



AUSTRALIAN ELECTRIC FLIGHT ASSOCIATION

OFFICIAL RULES

Section 10

Radio Control Electric Old Timer

(2010)

Revised July 2009
(Simplified energy units for Texaco events)

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COMPETITION DETAILS:

| <u>Event</u> | <u>Max Time</u> | <u>Flights counted</u> | <u>Launch Requirements</u> |
|--------------------|-----------------|------------------------|----------------------------|
| Electric Texaco | 15 min | best 3 of 4 | ROG |
| Electric Duration | 10 min | best 3 of 4 | ROG |
| Electric ½A Texaco | 15 min | best 3 of 4 | ROG optional |
| Electric LMR | 10 min | best 3 of 4 | ROG |
| Electric Nostalgia | 7 min | best 3 of 4 | Hand launch OK |

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 instructions or requirements whilst the terms “should” and “may” mean recommended 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 48 sq in of wing area per volt of motor battery pack (see also specific events for battery limits).

Note: Based on nominal voltage where Ni = 1.2v/cell, 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 models).
- (k) Minor extension to the front of the fuselage may be made to assist electric motor mounting and battery housing in order to facilitate balancing the model. All extensions are either to be direct motor mounting attachments or, where an extension of the fuselage is employed, it shall be in character with the original design.

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 (5) seconds will result in an attempt being awarded. The second attempt shall not be before the next official flight.

**Note: reduced allowance of gas power as electric motors start instantly on demand.*

- (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 25kph (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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SPECIFIC EVENT RULES

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 motor 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 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) Ni or Li chemistry cells are permitted.
- (b) Motor battery pack cell chemistry cannot be mixed

10.4.3.4 ENERGY ALLOCATION.

- (a) 90 cell.mAHr / Oz dry model weight for LiPo battery
100 cell.mAHr / Oz dry model weight for A123 battery
270 cell.mAHr / Oz dry model weight for Ni battery
- (b) For other cell types, the total energy to drive the electric motor is limited to 0.32 watt.hours / Oz of dry model weight (**Energy Rule** – see appendix for examples of mAHr rating and cell count for LiPo batteries).
- (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: Based on nominal voltage where Ni = 1.2v/cell, LiPo = 3.6v/cell and A123 = 3.3v/cell

10.4.3.5 FLIGHT PROCEDURE

- (a) Maximum flight time as defined in 10.4.1.5 is 15 minutes (900 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.

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).

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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) Ni or Li chemistry cells are permitted.
- (b) Motor battery pack cell chemistry cannot be mixed.
- (c) The maximum capacity of the motor battery is defined as follows:

LiPo cells: 1600 cell.mAHr/sq ft of wing area
A123 cells: 1745 cell.mAHr/sq ft of wing area
Nickel cells: 4800 cell.mAHr/sq ft of wing area

See table in appendix for examples of LiPo battery pack combinations for various wing areas or use the following formulae:

LiPo battery capacity: divide wing area in square inches by 144, multiply by 1600 then divide by the number of LiPo cells to be used.

A123 battery capacity: divide wing area in square inches by 144, multiply by 1745 then divide by the number of A123 cells to be used.

Ni battery capacity: divide wing area in square inches by 144, multiply by 4800 then divide by the number of Ni cells to be used.

10.4.4.4 FREE MOTOR RUN TIME ALLOCATION

All models are allowed 35 seconds Free Motor Run time.

10.4.4.5 FLIGHT PROCEDURES

- (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)). This includes the Free 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 35 seconds.
- (d) Points are deducted from the maximum score for the following:
 - (i) 1 point for each second of flight time under 10 minutes
 - (ii) 1 point for each second of flight time over 12 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) For the fly-off, the motor must not be run over the Free Motor Run time otherwise the competitor will be disqualified.
- (c) For the fly-off, refer also to safety clause 10.4.1.4-

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10.4.5 **1/2A ELECTRIC TEXACO**

Description: This is an energy event for small models where the aim is to achieve 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) Ni or 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 7 Ni or 3 Li.

10.4.5.4 **ENERGY ALLOCATION**

Energy allocation for Electric 1/2A Texaco is 5.05 watt.hours for all models based on nominal cell voltage where Ni = 1.2v, LiPo = 3.6v and A123 = 3.3v.

Eligible battery packs include the following number and type of cell:

6 x 700 mAHr Ni
7 x 600 mAHr Ni
2S 700 mAHr LiPo
3S 460 mAHr LiPo

10.4.5.5 FLIGHT PROCEDURE

- (a) The maximum flight time as defined in 10.4.1.5 (f) is fifteen (15) minutes (900 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.

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 LMR (Limited Motor Run)**

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

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) Ni or 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 14 Ni or 4 Li.

10.4.6.4 **LIMITED MOTOR RUN TIME ALLOCATION (LMR)**

The maximum motor run time for all aircraft is 90 seconds

(Note: From SAM USA rules).

10.4.6.5 **FLIGHT PROCEDURES**

- (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) A single continuous motor run to a maximum of 90 seconds applies.

- (d) Motor run time over 90 seconds will result in zero score for that flight.

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) For the fly-off, the motor must not be run over the free motor run 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) Ni or 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 14 Ni or 4 Li.

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

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APPENDIX 1

| ELECTRIC TEXACO BATTERY ENERGY RULE | | | | | | |
|-------------------------------------|----------------------|-------------------------------------|---------|---------|---------|---------|
| 90 cell.mAhr per Oz for LiPo Cells | | | | | | |
| Dry weight Oz | Energy Allocation | Maximum LiPo battery capacity, mAhr | | | | |
| | | 2 cells | 3 cells | 4 cells | 5 cells | 6 cells |
| 25 | 2250 | 1130 | 750 | 560 | 450 | 380 |
| 26 | 2340 | 1170 | 780 | 590 | 470 | 390 |
| 27 | 2430 | 1220 | 810 | 610 | 490 | 410 |
| 28 | 2520 | 1260 | 840 | 630 | 500 | 420 |
| 29 | 2610 | 1310 | 870 | 650 | 520 | 440 |
| 30 | 2700 | 1350 | 900 | 680 | 540 | 450 |
| 31 | 2790 | 1400 | 930 | 700 | 560 | 470 |
| 32 | 2880 | 1440 | 960 | 720 | 580 | 480 |
| 33 | 2970 | 1490 | 990 | 740 | 590 | 500 |
| 34 | 3060 | 1530 | 1020 | 770 | 610 | 510 |
| 35 | 3150 | 1580 | 1050 | 790 | 630 | 530 |
| 36 | 3240 | 1620 | 1080 | 810 | 650 | 540 |
| 37 | 3330 | 1670 | 1110 | 830 | 670 | 560 |
| 38 | 3420 | 1710 | 1140 | 860 | 680 | 570 |
| 39 | 3510 | 1760 | 1170 | 880 | 700 | 590 |
| 40 | 3600 | 1800 | 1200 | 900 | 720 | 600 |
| 41 | 3690 | 1850 | 1230 | 920 | 740 | 620 |
| 42 | 3780 | 1890 | 1260 | 950 | 760 | 630 |
| 43 | 3870 | 1940 | 1290 | 970 | 770 | 650 |
| 44 | 3960 | 1980 | 1320 | 990 | 790 | 660 |
| 45 | 4050 | 2030 | 1350 | 1010 | 810 | 680 |
| 46 | 4140 | 2070 | 1380 | 1040 | 830 | 690 |
| 47 | 4230 | 2120 | 1410 | 1060 | 850 | 710 |
| 48 | 4320 | 2160 | 1440 | 1080 | 860 | 720 |
| 49 | 4410 | 2210 | 1470 | 1100 | 880 | 740 |
| 50 | 4500 | 2250 | 1500 | 1130 | 900 | 750 |
| 51 | 4590 | 2300 | 1530 | 1150 | 920 | 770 |
| 52 | 4680 | 2340 | 1560 | 1170 | 940 | 780 |
| 53 | 4770 | 2390 | 1590 | 1190 | 950 | 800 |
| 54 | 4860 | 2430 | 1620 | 1220 | 970 | 810 |
| 55 | 4950 | 2480 | 1650 | 1240 | 990 | 830 |
| 56 | 5040 | 2520 | 1680 | 1260 | 1010 | 840 |
| 57 | 5130 | 2570 | 1710 | 1280 | 1030 | 860 |
| 58 | 5220 | 2610 | 1740 | 1310 | 1040 | 870 |
| 59 | 5310 | 2660 | 1770 | 1330 | 1060 | 890 |
| 60 | 5400 | 2700 | 1800 | 1350 | 1080 | 900 |
| 61 | 5490 | 2750 | 1830 | 1370 | 1100 | 920 |
| 62 | 5580 | 2790 | 1860 | 1400 | 1120 | 930 |
| 63 | 5670 | 2840 | 1890 | 1420 | 1130 | 950 |
| 64 | 5760 | 2880 | 1920 | 1440 | 1150 | 960 |
| 65 | 5850 | 2930 | 1950 | 1460 | 1170 | 980 |
| 66 | 5940 | 2970 | 1980 | 1490 | 1190 | 990 |
| 67 | 6030 | 3020 | 2010 | 1510 | 1210 | 1010 |
| 68 | 6120 | 3060 | 2040 | 1530 | 1220 | 1020 |

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

APPENDIX 2**EOT DURATION****BATTERY ENERGY RULE: 1600 cell.mAHr per sq ft Wing Area**

| Wing Area (square inches) | Energy Factor | Maximum LiPo Battery Capacity mAHr | | | | |
|---------------------------------|------------------|------------------------------------|---------|---------|---------|---------|
| | | 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 |