MODEL AERONAUTICAL ASSOCIATION of AUSTRALIA Inc.

AUSTRALIAN OFFICIAL RULES

Section 5 RC Old Timer Rules 2017

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R/C ASSIST OLD TIMER RULES

5.4.1. GENERAL REQUIREMENTS

The general requirements set out in this section apply to the specific Old Timer events described in later sections of these rules.

5.4.1.1. AIRCRAFT CATEGORIES

(a) **ANTIQUE** aircraft are defined as aircraft which were designed, kitted, or published on or before 31st December 1938.

(b) **OLD TIMER** aircraft are defined as aircraft which were designed, kitted, or published on or before 31st December 1942.

(c) **NOSTALGIA** aircraft are defined as aircraft which were designed, kitted or published on or after 1st January 1943 and on or before 31st December 1956 and having a combined wing and horizontal stabiliser area of not less than 225 square inches per 0.1 cubic inch engine capacity [see clause 5.4.1.2.b)].

5.4.1.2 AIRCRAFT GENERAL REQUIREMENTS

(a) Where the specific rules for an event state that the minimum wing area rules apply as defined in this clause, models used in those events shall comply with the following:

Models fitted with engines manufactured after 31st December 1950, except for approved reproduction engines as defined in 5.4.1.3.(e), shall have a minimum wing area of 225 square inches per 0.1 cubic inch of engine capacity. [see 5.4.1.3.(d) for models fitted with 4-stroke engines]

(b) The formula to be used to determine the wing area is:

WING AREA = CHORD X WINGSPAN
where:

The Wingspan is defined as a straight line dimension from wing tip to wing tip, with no allowance being made for tapered or rounded tips, and the Chord is measured half way between the wing tip and the centre-line of the fuselage.

(c) Models shall comply with the requirements of the M.A.A.A. Manual of Procedures.

(d) Old Timer, Antique and Nostalgia models may be modified in the following ways:

(i) Rudder and elevator are the only flying surface controls allowed.

(ii) Minor changes to the thrust line for flight trimming.

(iii) Engines may be rotated from their original location provided that the thrust line is not altered under Rule 5.4.1.2.(d)(i)

(e) Outlines, areas, moments and cross sections may not be changed except for direct scaling. Structures may be strengthened or lightened and provision for control surfaces may be added. Airfoil sections must be the same as on the original model. Landing gear must be in the same location as on the original model; however, single-wheeled main landing gear designs may be modified to dual wheel main landing gear designs, using the same wheel size as the original. All changes must be in the character of the original aeroplane.

(f) It is the responsibility of the contestant to prove the validity of the model and the fidelity to the original design. The contestant must submit the actual construction plans to the Contest Director upon request.

(g) No modification may be made which would prevent the model making a normal, unassisted rise off ground (ROG) take off. The following are not permitted:-
jettisoning undercarriages, vertical take off, or catapult devices.

(h) It is permissible to scale an approved design up or down, provided a copy of the original plans is used for scaling. (models for the R/C '38 Antique contest must not be scaled).

(i) One reserve model is permitted in each event in Old Timer contests and may only be used if the model used at the start of the event is damaged beyond repair. The CD shall OK the exchange before the reserve model may be used. A competitor may interchange various parts as he wishes provided the resulting complete model conforms to the requirements of these rules and that the parts have been checked by the CD before the start of the contest.

(j) All powered R/C aircraft, including ½ A Texaco, must have originally been gas powered. i.e. no rubber models.

5.4.1.3 ENGINE GENERAL REQUIREMENTS

(a) All engines must be of conventional reciprocating piston design. Turbines, Wankels or non-reciprocating designs may not be used.

(b) The use of engines of 0.65 cubic inches (10.65 cubic cm) capacity and above is restricted to antique spark ignition engines only.

(c) All other engines shall be 0.649 cubic inches (10.64 cubic cm) capacity or less.

(d) Sixty percent (60%) of a four-stroke engine capacity shall be used when calculating the wing area of a model in Rule 5.4.1.2.(a)

(e) Antique engines are defined as engines which were manufactured on or before 31st December 1950, or as any reproduction antique engines approved by MAAA R/C Assist Old Timer Rules sub committee. The Testors McCoy 60 and reproduction McCoy 60's are legal if converted to spark ignition. Any replacement parts are to be genuine or reproduction McCoy 60 parts.

(f) No folding, freewheeling or variable pitch propellers shall be permitted. Only traditional-style two-bladed propellers may be used.

(g) All engines, except 1/2 A engines, shall be fitted with an effective cut-off which

will stop the engine within five (5) seconds of the transmitted R/C command. Neither full rudder nor full elevator is satisfactory to operate the cut-off.

(h) Spark ignition engines are those engines using cam operated points, spark plugs, batteries, coil and condenser or magneto to ignite the fuel. Transistor amplifiers may be added to the ignition points.

(j) All two stroke glow engines, except Antique engines and ½ A engines must operate with the muffler supplied with engine or an approved muffler. Note: Nostalgia aircraft engines must operate with a muffler).

(k) The use of mufflers is encouraged on all engines.

(l) Tuned pipes are not permitted.

(m) The current MAAA noise limit is to apply to all models flown in "NOMINATED NOISE SENSITIVE AREAS" Rule 5.4.1.3.(l) will not apply to models if they meet MAAA noise limit when measured in the prescribed manner. (See MAAA Rule 2.8) The suspension of Rule 5.4.1.3.(l) will only apply to models when they are flown in nominated Noise Sensitive areas.

5.4.1.4 FUEL SAFETY

(a) The use of Tetra-nitro-methane, Nitro-benzene and Hydrazine or any other substance banned by the MAAA as fuel or additives in any fuel is prohibited.

5.4.1.5 CONTEST PROCEDURES

(a) In any area where height limitations are likely to occur, organisers of Old Timer contests should
conduct these contests in accordance with Government regulations.

(b) Five (5) contestants shall constitute an event at state level.

(c) All models, may rise off ground (ROG) or be hand launched.

(d) Models must be airborne within five (5) minutes of a round or fly-off being declared open by the Contest Director (radio frequency clashes permitting). Failure to become airborne within five (5) minutes will result in an attempt being awarded. The second attempt does not have to follow the first attempt immediately.

(e) Timing of a flight starts when the model is released with engine running. Timing stops when the model first touches the ground or other stationary object. In the vintage glider event, timing commences when the model is released from the tow-line. The determining factor as to if the model is IN or OUT is to where it comes to rest. If the model comes to rest then blown out by the wind it is still determined to be IN

(f) The contestants score for a flight is calculated by allocating one point for each second of flight time as defined in clause 5.4.1.5.(e) up to the maximum flight time specified for each event. Scoring is to be rounded off to the nearest second, i.e. 10.5 seconds is 11 seconds, 10.49 seconds is 10 seconds.

(g) Should the respective maximum flight time in any event plus two (2) minutes be exceeded, the flight score from then on will be reduced by one (1) point per second of flying time until the model lands. The minimum points for any flight is zero. Minus scores are not to be used.

(h) The engine run time for limited engine run events is defined as starting when the model is released with the engine running and ending at the cessation of sound from the engine.

(i) Prior to the commencement of the competition the Contest Director is to set out the defined Flying Area as Follows.
This area has five separate defined areas. This is shown schematically in Figure 5.

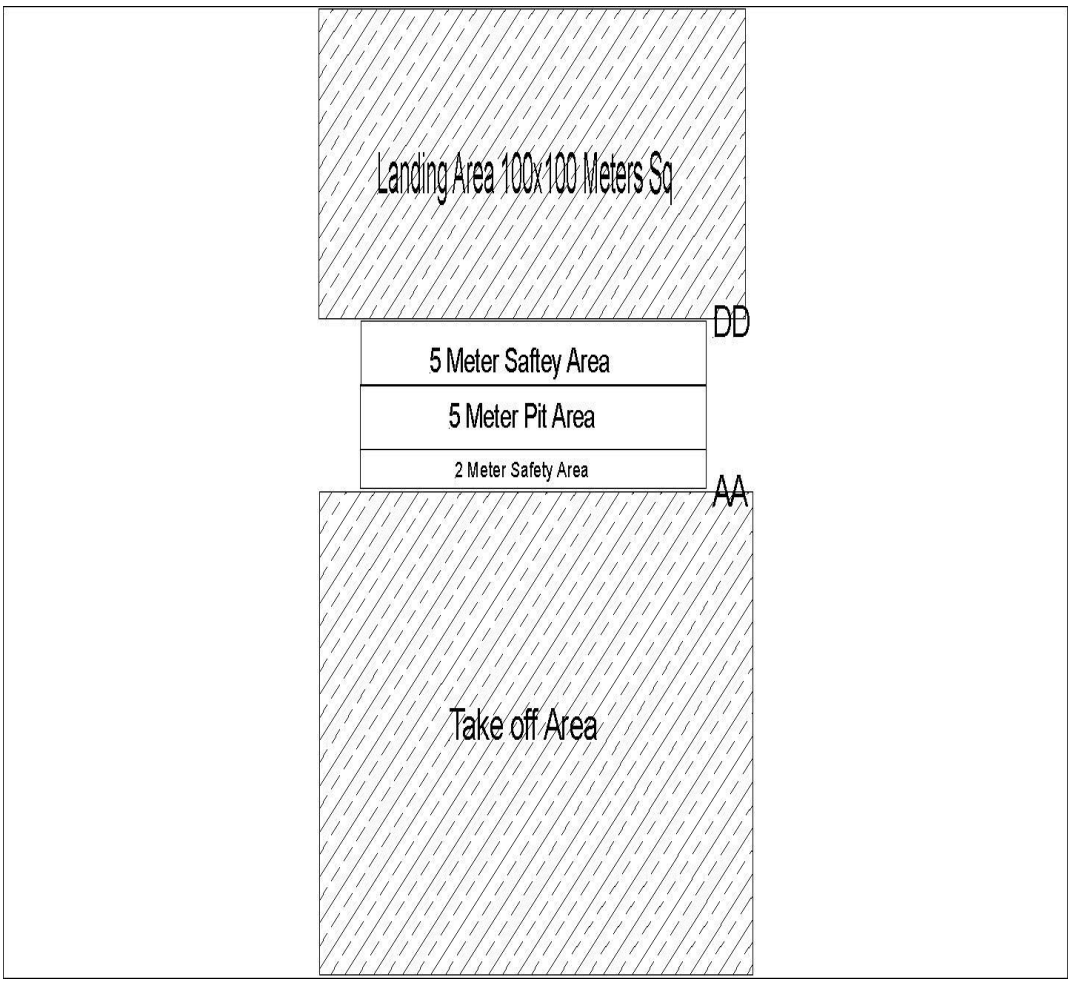
All measurements are recommended as it is recognised that some field it is impossible to apply these distances. Notwithstanding this, the concept as shown in Figure 5 should be followed as far as possible.

Any pilot advancing beyond line DD into the landing area when their aircraft is in flight records a zero time for that round.

Regardless of how much of the pit area is occupied the landing area does not extend either end of the pits and safety area.

The area between the lines AA, and DD (Pitts and Safety Areas) must not be overflown at less than 30 metres.

Figure 5



(j) Each contestant shall be entitled to two (2) attempts at each official flight. If a second attempt is made, it shall be the official flight.

(k) A model may only be used by the one competitor in any one event.

(l) A competitor may elect to compete with one previously-nominated assistant who may assist in the brief/minimal flying of the model for safety reasons only, including take-off and/or landing. The use of binoculars or similar aid shall result in a zero score for that round, or fly-off.

(m) Attempts are defined as follows:

(i) Release of model with engine running.

(ii) An engine over-run in limited engine run events.

(iii) Contestant calls an attempt within the given engine-run time allocated to that particular model in limited engine run events.

(iv) Contestant calls an attempt within two (2) minutes of release of model with the engine running in fuel allocation events.

(v) In R/C Vintage Glider, a contestant can call an attempt within 30 seconds from the release off the tow-line.

(n) Should an attempt be called, timing of the flight ceases.

(o) Should an engine over-run occur on a second attempt in an official flight of any limited engine run event, the score for that flight is zero.

(p) Official flights may be conducted in rounds as determined by the Contest Director.

(q) Thermal indicating devices are not permitted in R/C Assist Old Timer events.

(r) The contest may be delayed / suspended for a time/stopped at the Contest Directors discretion if the wind strength exceeds 25 km/h (7 metres per second) for more than twice in a 15 minute period.

(s) When, during the conduct of an event, weather conditions alter and render it inadvisable to conform to the contest format stated in these rules or because of M.O.P. regulations, the contest director will call a meeting of all entrants in that event to determine by consensus a contest format which will enable the successful completion of that event. Flight times achieved in rounds not completed by all entrants at the time of the contest Director calling this meeting will not be included in the official scores for that contest.

(t) Each contestant will have the opportunity to make four (4) official flights of which the best three (3) will count towards the contestant's official score. This system will apply to all Old Timer events.

(u) For all engine powered competitions in Old Timer the following safety procedure applies. With the engine running and the pilot standing behind the model, the pilot will demonstrate the correct movement of control surfaces to the person timing the flight, immediately prior to launch. Failure to do so will incur a penalty of zero score for that flight.

(v) The use of any mechanical, electronic or other devices (eg. Gyroscopes) to provide automatic correction to model attitude (pitch, roll, or yaw) are not permitted in R/C Old Timer events.

5.4.1.6 FLY-OFF PROCEDURES

(a) If on the completion of the official flights a tie exists that in the opinion of the Contest Director needs to be resolved to determine the results of the contest, a fly-off will be held.

(b) All models in the fly-off should commence the fly-off simultaneously if possible. Should a second round of the fly-off be required e.g. as a result of a frequency clash, then those contestants who qualified for the fly-off with the least number of flights should be included in the first round. Where there is more than one contestant so qualified, then the matter should be settled by a toss of a coin.

(c) Only one opportunity will be given to a competitor to make a fly-off flight. Once the model is released to commence a fly-off flight the result of that flight becomes the competitor's fly-off score.

(d) Maximum flight times do not apply to fly-offs.

(e) The model must land in the defined area in a fly-off flight for the score to count.

(f) Refer to the specific event rules for additional fly-off requirements for each event.

5.4.2. GUIDELINES FOR CONSTRUCTION OF ANTIQUE, OLD TIMER AND NOSTALGIA AIRCRAFT

5.4.2.1. General

PERMITTED

(a) Where the original undercarriage moved in slots in the fuselage, a solid attachment may be made at that point. [e.g. Flying Quaker, Dallaire],

(b) Undercarriage fairings, if shown on the original as standard fittings, must be fitted. [e.g. Miss Model Craftsman, Playboy],

(c) Full or partial wheel spats may be removed to make the model practical for use on grass fields.

(d) Scaling must be done from the ORIGINAL DRAWINGS (some 1/2 A plans have bulkheads moved for engines - these should not be scaled) The number of ribs in a wing may be increased when enlarging a model to ensure wing integrity. Rib spacing must be at least the same or greater than that shown on the original plan.

(e) The wing and tail may be covered with different materials, e.g. heat shrink for tail and tissue for wing.

5.4.2.2. Tailplane and fin

PERMITTED

(a) Addition of necessary structure for R/C controls.

(b) Bracing may be removed, e.g. Flying Quaker.

(c) Alternative methods of attaching tail assembly to fuselage.

NOT PERMITTED

(d) Added surface sheeting.

(e) Added cut-outs in tailplane for rudder movement.

(f) Added cut-outs in fin or rudder for elevator movement.

5.4.2.3. Fuselage

PERMITTED

(a) To increase size of longerons.

(b) Added surface "warren girder" bracing.

(c) Added internal sheeting for engine area and undercarriage.

(d) Cabanes may be strengthened with wire.

(e) Removable hatch(es) may be fitted for access to tank, R/C gear and/or battery.

(f) An unfaired spinner, up to five cm (two inches) in diameter may be fitted to facilitate the use of a starter.

NOT PERMITTED

(g) The addition of surface sheeting, if not shown.

(h) Reducing, increasing or eliminating cabanes.

(j) Painting windows on cabin models, unless shown on the original plan as dummy windows.

(k) Fitting a faired spinner if not shown on the original plan.

5.4.2.4. **Wings**

PERMITTED

(a) Increasing or reducing rib thickness.

(b) Adding shear webs to spars.

(c) Adding "warren girder" bracing below the surface.

(d) Fitting a solid trailing edge instead of a built up trailing edge.

(e) Adding spars below the surface.

(f) Increasing the size of the original spars. (See diagrams for special case spar arrangements).

(g) Substituting hardwood for balsa and vice-versa.

(h) Wing struts, if shown, must be used.

(j) Wings may be built in demountable sections to facilitate transport.

NOT PERMITTED

(k) Adding turbulators.

(l) Adding surface spars.

(m) Adding leading edge sheeting

(n) Increasing the width of leading edge sheeting.

(o) Increasing the width of trailing edge sheeting.

(p) Changing dihedral angles.

(q) Using bolts to attach the wing unless shown on the original plan.

5.4.2.5. **Wheels**

(a) Wheels must be the same diameter as the original. If the original model had balloon wheels, the contestant may fit commercial wheels of the same diameter or may manufacture similar wheels. The shape of wheels and tyres must conform to the spirit of a model's original design. All-non-original wheels shall have a diameter to

tyre-width ratio of about 4 to 1 and 6 to 1. E.g. a wheel 19 mm (3/4 inch) wide should be between 76 mm and 115 mm (3 and 4 1/2 inches) in diameter. Wheel hubs may be slightly thinner than tyre width.

Note: Sliver wheels are not acceptable unless specified on the original plan.

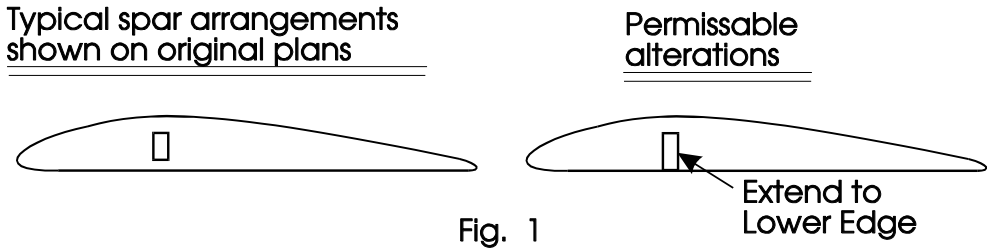


Fig. 1

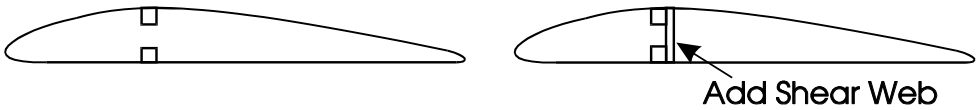


Fig. 2

Fig. 3

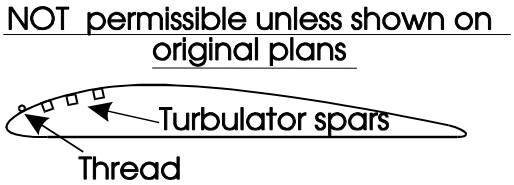


Fig. 4

SPECIFIC EVENT RULES FOR OLD TMER

5.4.3. O.T. TEXACO

Description: This is a fuel economy event where the aim is to achieve maximum flight times from limited allocations of fuel, based on model weight.

5.4.3.1. **Aircraft eligibility.**

(a) This event is for Antique aircraft only as described in rule 5.4.1.1.(a)

(b) The minimum wing area rule 5.4.1.2.(a) applies to this event.

5.4.3.2. **Engine eligibility.**

(a) This event is open to any class of engine conforming with section 5.4.1.3.

(b) All glow plug engines must run unassisted, without external power to the glowplug, otherwise they will be classified as four stroke spark ignition engines.

5.4.3.3 **Fuels.**

(a) Contestants using diesel engines shall supply their own fuel, which must comply to clause 5.4.1.4

(b) The standard 4 stroke fuel supplied by the event organisers shall contain: 15% oil, 5% nitromethane and 80% methanol. Both castor and synthetic oil fuels to be available, which may be used as a mixture by the contestant.

5.4.3.4 **Fuel allocations.**

(a) The following fuel allocations apply and are based on engine type and relate to model weight.

(i) Antique Engines (spark ignition & diesel)	8.8 ml/kg (4.0 cc/lb)
(ii) Four stroke spark ignition	3.3 ml/kg (1.5 cc/lb)
(iii) Diesel engines	4.4 ml/kg (2.0 cc/lb)
(iv) Four stroke glow engines using standard fuel as supplied by the event organizers	6.6 ml/kg (3.0 cc/lb)
(v) Four stroke glow engines not using supplied fuel	4.4 ml/kg (2.0 cc/lb)

(b) The measured weight of the model for fuel allocation shall be rounded off to the nearest pound (lb) e.g., 5.5lb to 6lb and 5.49lb to 5lb. The standard 4 stroke fuel supplied by the event organiser shall contain: 15% oil, 5 % nitromethane and 80% methanol. Both castor and synthetic oil fuels to be available".

(c) The maximum weight for fuel allocation shall be 3632 grams (8 lb).

(d) To fill a limited fuel allocation model with the allocated amount of fuel, the following procedure is to be adopted in the presence of the timekeeper just prior to the flight being made:-
The engine must be stopped, remove the fuel line from the spray bar and drain the fuel tank system.
The measured fuel allocation in the syringe must be transferred to the model by depressing the syringe once.
Note. The fuel in any tube between the syringe and the tank may NOT be drawn back into the syringe and put into the tank.

5.4.3.5 **Flight Procedures.**

(a) Maximum flight time as defined in 5.4.1.5. is 10 minutes (600 points) for all rounds.

5.4.3.6 **Fly-off**

(a) If at the end of official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.4. DURATION

DESCRIPTION: This is a limited engine run event where contestants attempt to achieve maximum flight times from limited engine run time allocations which are generally based on engine type.

5.4.4.1 **Aircraft eligibility**

(a) This event is open to all Old Timer and Antique aircraft as described in rules 5.4.1.1.(a) and 5.4.1.1.(b).

(b) The minimum wing area rule applies to this event as defined in clause 5.4.1.2.a)

5.4.4.2 **Engine eligibility**

(a) This event is open to any class of engine conforming with section 5.4.1.3 of these rules.

5.4.4.3 **Fuels**

(a) Fuels are unrestricted in this event except that prohibited fuel ingredients may not be used as defined in clause 5.4.1.4.

5.4.4.4 (a) **Engine run time allocations:**

i) **25 seconds:** Any front induction, side exhaust two stroke glow engine including Schneurle or PDP ported engine that is fitted with an approved or original factory muffler

ii) **28 seconds:** Any engine defined as Antique Glow and fitted to an aircraft having a wing area greater than 170 square inches per 0.1 cubic inches of engine capacity

iii) **28 seconds:** Any four-stroke glow engine having a pressurized air/fuel mixture induction system using other than muffler pressure

iv) **32 seconds:** Any normally aspirated four-stroke glow engine other than engines covered by rule 5.4.4.4 (a)(iii)

v) **40 seconds:** Any engine defined as Antique Spark Ignition or Antique Diesel and fitted to an aircraft having a wing area greater than 170 square inches per 0.1 cubic inches of engine capacity

5.4.4.5. **Flight procedures**

(a) The maximum flight time as defined in 5.4.1.5.f) is seven (7) minutes (420) points.

5.4.4.6 **Fly-off**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.5. 1/2A TEXACO

DESCRIPTION: This is a limited fuel allocation event using standardized engines and small models.

5.4.5.1 Aircraft eligibility

(a) The event is open to all Antique and Old Timer aircraft as described in rules 5.4.1.1.(a) and 5.4.1.1.(b).

5.4.5.2 Engine eligibility

(a) ½ A Texaco engines shall be limited to Cox reed valve, 0.049 cubic inch capacity engines typical of the following types:-

Black Widow, Golden Bee, Cox Texaco, Baby Bee and QRC and fitted with small (approx 5 cc) Cox fuel tank (Diesel conversions are not permitted).

(b) Engines may be modified in the following ways:
(i) relocation of the fuel pick up from the middle to the bottom of the tank;

(ii) addition of mufflers;

(iii) needle valve extensions are allowed.

(iv) cylinder heads may be drilled and threaded to accept a replaceable glow plug. This rule may only be exercised in the event of the original types becoming unobtainable.

NOTE: Throttles of any type are not permitted.

5.4.5.3 Fuels

(a) Fuels are unrestricted in this event except that prohibited fuel ingredients may not be used as defined in clause 5.4.1.4.

5.4.5.4 Fuel allocation

(a) The fuel allocation is a maximum small (approx. 5cc) Cox tank full, regardless of aircraft weight or size.

5.4.5.5 Flight procedure

(a) The maximum flight time as defined in 5.4.1.5 (f) is Seven Minutes (420 Points).

(b) The model must land in the defined area for the flight to count towards the score.

5.4.5.6 Fly-off

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.6. 2cc OLD TIMER DURATION

DESCRIPTION: This is a limited engine run event based on the duration event using small models and motors.

5.4.6.1 Aircraft eligibility

(a) This event is open to aircraft which were designed, kitted or published on or before the 31st December 1956

5.4.6.2 Engine eligibility

(a) This event is open to all two stroke glow or diesel engines of 2 cc capacity and less. Rule 5.4.1.3.(j) applies to this event.

5.4.6.3 Fuels

(a) Standard fuel shall be provided by the contest organizers for 2 Stroke Glow engines comprising the following:
1 part oil and 4 parts methanol. Both castor and synthetic oil fuels to be available, which may be used as a mixture by the contestant.

(b) Diesel fuel may be supplied by the contestant and is unrestricted apart from compliance with clause 5.4.1.4.

5.4.6.4 Engine run time allocation

(a) The following engine run time allocations will apply:
(i) Any Schneurle or PDP ported engine ..... 20 seconds
(ii) Any other engine type ..... 30 seconds

5.4.6.5 Flight procedures

(a) Maximum flight time as defined in 5.4.1.5. (f) is five (5) minutes (300 points)

(b) The model must land in the defined area for the flight to count towards the score.

5.4.6.6 Fly-off

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.7. R/C OLD TIMER GLIDER

DESCRIPTION: This event is to encourage the re-creation of suitable early design gliders and to fly them in a relaxed competition.

5.4.7.1 Aircraft eligibility

(a) The event is open to all gliders which were designed, kitted, or published on or before 31st December 1950.

(b) All R/C Assist Old Timer rules in relation to the out line and construction of a model (including scaling) will apply with the following exceptions:-

(i) The number of ribs in the wings may be increased when enlarging a model to ensure wing integrity, but rib spacing must be the same or greater than that shown on the original plan.

(ii) When reducing the size of the original model, the number of ribs shown on the original plan must be retained.

(iii) Radio control of rudder, tow hook and elevator functions only are allowed.

The use of ailerons, provided they are shown on the original published plan can be substituted for rudder control. In this case the rudder is no moveable and the controls are aileron, tow hook and elevator.

5.4.7.2 Flight procedures

(a) A models may launch by bungee, electric winch, hand tow or reverse pulley.

Winch or pulley system: 250 metres winch to turn around

Hand tow: 200 metres.

Bungee: 250 metres extended line length at point of launch

Contest Director may alter the line lengths if the field layout is not suitable for all competitors.

(b) The maximum flight time as defined in clause 5.4.1.5.(f) is six (6) minutes (360 points)

(c) The model must land in the defined area for the flight to count towards the score.

5.4.7.3 Fly-off

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly-off, the longest flight shall determine the winner.

5.4.8 NOSTALGIA

DESCRIPTION: This is a limited engine run event for nostalgia period model aircraft.

5.4.8.1. **Model eligibility**

(a) This event is open to all nostalgia aircraft as described in rule 5.4.1.1.(c)

5.4.8.2 **Engine eligibility**

(a) Any two-stroke cross scavenged engine fitted with either a factory or an effective muffler may be used. This muffler rule shall apply to any antique engine which fits this paragraph. No Schneurle or PDP ported engines are permitted and no engines fitted with ABC or AAC piston and cylinders are permitted. Mufflers are not required on diesel engines up to 3.5cc

5.4.8.3 **Fuels**

(a) Fuels are unrestricted in this event except that prohibited fuel ingredients may not be used as defined in clause 5.4.1.4.

5.4.8.4 **Engine run times**

(a) Engine Run.....25 seconds

5.4.8.5 **Flight procedures**

(a) The maximum flight time as defined in 5.4.1.5. (f) is seven (7) minutes (420 points)

(b) The model must land in the defined area for the flight to count towards the score.

(c) Hand launching of Nostalgia models is permitted.

5.4.8.6 **Fly-off**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.9 R/C '38 ANTIQUE

DESCRIPTION: This is a limited engine run event for antique aircraft with engine run times based on engine type and performance.

5.4.9.1. **Model eligibility**

(a) This event is for Antique aircraft as described in rule 5.4.1.1.(a).

(b) Pylon type aircraft are specifically excluded from this event, only cabin, no-cabin-fuselage and cabane types are permitted.

(c) Models may not be scaled up or down in size, they must be built to the original size.

5.4.9.2 **Engine eligibility**

(a) Only Antique Spark ignition or Antique Diesel engines may be used as defined in clause 5.4.1.3.(e)

(b) Antique engines which were made in both spark and glow forms may be converted from glow to spark provided that original or accurate reproduction parts are used in the conversion and the resulting engine is, to all appearances, an original spark ignition engine.

c) Any engine not listed or covered in or by groups listed in 5.4.9.4 c). shall be provisionally placed in Group 1 of that section until evaluated by the R/C Assist Old Timer Subcommittee.

The Subcommittee shall evaluate such engines as submitted to it and provisionally place each of these in an appropriate group and notify the owner/applicant in writing.

The engine will then be added to those listed in the printed rules on the re-issue of the MAAA Australian Official Rules when the Subcommittee is satisfied with the provisional grouping of the engine as shown in competition.

5.4.9.3 **Fuels**

(a) Spark ignition engines may use any mix of unleaded petrol, methanol and oil.

(b) Diesel engines may use any blend of fuel that complies with clause 5.4.1.4.

5.4.9.4 **Engine run times**

(a) Engine runs are based on a handicap system according to engine type and/or capacity used in the model and relate to model weight.

(b) The measured weight of the model for engine run calculations shall be rounded off to the nearest pound e.g. 5.5lb to 6lb and 5.49lb to 5lb.

(c) The following engine run times will apply:

Group 1 Engines: 12 seconds per pound

McCoy 60 Red Head Black Case, McCoy 60 Series 20, Dooling 61, Edco Sky Devil, Hassad Custom 60, Hassad Blue Streak 65, Hornet 60

Group 2 Engines: 16 seconds per pound

Anderson Spitfire (with sub-piston porting holes), Atwood Champion GD and DR, Orwick 64 and 73, Dunham Orwick 64, Cunningham Blue Streak 64, Daniel 64, Fox 59 long shaft, Nordec 60,
Rowell 60, Orr 65, Ball 60, Bungay 60, Hearns Hobbies Tempest 60, McCoy 49, Ken 60, Marden/Stevenson 60-65, and any other twin ball race front or rear induction .60 to .65 not listed in another group

Group 3 Engines: 19 seconds per pound

Atwood Champion models H, J, and JH, Atwood Super Champion, Anderson Spitfire (without sub-piston porting holes), Super Cyclone 65G, Super Cyclone 60CR, Pacemaker 59, O&R side port large exhaust stack, O&R 60 side port small exhaust stack (performance modified), O&R 60 front intake, McCoy Sportsman Senior 55 with McCoy spark conversion kit

Group 4 Engines: 24 seconds per pound

Contestor D-60S side port and Contestor D-60R rear rotary, Fleetwind 60, O&R side port small exhaust stack (standard unmodified), OK Super 60 and all other plain bearing or single ball race ignition engines from .57 to .99 not listed in another group

Group 5 Engines: 32 seconds per pound

Forster 99, Molnar 78 and 99, McCoy 29, Brown Junior 60, Dennymite 57, Bunch Tiger 45, Madewell 49, Atwood Triumph 49 and 51, Delong 45, Rocket 46, OS K6, Edco 49 diesel,
Vivell 49er, and all other .40 to .56 not listed in another group

Group 6 Engines: 41 seconds per pound

Torp 24/29/32, Vivell 35, Comet 35, O&R 29/33, Delong 30, RB Steel 29/36, Orwick 29/32, Forster 29/305 (original rear disc, plain bearing and ball race), Super Hurricane 24, all Drone 5cc diesels, all GB 5cc diesels, Cannon 300/358, all Atwood 24/29 designs (including Torpedo Special, Phantom, Bullet), all OK 29/Mohawk 29, Frog 500 and all other engines from .236 to .39 not listed in any other group

Group 7 Engines: 60 seconds per pound

Amco 3.5 plain bearing diesel, Bantam 19, ED Hunter 3.46 diesel, Morrill Hornet 19, Ohlsson 19, Oliver Tiger Mk 1, Shilen 19, Orwick 23, Cameron 23, Baby Cyclone 36, all Model Dockyard Whirlwind, McCoy 19 Red Head, Arden 19, HS 23, and all other engines from .155 to .235 not listed in any other group

Group 8 Engines: 70 seconds per pound

Elfin 2.49 radial, GB 250 replica, Oliver Rapier/ Panther Jaguar/ Tiger Mk 1 front rotary, Mills 2.4cc, CIE and any engine from .141 to .154 not listed in any other group

Group 9 Engines: 110 seconds per pound
Mills 1.3cc (including all replicas) Deezil, Micro 2cc, Elf, Madewell 14, Oliver Battleaxe and any other engine up to .14 cu inch not listed in any other group

Should any engine (home built, manufacturers production engine or performance modified) clearly and consistently outperform other engines in its group to the detriment of fair competition, then the SAM Engine Sub-committee shall be authorized to review that engines performance and reclassify the engine if considered necessary. The subcommittee shall use objective measures of comparison wherever possible

5.4.9.5 **Flight procedures**

(a) The maximum flight time as defined in 5.4.1.5. (f) is ten (10) minutes (600 points).

(b) The model must land in the defined area for the flight to count towards the score.

5.4.9.6 **Fly-off**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.10 STANDARD DURATION

DESCRIPTION: This a limited engine run event based on the duration event but using standardized engines and propellers.

5.4.10.1. **Model eligibility**

(a) This event is open to all Old Timer and Antique aircraft as described in rules 5.4.1.1.(a) and 5.4.1.1.(b)

(b) The minimum wing area for this event shall be 800 square inches.

5.4.10.2 **Engine eligibility**

(a) Engines used in this event shall only be two stroke glow engines of up to 0.40 cubic inches capacity and may only be engines with front intake and side exhaust. Engines must be fitted with an un-modified muffler made by the same manufacturer as the engine and the muffler must be the muffler normally used on that engine. Engines can use the standard type carburetor with normal throttle control, and only muffler-induced pressure of the fuel system is allowed.

(b) The propeller to be used for this event is to be a 10" x 6" fibreglass or nylon injection-moulded propeller which must be as purchased except that balancing may be carried out by working one blade only.

(c) It is a requirement of this event that the engine shall be fitted with a standard injection-moulded 10 x 6 propeller, and when tuned for maximum revolutions with the nose of the model held vertical and the motor leaned-out, must not exceed 12,500 RPM as measured by the CD's selected tachometer. To ensure RPM maximum, engines with carburettor are to be fitted with a mechanical stop on the throttle linkage to limit the maximum RPM..

(d) Random checks of engine speed will be carried out by the Contest Director during the contest. Any contestant using or intending to use a model fitted with an engine which exceeds the maximum RPM allowed will have zero score applied to the contestant's last official flight.

(e) Where a random check is made after completion of a contestant's official flights, and contravention of the maximum engine speed rule is found, the last flight completed will be altered to a zero score by the Contest Director.

5.4.10.3 **Fuels**

(a) Contestants may use any fuel of their choice that complies with clause 5.4.1.4.

5.4.10.4 **Engine run time allocation**

(a) Engine run will be 25 seconds

5.4.10.5 **Flight procedures**

(a) The maximum flight time as defined in 5.4.1.5. (f) is six (6) minutes (360 points)
(b) The model must land in the defined area for the flight to count towards the score.

5.4.10.6 **Fly-off**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b) For the fly off, the longest flight shall determine the winner.

5.4.11 GORDON BURFORD EVENT

DESCRIPTION: This is a limited engine run event for models fitted with specified engines manufactured by Gordon Burford.

5.4.11.1 **Aircraft Eligibility:**

i) This event is open to all Antique, Old Timer and Nostalgia aircraft as described in rules 5.4.1.1(a), 5.4.1.1(b) and 5.4.1.1(c).

ii) The minimum wing area rule as defined in clause 5.4.1.2(a) and 5.4.1.2(b), applies to all aircraft (including 'nostalgia') in this event.

5.4.11.2 **Engine Eligibility:**

Models flying in this event must be powered with a diesel engine 1cc up to a nominal 2.5cc, manufactured by Gordon Burford and falling within the following classifications:

i) **PB**: Any "GB", "Sabre" or "Taipan" engine having a plain-bearing crankshaft (including "GB250" replica engines).
ii) **BB:** Any "Taipan" engine having a ball raced crankshaft but excluding any Schneurle ported and/or limited production special engines.
iii) Mufflers are not required to be fitted.
iv) Only commercially available propellers having a minimum diameter of eight inches may be used.

5.4.11.3 **Fuels:**

Fuels are unrestricted in this event except that prohibited fuel ingredients may not be used as defined in clause 5.4.1.4.

5.4.11.4 **Engine Run Time Allocations**:

i) **PB** engines as per 5.4.11.2(i) 40 seconds

ii) **BB** engines as per 5.4.11.2(ii) 38 seconds

iii) David Owen engines 38 seconds

5.4.11.5 **Flight Procedures:**

(i) The maximum flight time as defined in 5.4.1.5(f) is five (5) minutes (300 points).

(ii) Hand launching of models is permitted.

(iii) The model must land in the defined area for the flight to count towards the total score as per 5.4.1.5. (j)

5.4.11.6 **Fly-off:**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 5.4.1.6.

(b For the fly off, the longest flight shall determine the winner.

R/C ELECTRIC OLD TIMER RULES

10.4.1 GENERAL

The general requirements set out in this section apply to the specific events described in later sections of these rules.

The terms "shall" and "must" indicate mandatory ins tructions or requirements whilst the terms "should" and "may" mean recommende d but optional.

10.4.1.1 AIRCRAFT CATEGORIES

The following **SAM** approved aircraft categories apply to electric events:

(a) **ANTIQUE** aircraft are defined as aircraft which were designed, kitted, or published on or before 31st December 1938.

(b) **OLD TIMER** aircraft are defined as aircraft which were designed, kitted, or published on or before 31st December 1942.

(c) **NOSTALGIA** aircraft are defined as aircraft which were designed, kitted or published on or after 1st January 1943 and on or before 31st December 1956. A combined wing and horizontal stabiliser area is used in calculating the wing area in clause 10.4.1.2(b).

10.4.1.2 AIRCRAFT GENERAL REQUIREMENTS

(a) Where the specific rules for an event state that the minimum wing area rules apply as defined in this clause, models used in those events shall comply with the following:
Aircraft must have a minimum of 46.7 sq in of wing area per volt of motor battery pack (see also specific events for battery limits).

Note: Based on nominal voltage where LiPo = 3.6v/cell and A123 = 3.3v/cell

(b) The formula to be used to determine the wing area is:

WING AREA = CHORD x WINGSPAN where:

The wingspan is defined as a straight line dimension from wing tip to wing tip, with no allowance being made for tapered or rounded tips, and the Chord is measured half way between the wing tip and the centre-line of the fuselage.

(c) Models shall comply with the requirements of the M.A.A.A. Manual of Procedures.

(d) Aircraft models may be modified in the following ways:

(i) Rudder and elevator are the only flying surface controls allowed.

(ii) Minor changes to the thrust line for flight trimming.

(iii) The electric motor mounting should retain the thrust line as on the original model.

(e) Outlines, areas, moments and cross sections may not be changed except for direct scaling. Structures may be strengthened or lightened and provision for control surfaces may be added. Airfoil sections must be the same as on the original model. Landing gear should be in the same location as on the original model; however, single-wheeled main landing gear designs may be modified to dual wheel main landing gear designs, using the same wheel size as the original. All changes must be in the character of the original aeroplane.

(f) It is the responsibility of the competitor to prove the validity of the model and the fidelity to the original design. The competitor must submit the actual construction plans to the Contest Director upon request.

(g) No modification shall be made which would prevent the model making a normal, unassisted rise off ground (ROG) take off.
The following are not permitted:- jettisoning undercarriages, vertical take off, or catapult devices.

(h) It is permissible to scale an approved design up or down, provided a copy of the original plans is used for scaling.

(i) One reserve model is permitted in each event in contests. A competitor may interchange various parts provided the resulting complete model conforms to the requirements of these rules and that the parts have been checked before the start of the contest.

(j) All powered R/C aircraft, including ½ A Texaco, must have originally been gas (IC) powered (ie, no rubber model designs).

(k) **MINOR EXTENSION TO THE FRONT OF THE FUSELAGE MAY BE MADE TO ASSIST THE ELECTRIC CONFIGURATION AND IN ORDER TO FACILITATE BALANCING THE MODEL, PROVIDED THAT THE CONSTRUCTOR IDENTIFIES AND ESTABLISHES A RELEVANT I.C. PROP FACE, AND DOES NOT EXTEND BEYOND SAME.**. Where an extension of the fuselage is employed, it shall be in character with the original desi

10.4.1.3 **ELECTRIC MOTOR GENERAL REQUIREMENTS**

(a) Any DC electric motor (brushed or brushless) is permitted.

(b) Any motor magnets (ferrite, cobalt or neodymium, etc) are permitted.

(c) Any single propeller drive system is allowed.

(d) A means of remotely cutting the power to the motor is mandatory and shall be demonstrated on demand.

(e) The electric motor must be fitted with a propeller brake function.

(f) No folding, freewheeling, variable pitch or single bladed propellers shall be permitted (locking a folding prop is permitted).

10.4.1.4 **SAFETY**

Competitors using an Electronic Speed Controller (ESC) with Battery Eliminator Circuit (BEC) in lieu of a separate Rx battery must ensure that there is sufficient energy in the motor battery pack for an extended flight in the event of a fly-off.

10.4.1.5 **CONTEST PROCEDURES**

(a) In any area where height limitations are likely to occur, event organisers should conduct these contests in accordance with Government regulations.

(b) Five (5) competitors shall constitute an event at state or national level.

(c) All models, except Nostalgia, shall rise off ground (ROG). The Contest Director may declare the field unsuitable for ROG of 1/2A Texaco at the start of the competition and allow hand launches.

(d) Models must be airborne within five (5) seconds of a flight or fly-off being declared open by the Contest Director (radio frequency clashes permitting). Failure to become airborne within five seconds will result in an attempt being awarded. The second attempt shall not be before the next official flight.

(e) Timing of a flight starts when the model is released with motor running. Timing stops when the model touches the ground and comes to rest. The electric motor must be off (and remain off) before the aircraft touches the ground.

(f) The competitors score for a flight is calculated by allocating one point for each second of flight time as defined in clause 10.4.1.5 (e) up to the maximum flight time specified for each event. Scoring is to be rounded off to the nearest second. (e.g. 10.5 seconds is 11 seconds, and 10.49 seconds is 10 seconds)

(g) Should the respective maximum flight time plus two (2) minutes be exceeded, the flight score from then on will be reduced by one (1) point per second of flying time until the model lands. The minimum point score for any flight is zero. Minus scores are not to be used.

(h) The motor run time for limited motor run events is defined as starting when the model is released with the motor running and ending when the throttle stick is reduced to minimum and the propeller stops. (refer also section 10.4.1.5 (u)).

(i) Prior to the start of the contest the Contest Director will define an area, which should be 100 x 100 metres or larger, which will become the defined landing area for the contest. Failure to land in the defined landing area after an official flight will result in a zero score for that flight.

(j) Each competitor shall be entitled to two (2) attempts at each official flight. If a second attempt is made, it shall be the official flight.

(k) A model may only be used by the one competitor in any one event.

(l) A competitor may elect to compete with one previously-nominated assistant who may assist in the flying of the model for safety reasons including take-off and/or landing.

(m) Attempts are defined as follows:

(i) Release of model with motor running.

(ii) A motor over-run or second start in limited motor run events.

(iii) Competitor calls an attempt within the given motor-run time allocated to that particular model in limited motor run events.

(iv) The competitor calls an attempt within two (2) minutes of release of model with the motor running in Texaco events.

(n) Should an attempt be called, timing of the flight ceases.

(o) Should a motor over-run occur on a second attempt in an official flight of any limited motor run event, the score for that flight is zero.

(p) Official flights may be conducted in rounds as determined by the Contest Director.

(q) On-board thermal indicating devices, including real time monitoring/ transmitting and receiving devices, are not permitted in any events.

(r) The contest may be stopped at the Contest Director's discretion if the wind strength exceeds 25 kph (7 metres per second) more than twice in a 15 minute period.

(s) When, during the conduct of an event, weather conditions alter and render it inadvisable to conform to the contest format stated in these rules or because of M.O.P. Regulations, the Contest Director will call a meeting of all competitors to determine by consensus a contest format which will enable the successful completion of the event. Flight times achieved in rounds not completed by all competitors at the time of the contest Director calling this meeting will not be included in the official scores for that contest.

(t) Each competitor will have the opportunity to make four (4) official flights of which the best three (3) will count towards the competitor's official score. This system will apply to all events.

(u) For all events the following safety procedure applies. With the motor running and the competitor standing behind the model, the competitor will demonstrate movement of control surfaces and motor shut-down with brake to the person timing the flight, immediately prior to launch. Failure to do so may incur a penalty of zero score for that flight.

10.4.1.6 **FLY-OFF PROCEDURES**

(a) If, on the completion of the official flights, a tie exists that in the opinion of the Contest Director needs to be resolved to determine the results of the contest, a fly-off shall be held involving the tied competitors/models only.

(b) All models in the fly-off shall commence the task simultaneously. It is each competitor's responsibility to have a minimum of two frequencies available for competition. Where it is impossible to separate the competitors' frequencies, the competitor(s) with the highest score(s) and then the highest dropped flight score shall proceed to the fly-off. Thereafter the matter shall be settled by a toss of a coin.

(c) Only one opportunity will be given to a competitor to make a fly-off flight. Once the model is released to commence a fly-off flight the result of that flight becomes the competitor's fly-off score.

(d) A motor overrun in the fly-off of any limited motor run event will result in a zero score being awarded for the fly-off.

(e) Maximum flight times do not normally apply to fly-offs. However, the CD may, before the fly-off commences, limit the flight time. In the event of a tied score in the fly-off the competitor with the highest dropped flight score shall be the winner. Should the result still be tied the contest shall be settled by the toss of a coin.

(f) The model must land in the defined landing area in a fly-off flight for the score to count.

(g) Refer to the specific event rules for additional fly-off requirements for each event.

10.4.2 GUIDELINES FOR CONSTRUCTION OF AIRCRAFT

10.4.2.1 GENERAL

PERMITTED

(a) Where the original undercarriage moved in slots in the fuselage, a solid attachment may be made at that point.

(b) Undercarriage fairings, if shown on the original as standard fittings, must be fitted.

(c) Full or partial wheel spats may be removed to make the model practical for use on grass fields.

(d) Scaling should be done from the ORIGINAL DRAWINGS (some 1/2 A plans have bulkheads moved for engines - these should not be scaled). The number of ribs in a wing may be increased when enlarging a model to ensure wing integrity. Rib spacing must be at least the same or greater than that shown on the plan.

(e) The wing and tail may be covered with different materials, e.g. heat shrink for tail and tissue for wing.

10.4.2.2 TAILPLANE AND FIN

PERMITTED

(a) Addition of necessary structure for R/C controls.

(b) Bracing may be removed, (e.g. Flying Quaker)

(c) Alternative methods of attaching tail assembly to fuselage.

NOT PERMITTED
(d) Added surface sheeting.

(e) Added cut-outs in tailplane for rudder movement.

(f) Added cut-outs in fin or rudder for elevator movement.

10.4.2.3 **FUSELAGE**

PERMITTED
(a) To increase size of longerons.

(b) Added surface "warren girder" bracing.

(c) Added internal sheeting for motor area and undercarriage.

(d) Cabanes may be strengthened with wire.

(e) Removable hatch may be fitted for access to R/C gear and/or battery.

(f) Front end extension to accommodate flight battery pack. Modification should follow original fuselage lines.

NOT PERMITTED
(g) The addition of surface sheeting, if not shown.

(h) Reducing, increasing or eliminating cabanes.

(i) Painting windows on cabin models, unless shown on the original plan as dummy windows.

(j) Fitting a faired spinner if not shown on the original plan.

10.4.2.4 **WINGS**

PERMITTED
(a) Increasing or reducing rib thickness.

(b) Adding shear webs to spars.

(c) Adding "warren girder" bracing below the surface.

(d) Fitting a solid trailing edge instead of a built up trailing edge.

(e) Adding spars below the surface.

(f) Increasing the size of the original spars (see MAAA IC OT Rules).

(g) Substituting hardwood for balsa and vice-versa.

(h) Wing struts, if shown, must be used.

(i) Wings may be built in demountable sections to facilitate transport.

NOT PERMITTED

(j) Adding turbulators.

(k) Adding surface spars.

(l) Adding leading edge sheeting.

(m) Increasing the width of leading edge sheeting.

(n) Increasing the width of trailing edge sheeting.

(o) Changing dihedral angles.

(p) Using bolts to attach the wing unless shown on the original plan.

10.4.2.5 **WHEELS**

Wheels should, as much as practical, be the same scale as the original model. If the original model had balloon wheels, the competitor may fit commercial wheels of the same diameter or may manufacture similar wheels. The shape of wheels and tyres must conform to the spirit of a model's original design. All non-original wheels shall have a diameter to tyre-width ratio of about 4 to 1 and 6 to 1 (e.g. a wheel 19 mm (3/4 inch) wide should be between 76 mm and 115 mm (3 and 4 1/2 inches) in diameter). Wheel hubs may be slightly thinner than tyre width.

Note: Sliver wheels are not acceptable unless specified on the original plan.

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10.4.3. ELECTRIC TEXACO

Description: This is an energy event where the aim is to achieve a maximum flight time from a limited motor battery pack based on 'dry model' weight.

Note: 'dry weight' is weight of model without the m otor battery pack installed.

10.4.3.1 AIRCRAFT ELIGIBILITY.

(a) This event is for **Antique aircraft only** as described in rule 10.4.1.1. (a)

(b) The minimum wing area rule as defined in clause 10.4.1.2 (a) does not apply to this event.

(c) Ballasting is permitted but should be limited to the minimum required to qualify for the next commercially available battery capacity using rule 10.4.3.4.

10.4.3.2 MOTOR ELIGIBILITY.

This event is open to any class of DC electric motor conforming to section 10.4.1.3.

10.4.3.3 MOTOR BATTERY PACK.

The motor battery pack powers the electric motor.

(a) Li chemistry cells are permitted.
(b) Motor battery pack cell chemistry cannot be mixed

10.4.3.4 ENERGY ALLOCATION.

(a) For all Li cell types, the total energy to drive the electric motor is limited to 0.222 watt-hours / oz of dry model weight
In mathematic form, this can be expressed as:

cp = F1 x WT x 1000 / (n x v)

Where:

cp = pack capacity (in milliamp hours)
F1 = energy allowance (0.222)
WT = dry model weight (in oz)
n = number of number of cells
v = cell nominal voltage

Example, for a 70% Lanzo Bomber dry weight of 40 oz.
If the aim is to use a standard (3.7V) 2S LiPo pack, the maximum pack capacity is:
cp = 0.222 x 40 x1000 / (2 x 3.7)
= 1200 mAh

(b) For standard 3.7V LiPo packs, an alternative expression is:
60 cell.mAh / oz of dry model weight
See Appendix 1 for a table showing a range of results derived from this approach for standard (3.7V) LiPo batteries.
Note – a small discrepancy may result from each method as a result of rounding at different stages of the calculation. However, commercially available packs will not usually exactly match the value calculated and require use of a smaller capacity than a calculated maximum.

(c) The measured dry weight of a model for energy allocation shall be rounded off to the nearest ounce (Oz). (e.g. 40.5 ounces is 41 ounces, and 40.49 ounces is 40 ounces).

Note: One ounce equals 28.35 grams

10.4.3.5 **FLIGHT PROCEDURE**

(a) Maximum flight time as defined in 10.4.1.5.is 10 minutes (600 points) for all flights except the fly-off (refer 10.4.1.6 (e)).

(c) The model must land in the defined area for the flight to count towards the score.

(d) The electric motor may be started and stopped at the competitor's discretion but must be off when the model touches the ground.

10.4.3.6 **FLY-OFF**

(a) If at the end of official flights a fly-off is necessary, it will be conducted as set out in rule 10.4.1.6.

(b) For the fly-off refer also to safety clause 10.4.1.4).

10.4.4 ELECTRIC DURATION

Description: This is a timed motor run event where competitors attempt to achieve maximum flight times from an allocated motor run time. The battery pack capacity is based on an energy rule which is related to the wing area of the model.

10.4.4.1 AIRCRAFT ELIGIBILITY

(a) This event is open to all Antique and Old Timer aircraft as described in rules 10.4.1.1 (a) and 10.4.1.1 (b).

(b) The wing area is calculated as defined in clause 10.4.1.2 (b)

(c) The minimum wing area rule as defined in clause 10.4.1.2 (a) does not apply to this event.

10.4.4.2 MOTOR ELIGIBILITY

This event is open to any class of DC electric motor conforming to section 10.4.1.3 of these rules.

10.4.4.3 MOTOR BATTERY PACK

The motor battery pack powers the electric motor.

(a) Li chemistry cells are permitted.

(b) Motor battery pack cell chemistry cannot be mixed.

(c) For all Li cell types, the maximum energy of the motor battery is:
5.92 watt-hours/sq ft of wing area.
In mathematic form, this can be expressed as:

cp = F2 x WA x 1000 / (n x v).

Where:

cp = pack capacity (in milliamp hours)
F2 = energy allowance (5.92)
WA = wing area (in sq ft)
n = number of number of cells
v = cell nominal voltage

Example, for a 70% Lanzo Bomber wing area of 650 sq in (650 / 144 = 4.51 sq ft).
If the aim is to use a 4S LiPo (3.7V) pack, maximum pack capacity is:

cp = 5.92 x 4.51 x 1000 / (4 x 3.7)
= 1804 mAh.

(d) For standard 3.7V LiPo packs, an alternative expression is:
1600 cell.mAh / sq ft of wing area

See Appendix 2 for a table showing a range of results derived from this approach for standard (3.7V) LiPo batteries.

Note – a small discrepancy may result from each method as a result of rounding at different stages of the calculation. However, commercially available packs will not usually exactly match the value calculated and require use of a smaller capacity than the maximum calculated.

10.4.4.4 **ALLOWED MOTOR RUN TIME**

All models are allowed twenty five (25) seconds motor run time

10.4.4.5 **FLIGHT PROCEDURES**

(a) The maximum flight time, as defined in 10.4.1.5(f), is seven (7) minutes. Four hundred and twenty (420) points for all flights except the fly-off (refer 10.4.1.6(e). This includes the allowed motor run time as above.
(b) The model must land in the defined area for the flight to count towards the score.
(c) The electric motor may be started and stopped at the competitor's discretion up to a maximum of 25 seconds total motor run time for the flight.
Motor run times over 25 seconds will score zero points for the flight.
(d) Points are deducted from the maximum score for the following:-
(i) 1 point for each second of flight time under 7 minutes; and
(ii) 1 point for each second of flight time over 9 minutes.

10.4.4.6 **FLY-OFF**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 10.4.1.6.

(b) The motor must not be run over the allowed motor run time otherwise the competitor will be disqualified.

(c) For the fly-off, refer also to safety clause 10.4.1.4.

10.4.5 1/2A ELECTRIC TEXACO

Description: This is an energy event for small models where the aim is to achieve a maximum flight time from a limited motor battery pack.

10.4.5.1 AIRCRAFT ELIGIBILITY

(a) The event is open to all Antique and Old Timer aircraft as described in rules 10.4.1.1 (a) and 10.4.1.1 (b).

(b) Models must have less than 450 sq in wing area as defined in section 10.4.1.2(b). The minimum wing area rule as defined in clause 10.4.1.2(a) does not apply to this event.

10.4.5.2 MOTOR ELIGIBILITY

This event is open to any class of DC electric motor conforming to section 10.4.1.3.

10.4.5.3 MOTOR BATTERY PACK

The motor battery pack powers the electric motor.

(a) Li chemistry cells are permitted.

(b) Motor battery pack cell chemistry cannot be mixed.

(c) The maximum number of cells for the motor battery pack is 3.

10.4.5.4 ENERGY ALLOCATION

(Energy allocation for Electric 1/2A Texaco is 3.404 watt-hours for all models. In mathematic form, this can be expressed as:

cp = F3 x 1000 / (n x v)

Where:

cp = pack capacity (in milliamp hours)

F3 = energy allowance (3.404)

n = number of number of cells

v = cell nominal voltage

For standard (3.7V) LiPo cells, examples of eligible battery configurations are: 2S 460 mAh LiPo, and 3S 300 mAh LiPo.

10.4.5.5 **FLIGHT PROCEDURE**

(a) The maximum flight time as defined in 10.4.1.5 (f) is ten (10) minutes (600 points) for all flights except the fly off (refer 10.4.1.6 (e)).

(b) The model must land in the defined area for the flight to count towards the score.

(c) The electric motor may be started and stopped at the competitor's discretion but must be off when the model touches the ground.

10.4.5.6 **FLY-OFF**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 10.4.1.6.

(b) For the fly-off, refer also to safety clause 10.4.1.4~~)~~.

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10.4.6 ELECTRIC HEIGHT LIMITED OLD TIMER

DESCRIPTION: This is a height limited event where a competitor attempts to achieve maximum flight time from a single motor run. Models must be fitted with an approved height limiter that cuts the power to the motor.

10.4.6.1 AIRCRAFT ELIGIBILITY

(a) This event is open to all Old Timer and Antique aircraft as described in rules 10.4.1.1 (a) and 10.4.1.1 (b).

(b) The minimum wing area rule applies to this event as defined in clause 10.4.1.2 (a).

10.4.6.2 ELECTRIC MOTOR ELIGIBILITY

This event is open to any class of DC electric motor conforming to 10.4.1.3 of these rules.

10.4.6.3 MOTOR BATTERY PACK

The motor battery pack powers the electric motor.

(a) Li cells are permitted.

(b) Motor battery pack cell chemistry cannot be mixed.

(c) There is no restriction on the number of cells that can be used in the motor battery pack.

10.4.6.4 HEIGHT/TIME RESTRICTIONS

Models must be fitted with an approved limiter that cuts power to the motor either at a height of 200m or after a continuous motor run of 30 seconds, whichever occurs first. The motor cannot be stopped and restarted during the initial climbmotor battery pack.

10.4.6.5 FLIGHT PROCEDURES

(a) The maximum flight time as defined in 10.4.1.5 (f) is seven (7) minutes (420) points for all flights except the fly off (refer 10.4.1.6 (e)).

(b) The height limiter must be set to cut the motor at a maximum of 200m.

(c) A single motor run to the specified height applies

(d) The motor must not be run for more than 30 seconds otherwise the flight will be disqualified.

(e) The motor must not be run a second time otherwise the flight will be disqualified.

(f) The model must land in the defined area for the flight to count towards the final score.

10.4.6.6 **FLY-OFF**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 10.4.1.6.

(b) The motor must not be run a second time otherwise the competitor will be disqualified.

For the fly-off, refer also to safety clause 10.4.1.4.

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10.4.7 ELECTRIC NOSTALGIA

DESCRIPTION: This is a limited motor run event where a competitor attempts to achieve maximum flight time from a single motor run.

10.4.7.1 AIRCRAFT ELIGIBILITY

(a) This event is open to all nostalgia aircraft as described in rules 10.4.1.1(c)

(b) The minimum wing area rule applies to this event as defined in clauses 10.4.1.1(c) and 10.4.1.2(a).

10.4.7.2 ELECTRIC MOTOR ELIGIBILITY

The general requirements for electric drive systems under 10.4.1.3 of these rules apply.

10.4.7.3 MOTOR BATTERY PACK

The motor battery pack powers the electric motor.

(a) Li cells are permitted.

(b) Motor battery pack cell chemistry cannot be mixed.

(c) The maximum voltage of the pack is 14.8V. For standard (3.7V) LiPo cells, the maximum number of cells for the motor battery pack is 4.

10.4.7.4 LIMITED MOTOR RUN TIME ALLOCATION

The maximum motor run time for all aircraft is 35 seconds.

10.4.7.5 FLIGHT PROCEDURES

(a) The maximum flight time as defined in 10.4.1.5 (f) is seven (7) minutes (420) points for all flights except the fly off (refer 10.4.1.6 (e)).

(b) The model must land in the defined area for the flight to count towards the score.

(c) A single continuous motor run to a maximum of 35 seconds applies.

(d) Motor run time over 35 seconds will result in zero score for that flight.

(e) Hand launching of Nostalgia models is permitted.

10.4.7.6 **FLY-OFF**

(a) If at the end of the official flights a fly-off is necessary, it will be conducted as set out in rule 10.4.1.6.

(b) For the fly-off, the motor must not be run over the free motor run time otherwise the competitor will be disqualified.

(d) For the fly-off, refer also to safety clause 10.4.1.4.

Electric Vintage Glider-

10.4.8 **ELECTRIC VINTAGE GLIDER**

Description. This is a height limited event where a competitor attempts to achieve a maximum flight time from a single motor run. Models must be fitted with an approved height limiter that cuts power to the motor.

10.4.8.1 **AIRCRAFT ELIGIBILITY**

(a) This event is open to all Vintage Gliders which were designed, kitted or published on or before 31st December 1956.
(b) The minimum wing area rule applies as defined in clause 10.4.1.2(a).
(c) The design of the glider may be modified to accommodate an electric motor for launching the model. A spinner may be fitted to maintain the character of the original design.

10.4.8.2 **ELECTRIC MOTOR ELIGIBILTY**

This event is open to any class of DC electric motor conforming to 10.4.1.3 of these rules with the exception that folding propellers and spinners are permitted.

10.4.8.3 **MOTOR BATTERY PACK**

The motor battery pack powers the motor.
(a) Li cells are permitted.
(b) Motor battery cell chemistry cannot be mixed.
(c) There is no restriction on the number of cells that can be used in the motor battery pack.

10.4.8.4 **HEIGHT/TIME RESTRICTIONS**

Models must be fitted with an approved limiter that cuts power to the motor either at a height of 200 metres or after a continuous motor run of 30 seconds, whichever occurs first. The motor cannot be stopped and restarted during the initial climb.

10.4.8.5 **FLIGHT PROCEDURES**

(a)The maximum flight time as defined in 10.4.1.5(f) is seven (7) minutes. Maximum of 420

(b) The height limiter must be set to cut the motor at a maximum of 200m.
(c) A single motor run to the specified height applies.
(d) The motor must not be run for more than 30 seconds otherwise the flight will be disqualified.
(e)The motor must not be run a second time or the flight will be disqualified.

(f) The model must land in the defined area for the flight to count towards the final score.

10.4.8.6 **FLY OFF**

(a) If at the end of the official flights a fly off is necessary, it will be conducted as set out in rule 10.4.1.6.

(b) The motor must not be run a second time otherwise the competitor will be disqualified.

For the fly off, refer also to safety clause 10.4.1.4

APPENDIX 1

ELECTRIC TEXACO BATTERY ENERGY RULE					
60 cell.mAh per Oz for Lithium Polymer Cells					
Dry model	Energy	Max LiPo battery capacity, mAh			
Weight Oz	Allocation	2 cells	3 cells	4 cells	5 cells
25	1500	750	500	375	300
26	1560	780	520	390	312
27	1620	810	540	405	324
28	1680	840	560	420	336
29	1740	870	580	435	348
30	1800	900	600	450	360
31	1860	930	620	465	372
32	1920	960	640	480	384
33	1980	990	660	495	396
34	2040	1020	680	510	408
35	2100	1050	700	525	420
36	2160	1080	720	540	432
37	2220	1110	740	555	444
38	2280	1140	760	570	456
39	2340	1170	780	585	468
40	2400	1200	800	600	480
41	2460	1230	820	615	492
42	2520	1260	840	630	504
43	2580	1290	860	645	516
44	2640	1320	880	660	528
45	2700	1350	900	675	540
46	2760	1380	920	690	552
47	2820	1410	940	705	564
48	2880	1440	960	720	576
49	2940	1470	980	735	588
50	3000	1500	1000	750	600
51	3060	1530	1020	765	612
52	3120	1560	1040	780	624
53	3180	1590	1060	795	636
54	3240	1620	1080	810	648
55	3300	1650	1100	825	660
56	3360	1680	1120	840	672
57	3420	1710	1140	855	684
58	3480	1740	1160	870	696
59	3540	1770	1180	885	708
60	3600	1800	1200	900	720
61	3660	1830	1220	915	732
62	3720	1860	1240	930	744
63	3780	1890	1260	945	756
64	3840	1920	1280	960	768
65	3900	1950	1300	975	780
66	3960	1980	1320	990	792
67	4020	2010	1340	1005	804
68	4080	2040	1360	1020	816

Note: 'Dry Weight' is mass of model without the battery that powers the motor.

APPENDIX 2

ELECTRIC DURATION
BATTERY ENERGY RULE: 1600 cell.mAh per sq ft Wing Area

Wing Area (square inches)	Energy Factor	Maximum Lithium Polymer Battery Capacity mAh				
		2 Cells	3 Cells	4 Cells	5 Cells	6 Cells
600	6667	3330	2220	1670	1330	1110
625	6944	3470	2310	1740	1390	1160
650	7222	3610	2410	1810	1440	1200
675	7500	3750	2500	1880	1500	1250
700	7778	3890	2590	1940	1560	1300
725	8056	4030	2690	2010	1610	1340
750	8333	4170	2780	2080	1670	1390
775	8611	4310	2870	2150	1720	1440
800	8889	4440	2960	2220	1780	1480
825	9167	4580	3060	2290	1830	1530
850	9444	4720	3150	2360	1890	1570
875	9722	4860	3240	2430	1940	1620
900	10000	5000	3330	2500	2000	1670
925	10278	5140	3430	2570	2060	1710
950	10556	5280	3520	2640	2110	1760
975	10833	5420	3610	2710	2170	1810
1000	11111	5560	3700	2780	2220	1850
1025	11389	5690	3800	2850	2280	1900
1050	11667	5830	3890	2920	2330	1940
1075	11944	5970	3980	2990	2390	1990
1100	12222	6110	4070	3060	2440	2040
1125	12500	6250	4170	3130	2500	2080
1150	12778	6390	4260	3190	2560	2130
1175	13056	6530	4350	3260	2610	2180
1200	13333	6670	4440	3330	2670	2220