum of 560.

5.9.10 If scores are tied, fly-off has no maximum and bonuses apply. (See Rule 2.3.10 for NDC fly-offs.)

5.10 RC Sport Cabin Texaco, IC and E

Purpose: To enjoy RC flying (IC or Electric) with sport cabin Power Model designs from the Vintage and Classical periods through managing a specified energy supply to maximise flight time.

5.10.1 An eligible design is a sport Power Model (see Rule 2.1.1) from the combined Vintage and Classical periods (see Rule 2.1.2), that was not intended for competition flying and has:

- a. A wingspan (unscaled) in the range 30 – 40 inches.

- b. A cabin or cockpit with either glazing, or a canopy, or a windscreen.
- c. A fixed undercarriage that is either two-wheel or tricycle.

If the plan of an eligible design omits the wing section, the Clark Y section (as used by Tomboy) is substituted.

Examples of eligible designs are listed in 5.10.9. As contestants discover further eligible designs, they will be added to the list.

5.10.2 There are two separate classes:

1. RC Sport Cabin IC Texaco

- a. Models have IC motors up to 1cc (0.61 cu. in.) nominal capacity.
- b. Maximum fuel tank size is 3cc.
- c. The fuel tank is either integral of the correct capacity or a separate commercially-available unit, or a home-made tank that is approved by the Vintage SIG Committee.

2. RC Sport Cabin E Texaco

- a. Models have any electric motor with direct drive.
- b. The motor battery is a 2 cell LiPo with maximum capacity 180 mah.
- c. The motor may be stopped and started and its speed may be adjusted in flight.

5.10.3 Rules 5.10.4 – 5.10.9 apply to both classes.

5.10.4 Radio Control General Rules (see Section 2) apply, except for Rules 2.1.4 and 2.1.6. Scaling is not allowed and there is no minimum wing loading.

5.10.5 Age bonus does not apply.

5.10.6 Landing bonus does not apply.

5.10.7 Three timed flights are allowed. The score is the combined total of the two best flights, each scored as one point per second.

5.10.8 If scores are tied, placings are determined by the score of the third-ranked flight of the three allowed.

5.10.9 Examples of Eligible Designs

Aston (Woodrow, MA)	MK Sportster (Fang-Chuin, MA)
Baby Fleetster (Elgin, Cleveland)	Molecule (Garami, AT)
Ballerina (Smeed, APS)	Moss Trooper (Jones, APS)
Bantam (Hatfull, KK)	Nimrod (Frog)
Beast (McGovern, FM)	Origo (Fang-Chuin, MAN)
Binatang (Shennan, OZ)	Pappy (Read, APS)
Boom (Fleming, APS)	Paragon (Qureshi, APS)
Boomer (Miller, MAN)	Pepe (Healey, APS)
Brigadier 38 (Effinger, Berkeley)	Peregrine (Twomey, APS)
Buccaneer 36 (Effinger, Berkeley)	Pinky (Read, APS)
Buttons (Laumer, MAN)	Pipette (Read, MA)
Cardinal (Smith, Veron)	Pirate (Dean, KK)
Changi (Healey, APS)	Point Five (Slyleada)
Chatterbox (Smeed, APS)	Poppet (Read, MA)
Cherub (Smeed, APS)	Poppet (Smeed, APS)
Chloe (Darr, APS)	Pops (Read, APS)

Courier (Russo, AT)
Courtesan (Smeed, APS)
Curvette (Laumer, FM)
Cyrano (Laumer, APS)
Daredevil (Ealy, MAN)
Debutante (Smeed, APS)
Diesel Sportster (Ehling, MAN)
Donald (Peckham, MA)
El Petardo (Casa Vega)
Envoy (Shaw, APS)
Fantasm (Campbell, MA)
Fledgeling (Shaw, APS)
Flyabout (Winter, MAN)
GE Cabinette (Ehling, MAN)
Guru (Barrett, APS)
Gyrfalcon (Ealy, FM)
Hummingbird (Plecan, FM)
Infant Sportster (Winter, FM)
Inflammable, McGovern, FM)
Isabel (Read, APS)
Jerseyette (Ehling, AT)
Junior Jim (Jacobsen, APS)
Just Right (Ehling, AmMod)
Kamarad (Moucka, OZ)
KC Cutie (Miller, AT)
Kea (Macdonald, Modelair)
Korker (Willard, MAN)
Lilliput (Shoenfeld, FM)
Magna (Young, Mercury)
Mamselle (Smeed, APS)
Martinet (Frog)
Mascal (Italian)
Mayflower (Healey, APS)

Popsie (Smeed, APS), APS)
President (Hatfull, APS)
Push-up (Laumer, OZ)
Rambler (Howe, MA)
Rover (Dean, KK)
Sandow (Smith)
Scorpion (Williamson, MAN)
Shadow (McGovern, Enterprise)
Sharp Scooter (Laumer, APS)
Shy-Lark (Smith, MA)
Sioux (Wagner, Veco)
Skywayman (Parker, MA)
Small Talk (Pollard, MA)
Smoke Trail (Foss, APS)
Snipe (Willis, KK)
Snow White (Bridge, APS)
Southerner Mite (Dean, KK)
Starflight (Williamson, MAN)
Super Starduster (Garafolo, Tern Aero)
Swanky Doodle (Laumer, FM)
Tempo (Larsson, OZ)
Terrier (Lewis, APS)
Titch (Warring, APS)
Tomboy 36 (Smeed, APS)
Topsy (Carnegie, MA)
Tornado II (Plecan, MAN)
Tutor (Frog)
Twin Lizzie (Laumer, FM)
Vixen (Frog)
Week-End (Bayet, MRA)
Wee Snifter (McHard, APS)
Wendy (Fry, MA)
Zephyr (Frog)

6 FREE FLIGHT GENERAL RULES

6.1 DESIGNS AND MODELS

6.1.1 Types of Design

Power Models: Models powered by engines that obtain energy by combustion, or by expansion of a fluid or gas acting on a piston, or motors which convert electrical energy into mechanical energy.

Rubber Models: Models powered by extensible motors that convert stored energy into mechanical energy.

6.1.2 Periods of Eligible Designs

Vintage: up to 31st December 1950

Nostalgia: from 1st January 1951 to 31st December 1960

Classic: from 1st January 1961 to 31st December 1970

6.1.3 Authentication of Designs

Authentication of both model design and its date of origin is the responsibility of the contestant. Authentication is achieved through any of the following:

- a. Evidence of publication or kit release *within* the relevant period, which also establishes the date of origin. This evidence may be obtained from SAM USA or NFFS listings, or from other sources
- b. Evidence of publication or kit release *later* than the relevant period together with evidence that a model from the design was flown within the relevant specified year, which is thereby established as the date of origin. This evidence may be obtained from SAM USA or NFFS listings (including NFFS publication of the plan), or from other chosen sources such as magazine references.
- c. In the absence of evidence of publication or kit release, by written approval of the Vintage SIG Committee on the basis of submitted evidence.

Design and authenticated date must be displayed on the model.

6.1.4 Scaling of Designs

Models may be scaled up or down from the original design.

6.1.5 Wing Area Calculation

Where rules call for an area calculation, the following applies:

- a. Wingspan: The distance from tip to tip without considering dihedral, i.e. as it appears on the plan.
- b. Tip shape: No allowance made for rounded or tapered tips.
- c. Area of constant chord wings is calculated as: Chord x Wingspan.
- d. Area of tapered or elliptical wings (where either or both leading and trailing edge taper or curve from the wing root or fuselage junction) is calculated as: Chord at 25% of Wingspan x Wingspan.

6.1.6 Wing Loading

No minimum wing loading applies to FF models.

6.1.7 Modification of Design and Construction

The following aspects of reasonable fidelity to the original design are required:

- a. Proportions of whole design
- b. Wing and tail surface outlines
- c. Fuselage shape
- d. Dihedral angles
- e. Moments
- f. Airfoil sections.

The following modifications are allowed:

- a. Fitting of a dethermaliser (DT)
- b. Minor changes to the thrust line
- c. Wing in more than one piece
- d. Removable tail surfaces, undercarriage, and other parts
- e. Strengthening of structure
- f. Lightening of structure
- g. Sheeting of wing and tailplane centre sections.

The following modifications are not allowed:

- a. Additional spars that touch the top covering in the front third of the airfoil
- b. Additional sheeting on the front third of the airfoil top surface.

6.1.8 Auto-Rudders

Gliders may have auto-rudder fitted to aid towing. Otherwise, no auto-rudders or variable incidence tailplanes are permitted unless used on the original design.

6.1.9 Radio Dethermaliser

Permitted subject to conditions

- a. The RDT device is either commercially available, or if home built, is 2.4GHz.
- b. The RDT operating system does not interfere with R/C model operations.

6.1.10 Construction Materials

Modern materials may be used in construction and covering, but the finished model must comply with the appearance of the original.

6.1.11 Propellers

IC powered models use propellers that are fixed pitch, have two blades, and are non-folding. Propellers for Rubber powered models are defined in Rubber event rules.

6.1.12 Undercarriages

Undercarriages, including wheel-mounting and skids, have the original dimensions. One wheel gear may be changed to two but not vice versa. A skid may be replaced by one or more wheels. Gear that retracted may be presented as locked in either the retracted or extended position.

6.1.13 Builder of the Model

A contestant need not be the builder of the model used in a contest. Only one contestant may fly a particular model in a given event.

6.2 ENGINES AND MOTORS

6.2.1 Permitted IC Engines

The engine types permitted are:

- a. Ignition two-stroke - defined as using a spark plug to initiate combustion, using petrol or alcohol based fuel mixtures that are without performance-enhancing additives.
- b. Diesel
- c. Glow two-stroke cross flow
- d. Glow two-stroke Schneurle-ported
- e. Four-stroke glow, ignition, or diesel

6.2.2 Vintage Engines

Any of the types listed in 2.2.1 qualify as Vintage Engines if they were first manufactured before 1st Jan 1951. Replicas of engines produced at a later date with no performance-enhancing modifications are considered vintage.

6.2.3 Converted Engines

An engine converted to a mode of operation different to that it was manufactured for (e.g. Glow to Diesel, Glow to Ignition) is categorised in its converted state.

6.2.4 Maximum Engine Capacity

- a. Vintage engines: 1.0 cubic inch (16 cc)
- b. Four stroke engines: 1.0 cubic inch (16 cc)
- c. Other engines: 0.65 cubic inch (11 cc)

6.2.5 Mufflers

The use of mufflers is strongly encouraged on non-vintage motors.

6.2.6 Permitted Electric Motors

All types of electric motors are permitted. There is no limitation on electric motor size.

6.3 FLIGHT RULES

6.3.1 Competition Format

Unless advertised or announced to the contrary by the CD before the start of flying, competitions consist of three flights of 180 seconds. Flights are not in rounds, ie flights may be at any times between the start and finish of the contest.

6.3.2 Contest Director (CD)

The CD oversees each competition and ensures compliance with relevant Rules. The CD locates the launching area to provide best use of the site with regard to safety and wind direction. The CD may re-locate the launching area due to changes in wind direction or safety requirements. If practicable, finishing time is extended by the time taken to relocate.

The CD specifies areas that must not be over-flown.

The CD confirms or alters the advertised maximum, before any official flights are attempted, in anticipation of the likely wind strength during the contest and the site.

6.3.3 Timekeeper

A flier may not time his own contest flight - this is the job of the timekeeper.

The timekeeper is also responsible for timing engine or motor run duration in power events.

6.3.4 Number of Models

A contestant may use a maximum of two models to complete official flights and fly-offs in all events other than Vintage Hand Launch Glider and Vintage Catapult Launched Glider. In these two events, an unlimited number of models may be used

6.3.5 Age Bonus

A design age bonus is added to each flight score in all Vintage classes. The Age Bonus is calculated as one point for each full year the design predates the Vintage cut-off date, as per the following

1950	0	1943	7	1936	14
1949	1	1942	8	1935	15
1948	2	1941	9	1934	16
1947	3	1940	10	1933	17

1946	4	1939	11	1932	18
1945	5	1938	12	1931	19
1944	6	1937	13	1930	20 (max)

Age Bonus points may not take round scores over the flight maximum.

6.3.6 Method of Launching

Models may rise off ground (ROG) or be hand launched from the launching area defined by the Contest Director.

6.3.7 ROG Bonus

Applies only to Vintage Free Flight Duration

20 points added to each flight for unassisted ROG.

ROG Bonus points may not take round scores over the flight maximum.

Designs not originally fitted with an undercarriage do not qualify for ROG bonus.

6.3.8 Timing of Engine and Motor Runs

Engine or motor run times are not rounded down.

A run time over the stipulated maximum is an over-run.

If an over-run occurs on a contestant's first or second attempts, that flight may be taken as a no-flight. Refer to the first paragraph of Rule 2.3.9

If an over-run occurs on a contestant's first or second attempts, that flight may be taken as a no-flight. Refer to the first paragraph of Rule 6.3.10

Timing starts when one of the following occurs:

- a) The model leaves the hand when hand-launch is used
- b) The model is released to begin its take-off run when ROG is used.

Timing stops when one of the following occurs:

- a) The timekeeper hears the engine or motor stop
- b) The timekeeper sees the propeller stop rotating.

6.3.9 Timing of Flights

Flight times are rounded to the nearest whole second below the watch reading, eg 55.1 seconds to 55.9 seconds are all rounded down to 55 seconds.

Timing starts when one of the following occurs:

- a) The model leaves the hand when hand-launch is used
- b) The model is released to begin its take-off run when ROG is used.

Timing stops when one of the following occurs:

- a) The model first touches the ground at the end of its flight
- b) There is a collision with an obstruction and the model ceases forward motion
- c) The model goes out of sight of the timekeeper.

Collision with an obstruction is when the model flies into an obstruction and does not instantly glance off it and continue flying normally. Examples of collisions are flying into a building then remaining fixed or sliding down a wall or roof slope or, flying into a tree

and either becoming lodged in foliage or falling through it or, flying into power wires and either remaining on them or falling through. In all such cases the watch is stopped when the collision occurs and not when the model stops moving under the influence of gravity.

Goes out of sight of the timekeeper is when the model is still flying but becomes indistinct from the background, or flies into cloud or ground mist, or flies behind ground obstructions such as buildings, trees, people, or behind hills or local ridges. In all such cases the timekeeper continues to look for the model and starts a verbal count to 10 seconds when visual contact with the model is lost. If the count reaches 10 the watch is stopped. The flight time is the time recorded on the watch minus 10 seconds. If visual contact is again made with the model before a count of 10 is reached, timing continues normally.

Touch and Go: Timing continues if the model performs a “touch and go” after becoming airborne from ROG or hand launch and resumes flying immediately. If flying does not resume, then timing stops.

Timekeepers may move within the launching area to keep the model in sight

The timekeeper may advise the elapsed time of the flight to assist the flier to judge power run or flight time.

6.3.10 No-flight

A no-flight entitles the competitor to a repeat attempt. In each round, a competitor may have 3 attempts to record an official flight, ie two no-flights and a third attempt. If the third attempt is also a no-flight, it may be recorded an official flight for that round except when the third no-flight is caused by a motor over-run, in which case the flight is recorded as zero.

Unless specified otherwise, a no-flight is recorded

- a. If the flight total is 20 seconds or less
- b. If the motor run exceeds the stipulated maximum.
- c. If any part of the model becomes detached during the flight.
- d. If the model collides with a person or other obstruction at launch, or with another model or a towline during flight. If this occurs, the competitor may opt to have this flight recorded, but must do so before his next official flight.
- e. If the towline breaks or is struck by another line or model during tow and this is observed by the timekeeper.
- f. If the timekeeper makes an error that affects a flight score, the contestant may claim an additional attempt.

6.3.11 Fly-offs

Ties for first place are broken by a fly-off that will normally be held during a pre-announced 15 minute period at the end of the contest. When an event has specific fly-off requirements, these are noted in the rules for that event.

For NDC events, if a maximum score is achieved for all rounds of an event, a single fly-off is flown to the fly-off rule for that event. Points for the normal rounds (i.e. the

maximum score), the fly-off round score, and for the FF Precision event the age bonus are notified to the MFNZ Recording Officer. Note that for all unlimited Duration fly-offs the competitor adds the age bonus before sending the results to the Recording Officer. If NDC scores are tied after the fly-off the NDC points are shared between the tied contestants.

6.3.12 Binoculars

Binoculars are permitted.

6.3.13 Thermal Detectors

Streamers are the only artificial aid to indicate of wind direction or thermal activity

6.3.14 Adverse Weather Conditions

A Contest Director may interrupt a contest if wind speed exceeds 6 m/sec (21.6 kph) at 2 metres above ground; if visibility does not allow fair observation of the models; or if the CD considers conditions to be unsafe.

7 VINTAGE FREE FLIGHT EVENTS

7.1 PRECISION

7.1.1 Models can be power, rubber, glider or electric.

7.1.2 There are 3 flights, each with a target of 90 seconds. Flights are scored at one point per second with one point deducted for every second over 90. Bonus points are added to each adjusted flight score up to the maximum of 90 points.

7.1.3 No limit on engine run, electric motor size, weight of rubber motor, or towline length. IC engine size is limited by Rule 6.2.4

7.1.4 In addition to no-flight rule 6.3.10, a flight time in excess of 160 is a no-flight.

7.1.5 Dethermaliser. If the dethermaliser is seen by the timekeeper to operate before 160 seconds the flight points are zero, but the age bonus applies and becomes the flight score.

7.1.6 If leading scores are tied, a fly-off flight is scored according to 7.1.2, but bonus points are not added to the flight points unless these remain tied. For NDC, see Rule 6.24

COMBINING VINTAGE DURATION EVENTS

Vintage Power Duration (IC or Electric), Vintage Rubber Duration, and Vintage Glider Duration may be combined at the discretion of the Contest Director if the number of fliers in individual classes is not enough for a meaningful contest.

7.2 VINTAGE POWER DURATION

- 7.2.1 There are 3 flights with each flight scored at one point per second with bonus points added up to a maximum of 180 points.
- 7.2.2 IC engine capacity is limited by Rule 6.2.4
- 7.2.3 Electric motor size is not limited.
- 7.2.4 Battery capacity for electric models is limited as follows
for LiPo cells: $(220 \times WA)/(S \times C)$ mah
for LiFePo cells: $(250 \times WA)/(S \times C)$ mah
for NiMH cells: $(665 \times WA)/(S \times C)$ mah
where WA is wing area in square inches, calculated using Rule 6.1.5.
S is number of cells connected in series, and
C is manufacturer's stated standard discharge rating (not short-duration peak rating). If C is not stated, it is taken to be 50.
- 7.2.5 Power Loading.
In addition to Rule 6.2.4, maximum engine capacity is further limited to 0.1cu in per 225 sq in of wing area, calculated using Rule 6.1.5.
For the purposes of power loading, Vintage Ignition, Vintage Diesel, and Four Stroke motors are rated at 60% of their nominal capacity.
- 7.2.6 Maximum engine run
- | | | |
|----|-------------------------------------|------------|
| a. | Vintage Ignition | 25 seconds |
| b. | Non-vintage Ignition | 20 |
| c. | Vintage Diesel and Glow | 20 |
| d. | Modern Diesel / Cross-flow Glow | 15 |
| e. | Cox (except Conquest) | 15 |
| f. | Electric | 15 |
| g. | Schneurle Ported Glow, Cox Conquest | 12 |
| h. | 4-Stroke (Glow, Diesel or Ignition) | 12 |
- 7.2.7 Age Bonus points are added to each flight.
- 7.2.8 ROG Bonus of 20 points is added to each flight for unassisted ROG.
Designs not originally fitted with an undercarriage do not qualify for ROG bonus.
- 7.2.9 Fly-off. No maximum, Bonus points added.

7.3 VINTAGE RUBBER DURATION

- 7.3.1 There are 3 flights with each flight scored at one point per second with bonus points added up to a maximum of 180 points.
- 7.3.2 Rubber Motors
These can be no heavier than used in the original model. If motor size is not defined, the maximum permitted rubber motor weight is 100 grams.

- 7.3.3 Rubber model propellers are to the original design and freewheel, fold or feather as the original. Hub assemblies may be modified as desired.
- 7.3.4 Age Bonus points are added to each flight.
- 7.3.5 ROG Bonus of 20 points is added to each flight for unassisted ROG. Designs not originally fitted with an undercarriage do not qualify for ROG bonus.
- 7.3.6 Fly-off. No maximum, Bonus points added.

7.4 VINTAGE GLIDER DURATION

- 7.4.1 There are 3 flights with each flight scored at one point per second with bonus points added up to a maximum of 180 points.
- 7.4.2 Age Bonus points are added to each flight.
- 7.4.3 Maximum towline length 50 metres.
- 7.4.8 Fly-off. No maximum, Bonus points added.

7.5 VINTAGE MINIATURE REPLICA

- 7.5.1 There are 3 flights with each flight scored at one point per second with bonus points added up to a maximum of 120 points.
- 7.5.2 Maximum motor size 0.55 cc (0.034 cu.in.)
- 7.5.3 Maximum motor run
 - a. 12 seconds for glow plug motors
 - b. 15 seconds for diesels.
- 7.5.4 Hand launch.
- 7.5.5 Maximum wingspan (projected) 36 inches. (920 mm)
- 7.5.6 Age Bonus are added to each flight.
- 7.5.7 Fly-off. No maximum, Bonus points added.

7.6 VINTAGE HAND LAUNCHED GLIDER

- 7.6.1 There are 6 flights with each flight scored at one point per second with bonus points added up to a maximum of 60 points.
- 7.6.2 No-flight time 10 seconds.

7.6.3 No limit on the number of models which may be used.

7.6.4 Age Bonus points are added to each flight.

7.6.5 Fly-off. No maximum, Bonus points added.

7.7 VINTAGE CATAPULT GLIDER

7.7.1 There are 6 flights with each flight scored at one point per second with bonus points added up to a maximum of 6 points.

7.7.2 No-flight time 10 seconds.

7.7.3 No limit to the number of models which may be used.

7.7.4 Age Bonus points are added to each flight.

7.7.6 The launching device is a single loop, or multiple loops, of rubber of no more than 6.72mm², (equivalent to 1/4 x 1/24 inches) in cross-section; 230 mm, (9 Inches) in length, attached to a 150 mm (6 inch) long handle.

7.7.7 Models. Any Vintage Chuck Glider, adding an attachment for the launching device.

7.7.8 Fly-off. No maximum, Bonus points added.

8 NOSTALGIA FREE FLIGHT EVENTS

COMBINING VINTAGE DURATION EVENTS

Nostalgia Power Duration (IC or Electric), Nostalgia Rubber Duration, and Nostalgia Glider Duration may be combined at the discretion of the Contest Director if the number of fliers in individual classes is not enough for a meaningful contest.

8.1 NOSTALGIA POWER DURATION

8.1.1 There are 3 flights with each flight scored at one point per second up to a maximum of 180.

8.1.2 Permitted engines are listed at 6.2.1

8.1.3 Engine capacity is limited by Rule 6.2.4

8.1.4 Power Loading.

In addition to Rule 6.2.4, maximum engine capacity is further limited to 0.1cu in per 225 sq in of wing area, calculated using Rule 6.1.5.
For the purposes of power loading, Vintage Ignition, Vintage Diesel, and Four Stroke motors are rated at 60% of their nominal capacity.

- 8.1.5 Maximum engine run
- a. 10 seconds for glow plug engines
 - b. 12 seconds for diesel engines.

8.1.6 Fly-off. No maximum.

8.2 NOSTALGIA RUBBER DURATION

- 8.2.1 There are 3 flights with each flight scored at one point per second up to a maximum of 180.
- 8.2.2 Rubber motors may be no heavier than those used in the original model. If not defined, the maximum permitted rubber motor weight is 100 grams.
- 8.2.3 Rubber model propellers are to the original design and freewheel, fold or feather as the original. Hub assemblies may be modified as desired.

8.3 NOSTALGIA GLIDER DURATION

- 8.3.1 There are 3 flights with each flight scored at one point per second up to a maximum of 180.
- 8.3.2 Maximum towline length is 50 metres.
- 7.5.8 Fly-off. No maximum.

8.4 SMALL NOSTALGIA / VINTAGE POWER DURATION

This class includes small wingspan designs from both Vintage and Nostalgia periods. Equality is attained through specified model sizes, engine capacities, and engine runs.

- 8.4.1 There are 3 flights with each flight scored at one point per second up to a maximum of 120.
- 8.4.2 Models are one of three types :
- (a) Vintage Miniature Replica designs with maximum engine capacity of 0.034 cu in / 0.55 cc, and maximum wingspan 36 inches / 920 mm.
 - (b) Nostalgia Miniature Replica designs with maximum engine capacity of 0.034 cu in / 0.55 cc, and maximum wingspan 36 inches (920 mm)
 - (c) 1/2A designs or any other scaled Nostalgia design with maximum engine capacity of 0.051cu in / 0.84 cc

8.4.3	Maximum engine runs :		
	For types (a) and (b)	Glow	12 seconds
		Diesel	15 seconds
	For type (c)	Glow	7 seconds
		Diesel	9 seconds

8.4.4 Fly-off. No maximum.

9 CLASSIC FREE FLIGHT EVENTS

COMBINING CLASSIC DURATION EVENTS

Classic Power Duration (IC or Electric), Classic Rubber Duration, and Classic Glider Duration may be combined at the discretion of the Contest Director if the number of fliers in individual classes is not enough for a meaningful contest.

9.1 CLASSIC POWER DURATION

9.1.1 There are 3 flights with each flight scored at one point per second up to a maximum of 180.

9.1.2 Permitted engines are listed at 6.2.1

9.1.3 Engine capacity is limited by Rule 6.2.4

9.1.4 Power Loading.

In addition to Rule 6.2.4, maximum engine capacity is further limited to 0.1cu in per 225 sq in of wing area, calculated using Rule 6.1.5.

For the purposes of power loading, Vintage Ignition, Vintage Diesel, and Four Stroke motors are rated at 60% of their nominal capacity.

9.1.5 Maximum engine run is 10 seconds for all engines.

9.1.6 Fly-off. No maximum.

9.2 CLASSIC RUBBER DURATION

9.2.1 There are 3 flights with each flight scored at one point per second up to a maximum of 180.

9.2.2 Rubber motors may not be heavier than those used in the original model. If not defined the maximum permitted rubber weight is 100 grams.

9.2.3 Rubber model propellers are to the original design and freewheel, fold or feather as the original. Hub assemblies may be modified as desired.

9.2.4 Fly-off. No maximum.

9.3 CLASSIC GLIDER DURATION

- 9.3.1 There are 3 flights with each flight scored at one point per second up to a maximum of 180.
- 9.3.2 Maximum towline length is 50 metres.
- 9.3.3 Circle towing is permitted only if it was used on the original.
- 9.3.4 Fly-off. No maximum.

Appendix A

MFNZ Vintage SIG: RC Vintage Competition Code of Practice

Introduction

This Code of Practice pertains to safe operation of RC models when flown in competitions governed by the Vintage Flying Rules that are administered by the Model Flying New Zealand (MFNZ) Vintage SIG.

Operators

Every model operator is a member of MFNZ and is party to MFNZ insurance.
The operator of each model holds a Wings badge.
The operator of each model is responsible for the safety of its operation.

MFNZ Safety Rules and Provisions

All competition models and competition flying comply with MFNZ's general definitions, rules and provisions regarding the airworthiness and safe operation of RC models.

Flying Sites

All competitions are flown at sites approved by MFNZ.
All flying at each competition complies with the CAA altitude restriction pertaining to the site at which the competition is flown, on the day of competition flying.

Specific Operation of Vintage Models

1. Structural integrity of models

If necessary, model designs are modified – within the conditions imposed by Vintage Flying Rules 2.1.7 – to ensure that models have the structural integrity required to safely endure the stresses imposed by flight in competitions, especially regarding rate of climb, speed of descent, and landing forces.

2. Flying site operations

All flying complies with the safety provisions stated by the provider of each flying site. The Contest Director of each competition ensures that take-off zone(s) and landing circle(s) are sufficiently separated to ensure that models taking off do not collide with models that are landing.

Model operators ensure that take-offs and landings are safe for people close to the flight line: other operators, helpers, and time keepers.

Appendix B

Updates and Alterations

- i 1 Dec 99 Builder of Model rule removed for FF classes (4.2.)
- ii 1 Dec 03 Approved Schneurle engines will be listed on NZMAA web page (4.4.6.)
- iii 1 Dec 03 Vintage Glow added (5.3.4.d)
- iv 1 Dec 02 - Correction of earlier typographical error (5.4.2 & 8.4.2)
- v 1 Dec 99 ROG Bonus removed for NOS FF Power models (8.3.3.)
- vi 1 Dec 99 Electric Power removed from FF NOS Power and engine runs shortened. (8.3.4)
- vii July 05 OT RC A Texaco added (6.5.)
- viii Oct 05 Typo's and corrections.(Pages 4 & 5, 19 & 20 & 21)

April 2006

Rule 5.7, Section 7, Rule 8.7, Section 9, Nostalgia RC all deleted.

Rule 4.4.4, Rule 4.5(d), Rule 5.3, Rule 6.2.1., Rule 6.3.1., Rule 6.4.3. Amended

Rule 4.4.6 replaced

Section 8 renumbered as Section 7

Feb 2007

All: Section Divided to 4a Vintage and 4b Nostalgia incorporating changes to the following:

- i 2.1 Nostalgia References deleted
- ii 3 Nostalgia References deleted
- iii 4.4.6 Nostalgia References deleted
- iv 4.6 Nostalgia References deleted
- v sec 5 & 6 Remove 'Old Time' and replace with 'Vintage'
- vi Sec 4b Nostalgia Free Flight Section added

January 2008

Deleted existing Section 4b replaced by New Section 4b Nostalgia.

New Section 4c Classic added.

Section 4.8 Fly-offs amended to cover NDC Fly-off requirements.

Section 4a. Para. 6.2.5 Paras. a and f motor run amended

Section 4a Para 6.1.2 RC Precision Electric Drive option added

Section 4a Para 6.2.3 RC Duration Electric Power option added.

Jan 2009

Change rule 6.3.5 and 6.4.5 of the 1/2A Texaco classes to read "Babe Bee" not "Baby Bee"

August 2010

Vintage Age Bonus Chart reinstated

Add to Rule 4.1 Modification

A Provisional Rule was added to the Nostalgia section, (this is a trial rule not a full Official rule as yet)

Amendment to the Provisional Electric Vintage rules 6.3 and 6.5

June 2011

Nostalgia 1/2A/Miniature Replica FF power rule 4b 21.0 made official

Rule 6.2 Amended to Read Vintage RC IC Duration and electric drive reference deleted

Official Electric RC rules added as 4a section 7

September 2011

Section 6 re-label as Radio Control IC powered Vintage and Classical

Section 6.1 New General rules for all RC Classes

Section 6.2 Re-presented RC Vintage Precision; Section 6.3 Add RC Classical Precision
Section 6.4 Re-presented RC Vintage Duration; Section 6.5 Add RC Classical Duration
Renumber old sections 6.3,6.4, 6.5 as 6.6,6.7, and 6.8 respectively

Section 7 re-label as Radio Control Electric Vintage and Classical

Change references to Nostalgia and Classic periods to a single Classical period, which is 1/1/51 to 31/12/75

Remove all age bonuses from Classical classes, landing bonuses from E Classical Duration and all E Texaco classes

Amend sub section 7.1 so model design features 7.1.3 –7.1.6 are consistent with the rules for IC classes 6.1.3 – 6.1.6

February 2012: Radio DT allowed in all Vintage Nostalgia and Classic Classes (refer rule 4.1.2)

Rule 4.4.1 amended to allow Electronic ignition units

June 2012: R C IC Texaco rules revised, Open Texaco class added. Throttle use allowed for A Texaco

Vintage landing area increased from 20m to 30 m diameter. Age and landing bonus applies in all Vintage classes

Layout of RC Rules revised.

January 2013: RC E Texaco rules revised, battery size revised down and E Rubber Texaco wing load and Propeller rules updated.

January 2014: Rule 4.9 RC timing added, Rule 5.6.6 Multiple Loops of rubber allowed, Rules 6.4.4 < 6.4.5,6.5.4 and 6.5.5 Motor types and run times amended. Section 4b Nostalgia FF Rule 21 Nos/Vintage Redrafted to clarify class.

January 2015: 1/2E and E Texaco rules 7.4.3, 7.4.11 and 7.3.3 revised. Motor Rule 4.4.6 revised. Motor Run rule 5.3.4 revised. Appendix 1 Nostalgia FF Power Motors revised. Appendix 1 Classic FF Power Motors revised. Rule 4.4.1 Motors amended. New Rule 4.4.7 Converted motors added. Rule 4.1.2 amended to delete RC DT reference; New Rule 4.1.6 added referring to RC DT use.

April 2019:

Change scoring method in rules 5.4.9, 5.5.9, 5.6.10, 5.7.10, and 5.8.10.

In rules 5.4.10, 5.5.10, 5.6.11, 5.7.11, 5.8.11 replace fly-off definition.