

NZMAA FLYING RULES

Section 5: Soaring

PREFACE

This Section details all New Zealand designed Soaring competitions. Refer to the Section 1 (General Competition Rules) for general contest and flying rules. For international contest classes refer to the FAI Sporting Code extracts at Section 5A. New Zealand variations of the international rules are detailed below.

F3J

- a) All references to national teams, team managers etc. do not apply.
- b) The line length for F3J may be 175 Metres at the CD's discretion. This change must be advertised before the contest.

F3B

Due to the small number of competitors at local events it may be necessary to alter the group scoring system slightly.

- a) All references to national teams, team managers etc. do not apply.
- b) Duration. May be flown as per the world rules with groups of pilots flying at the same time and group scoring. Alternatively duration may be flown in an open round of say 45 - 60 minutes, where competitors keep their own 9 minute working time, all fliers are then scored as if they were one group.
- c) Distance. May be flown as per the world rules with groups of 3 or more pilots flying at the same time and group scoring. Alternatively distance may be flown in an open round with 1 or 2 competitors flying at the same time, all competitors are then scored as if they were one group.

F5B

This event may be flown to a handicap system, giving bonuses for models with 10 and 7 cell battery packs. Additional rules (to those in the FAI Rules Book) for handicap events:

- a) Add to rule 5.5.4.5. g): For 10 cell models - award 13 points per leg.
For 7 cell models - award 20 points per leg.
- b) Add to rule 5.5.4.6 d):
For Open -- 1 point deducted per 1 second of motor run.
For 10 cell -- 1 point deducted per 2 seconds of motor run.
For 7 cell -- 1 point deducted per 3 seconds of motor run.

1 GENERAL DEFINITIONS

1.1 DEFINITIONS

Glider / Sailplane: An aeromodel which is not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed, (ie. not rotating or ornithopter surfaces). Models with variable geometry or area must comply with the specifications when the surfaces are in the maximum and minimum extended mode. The pilot on the ground using radio control must control the model. Any variation of geometry or area must be actuated at distance by radio control.

1.2 CHARACTERISTICS

Maximum surface area	150 dm ²
Maximum flying weight	5 kg
Maximum wing loading	75 g / dm ²
Minimum wing loading	12 g / dm ² (3.932oz/ft ²)
Minimum radius of fuselage nose	7.5 mm

1.3 RADIO CONTROL TRANSMITTER.

The radio equipment must be operated on an NZMAA approved frequency and be an approved telecontrol device. No device for transmitting information from the sailplane to the pilot is permitted.

1.4 NUMBER OF MODELS, OWNERSHIP AND OPERATION.

- 1.4.1 Unless otherwise specified in class rules, the competitor may use a maximum of two models in a contest and may combine any parts of the models provided the resultant complies with the required characteristics of 1.2.
- 1.4.2 The competitor must own the model(s) flown, but is not required to have built them.
- 1.4.3 A model may be flown in a contest by only one competitor.

1.5 BALLASTING

Ballast may be removed or fitted between flights provided that the model complies with the required characteristics and provided also that the ballast is fitted internally.

1.6 OFFICIAL FLIGHT

There is an official flight when the model has left the hands of the competitor or his helper under the pull of the launching apparatus. Unless otherwise specified there will only be one official flight per round in contests flown to rounds.

1.6.1 Repeat Attempt. (*Applies to all NZ tow launched classes except Premier Duration.*)

A flight may be repeated only if:

- (a) The model being launched or its launching cable collides with another model in flight, with another person at launch, strikes another launching cable, or is affected by proven radio interference. In these circumstances, should the model continue its flight, the competitor may take the flight as official even if the decision is made at the end of the attempt.
- (b) The flight was not judged correctly by the timekeeper.
- (c) The launching system malfunctions (including line break). (A repeat attempt is not permitted for early disengagement from the launching cable).
- (d) A model lands without becoming detached from the launching system.

Note 1. A repeat attempt is not allowed in a case where the timekeeper makes an error in counting down the time to assist the pilot; there is no obligation for the timekeeper to provide such a service.

Note 2. A repeat attempt is not allowed where the pilot has not asked the timekeeper(s) to verify the stopwatch(es) have been started when the parachute/pennant is seen to drop from the sailplane.

Note 3. Repeat attempts are permitted no more than once for each official flight, except (and only for) the circumstances detailed in 1.6.1 (a). Should a 1.6.1 (a) occurrence take place during a repeat attempt then the repeat attempt may be taken again.

Note 4. In contests flown to rounds, the repeat attempt must take place in the same round as the original attempt.

1.7 FLIGHT ANNULMENT

A flight will be annulled and no repeat attempt permitted if:

- (a) A competitor's model does not conform to the rules.
- (b) A model loses any part during launch or flight (the losing of a part on landing is permissible).
- (c) A flight is made when the competitor is not adhering to the frequency control system in use for the contest.

1.8 TRANSMITTER CONTROL

- 1.8.1 Transmitters must not be operated without adherence to the frequency control system being used. Transmitter pounds must be available for storage of transmitters where there is more than one person on the frequency. All transmitters at the contest site must be kept in a pound when not in use. The onus is on the competitor to return the transmitter to the pound. Where there is no frequency conflict, the transmitter and peg may be retained for the contest and the requirement to use the pound may be waived by the CD. A personal peg must be inserted in the space from which the frequency peg has been removed.

2 SOARING (All Classes)

2.1 THERMAL SOARING

Thermal soaring is flight over reasonably level terrain with a low probability of slope or wave lift. For thermal sites with adjacent hills, structures, or objects from which updraft can be generated, the CD may impose flight restrictions to preclude the use of lift off such features. Such restrictions must be announced at the contestants meeting.

2.2 LAUNCHING

(See individual classes for launch types permitted.)

2.2.1 General.

The launch of the glider may be by one of the following means:

- (a) hand towing
- (b) electrical powered winch
- (c) hand operated pulleys
- (d) bungee

2.2.2 Launch apparatus shall conform to the following specifications:

- (a) **Towline:** The towline (which must be of non-metallic material except for linkages) must be equipped with a pennant having a minimum area of 5 dm². A parachute (5 dm² minimum area) may be substituted for the pennant provided it is not attached to the model and remains inactive until the release of the cable.
- (b) **Hand towing:**
 - (i) Line length must not exceed 175metres when tested under a tension of 2 kg.
 - (ii) The line must be attached to a device that allows immediate retrieval following release of the model
- (c) **Electrical Powered Winch:**
 - (i) Line length must not exceed 400 metres.
 - (ii) Upwind turn around devices, which must be used, shall be no more than 200m from the winch.
 - (iii) The height of the axis of the turn-around pulley to the ground must not exceed 0.5 metre.
 - (iv) Release of the model must occur within approximately 3 metres of the winch.
 - (v) An automatic means must be provided to prevent the line reel from unwinding during launch.

The winch shall meet the following specifications:

- (i) The winch shall be fitted with a single production starter motor having an internal resistance of at least 15.0 milliohms at ambient temperature corrected to 20 degrees C using the formula:

$$R \text{ corrected} = \frac{R \text{ ohms} \times T}{1 + [0.003 \times (T - 20 \text{ deg C})]}$$

where: R = internal resistance and T = ambient temperature in degrees C.

- (ii) The resistance may be attained by adding an external resistor, but the design must not allow any change of the total resistance (eg. by overbridging the resistor). Resistance of any control device does not count.
- (iii) The rotor of the motor may be fitted at each end with ball or needle roller bearings. Any further change of the original motor will lead to immediate disqualification of the competitor who used it.
- (iv) The measurement is made using the test equipment and procedure shown in the STC winch testing operating manual. NZ test gear is held by the STC.
- (v) All winches used at National competitions (except NDC) must be tested and certified by an STC approved person.
- (vi) At national events the organisers may randomly test any winch at anytime to check compliance with the above standard.
- (vii) The drum must have a fixed diameter and the width between winch drum flanges shall be at least 75 mm.
- (viii) The power source shall be a single 12 volt lead/acid battery having linear dimensions so that the sum of the length, breadth, and height (excluding mounting lugs) does not exceed 750mm.
- (ix) The battery must supply the winch motor with current through a magnetically or mechanically actuated switch. The use of any electronic device between the winch motor and the battery is forbidden.
- (x) The motor must not be cooled, and the battery must not be heated.
- (xi) With the exceptions of the single winch battery, line stretch, and the small amount of energy in the rotating motor and winch drum, no energy storage devices shall be allowed. This includes, but is not limited to, fly wheels, springs, weights, and hydraulic or pneumatic devices. The flywheel-like properties of the winch drum shall not be exploited. The purpose of this rule is to prohibit the use of significant energy storage devices other than those mentioned.

- (d) Hand Operated Pulleys:
 - (i) Must not exceed 175 metres (except as provided in (ii) below) when tested under a tension of 2kg. One end of the towline must be securely attached to the ground during launch.
 - (ii) Reflex pulley tow. Line length shall not exceed 350 metres when tested under a tension of 2kg. One end of the line will be staked to the ground, the line will then run no more than 175 metres into wind to a fixed turn-around and then back to the parachute/pennant and towman standing next to the staked end of the winch line. The towman may use a single pulley.
 - (iii) Lines may be required to be recovered as directed by the contest director.
- (e) Bungee: 30 metres maximum of rubber, 120 metres maximum of line, plus a parachute or pennant and 30cm maximum of leader line. Maximum pull on the bungee before release not to exceed 5kgs.

2.2.3. Launching Operations.

- (a) Hand towing: After release of the model from the towline, the towline must be retrieved without delay and wound in to the handreel.
- (b) Electrical powered winch. After release of the model from the towline, the towline should be rewound without delay by operating the winch until the parachute (or pennant) is 10metres above the ground level. The parachute should be retrieved by hand to the winch. A powered winch must not be operated when the towline :
 - (i) is lying on the ground and is across other towlines;
 - (ii) strikes another towline during launching.
- (c) The penalty for not winding down the winch line as above will be 100 points deducted from the score for that round (after normalising if normalised scoring is being used). The C.D. may exempt a competitor from the penalty if he is satisfied that compliance was prevented by winch malfunction or another competitor(or his helper or equipment.) During complete rewinding of the line on the winch, the parachute, when used, must be removed or deactivated. The line must be suitably marked (e.g. electrical tape) to facilitate winding the line down.

2.3 TIMING

- 2.3.1 Timing of the flight commences when the parachute/pennant is seen to drop from the sailplane.
- 2.3.2 Timing of the flight shall finish when the sailplane first touches the ground or first touches any object which is in contact with the ground.
- 2.3.3 Models already in the air and being timed at the completion of the round, may complete that flight and landing.

2.4 LANDING

- 2.4.1 An in-flight sailplane has right of way over a launching sailplane.
- 2.4.2 In contests requiring precision (spot) landings, the pilot and timekeeper must not enter the 15 metre radius landing circle while the model is in flight and must stand upwind of the landing spot, moving to this point as soon as practical after launch.
- 2.4.3 Models are to be scored and retrieved by the pilot / timekeeper with haste and caution so as not to impede the landing approach of other sailplanes. (See clause 2.4.4.).
- 2.4.4 Precision Landings
The following applies to classes that call for precision landings. Bonus points are awarded depending on the distance from the model nose at rest to the centre of a 1m radius circle. The measured distance is rounded to the next full metre according to the following table.

Precision Landing Scoring:

Distance from spot (metres)*	Bonus	Distance from spot (metres)*	Bonus
1	100	9	60
2	95	10	55
3	90	11	50
4	85	12	45
5	80	13	40
6	75	14	35
7	70	15	30
8	65	Over 15	Nil

* Next full metre distance.

2.5 CONTESTS

2.5.1 Contestants Meeting.

At every contest the Contest Director will hold a contestants meeting no later than 15 minutes before the beginning of round 1. The purpose of the meeting will be to advise contestants of any matters pertaining to the contest.

2.5.2 Round Identification.

In contests using a 'rounds' format, the Contest Director shall ensure that the start and finish of rounds are clearly identified for competitors, preferably by use of a loud audible alarm. It is also recommended that a visible display be used, eg. a flag in a prominent position. Competitors are to be informed at the contestants meeting what round identification method is to be used.

2.6 NZ CLASSES

		<i>Para</i>
Class A	6 minute Thermal Duration	3.1
Class B	10 minute Thermal Duration	3.2
Class C	Premier Thermal Duration	3.3
Class D	Thermal Formula 500	3.4
Class E	Thermal Electric 7 x 7	3.5.1
Class E2	Thermal Electric Precision	3.5.2
Class F	Slope Soaring Closed Circuit Distance	3.6.1
Class G1	Slope Soaring Pylon Racing, Open	3.6.2
Class G2	Slope Soaring Pylon Racing, 60inch	3.6.2
Class G3	Slope Soaring Combat	3.6.3
Class H	2 Metre Thermal	3.7
Class I	Hand Launch Glider	3.8
Class J	Thermal 2,4,6,8,10	3.9

2.7 FAI CLASSES (see FAI Sporting Code)

Class F3B	FAI Thermal Multi-task
Class F3J	FAI Thermal Duration
Class F5A	FAI Electric Aerobatics
Class F5B	FAI Electric Multi-task (including handicap)
Class F5B/600	FAI 10-cell Electric Multi-task
Class F5D	FAI Pylon

3. NEW ZEALAND CLASS RULES

3.1 CLASS A : 6 MINUTE THERMAL DURATION

A four round, 6 minute duration and landing contest with best 3 flights counting.

3.1.1 Lanching

The launch of the model may be by one of the following means:

- hand tow
- electrical powered winch
- hand operated pulleys

3.1.2 Scoring

- (a) One point will be awarded for each full second from the time the model is free flying to the time it first touches down (as defined in Rule 2.3) up to a maximum of 360 points.
- (b) One point will be deducted for each full second flown in excess of six minutes.
- (c) Landing points scored as per rule 2.4.4 added to flight score.

3.1.3 Number of Flights

- (a) Unless otherwise specified by the Contest Director, contests will be run in rounds of one hour duration.
- (b) Four rounds will be flown with the total of the best three determining placings.

3.1.4 Flights at end of round.

As long as the parachute/pennant drops from a launching glider before the end of a round is signalled, a full 6 minute flight and spot landing can be attempted even if the round ends during the flight.

3.2 CLASS B : 10 MINUTE THERMAL DURATION

A three round duration contest plus fly-off, with 10 minute max. plus landing points.

3.2.1 Launching: The launch of the model may be by one of the following means:

- hand tow
- electrical powered winch
- hand operated pulleys

3.2.2 Scoring

- (a) Five points will be awarded for each completed half minute of free flying (as defined in rule 2.3) up to a maximum of 100 points.
- (b) No points will be deducted for flights in excess of 10 minutes but if other contestants are waiting to fly on the pilots frequency, he is obliged to land as soon as practical after achieving the 10 minute maximum.
- (c) A landing bonus is scored as per rule 2.4.4.
- (d) Flight and landing scores are totalled and any points scored in excess of 120 are not counted.

3.2.3 Number of Flights

- (a) Unless otherwise specified by the Contest Director, contests will be run in rounds of one hour duration.
- (b) Three rounds will be flown, all counting.
- (c) In the event that more than one competitor scores three maximum flights, a single round fly-off to a 200 point maximum (100 flying points plus 100 landing points), will be held with competitors flying simultaneously if frequencies permit. The maximum flight time is again 10 minutes.
- (d) In the event of a fly-off tie, another fly-off is permitted. In a National Decentralised Contest, only the first fly-off flight is scored.

3.3 CLASS C : PREMIER THERMAL DURATION.

A 10 minute flight during an 11 minute working time. This class offers thermal duration flying in a group using a common working time. This enables the scoring to be done on a 'group scoring' basis.

- 3.3.1 Launching: The launch of the model may be by one of the following means:
 hand tow
 electrical powered winch
 hand operated pulleys

3.3.2 Organisation of Starts

- (a) The organisers will use a list of competitors when making out the draw, and each competitor will be allocated an identification number. This number will be prefixed with a letter, this letter indicating the column a competitor has been placed into, in the draw.

Examples of lists for the allocation of identification numbers:

For 25 competitors or less

A	B	C	D	E
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5

For 49 competitors or less

A	B	C	D	E	F	G
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7

Use 6 columns for 36 to 42 competitors, and 5 columns for 26 to 35 competitors.

Note: Those on the same frequency will have to be placed in the same column in the draw, (their identification number will be prefixed with the same letter). This means that they will not be called to fly in the same group. The CD may request R/C frequency changes by competitors to accommodate matrix requirements. (Competitors who wish to assist each other with launching are not permitted to enter on the same frequency to avoid flying against each other).

- (b) The following is the matrix to be used for 25 fliers or less, to determine which group each flier will fly in for each round, up to a maximum of 5 rounds. (5x5matrix).

	Round One					Round Two				
Grp.1	A1	B1	C1	D1	E1	A1	B2	C3	D4	E5
Grp.2	A2	B2	C2	D2	E2	A2	B3	C4	D5	E1
Grp.3	A3	B3	C3	D3	E3	A3	B4	C5	D1	E2
Grp.4	A4	B4	C4	D4	E4	A4	B5	C1	D2	E3
Grp.5	A5	B5	C5	D5	E5	A5	B1	C2	D3	E4

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<i>Round Three</i>					<i>Round Four</i>					<i>Round Five</i>				
A1	B3	C5	D2	E4	A1	B4	C2	D5	E3	A1	B5	C4	D3	E2
A2	B4	C1	D3	E5	A2	B5	C3	D1	E4	A2	B1	C5	D4	E3
A3	B5	C2	D4	E1	A3	B1	C4	D2	E5	A3	B2	C1	D5	E4
A4	B1	C3	D5	E2	A4	B2	C5	D3	E1	A4	B3	C2	D1	E5
A5	B2	C4	D1	E3	A5	B3	C1	D4	E2	A5	B4	C3	D2	E1

The following is the 7x7 matrix to be used for between 26 and 49 fliers. For 26 to 35 fliers use 5 columns, and for 36 to 42 fliers use 6 columns. This matrix gives a maximum of 7 rounds.

<i>Round One</i>							<i>Round Two</i>							
Group 1	A1	B1	C1	D1	E1	F1	G1	A1	B2	C3	D4	E5	F6	G7
Group 2	A2	B2	C2	D2	E2	F2	G2	A2	B3	C4	D5	E6	F7	G1
Group 3	A3	B3	C3	D3	E3	F3	G3	A3	B4	C5	D6	E7	F1	G2
Group 4	A4	B4	C4	D4	E4	F4	G4	A4	B5	C6	D7	E1	F2	G3
Group 5	A5	B5	C5	D5	E5	F5	G5	A5	B6	C7	D1	E2	F3	G4
Group 6	A6	B6	C6	D6	E6	F6	G6	A6	B7	C1	D2	E3	F4	G5
Group 7	A7	B7	C7	D7	E7	F7	G7	A7	B1	C2	D3	E4	F5	G6

<i>Round 3</i>							<i>Round 4</i>							
Group 1	A1	B3	C5	D7	E3	F5	G7	A1	B4	C7	D3	E6	F2	G5
Group 2	A2	B4	C6	D1	E4	F6	G1	A2	B5	C1	D4	E7	F3	G6
Group 3	A3	B5	C7	D2	E5	F7	G2	A3	B6	C2	D5	E1	F4	G7
Group 4	A4	B6	C1	D3	E6	F1	G3	A4	B7	C3	D6	E2	F5	G1
Group 5	A5	B7	C2	D4	E7	F2	G4	A5	B1	C4	D7	E3	F6	G2
Group 6	A6	B1	C3	D5	E1	F3	G5	A6	B2	C5	D1	E4	F7	G3
Group 7	A7	B2	C4	D6	E2	F4	G5	A7	B3	C6	D2	E5	F1	G4

<i>Round 5</i>							<i>Round 6</i>							
Group 1	A1	B5	C2	D6	E3	F7	G4	A1	B6	C4	D2	E7	F5	G3
Group 2	A2	B6	C3	D7	E4	F1	G5	A2	B7	C5	D3	E1	F6	G4
Group 3	A3	B7	C4	D1	E5	F2	G6	A3	B1	C6	D4	E2	F7	G5
Group 4	A4	B1	C5	D2	E6	F3	G7	A4	B2	C7	D5	E3	F1	G6
Group 5	A5	B2	C6	D3	E7	F4	G1	A5	B3	C1	D6	E4	F2	G7
Group 6	A6	B3	C7	D4	E1	F5	G2	A6	B4	C2	D7	E5	F3	G1
Group 7	A7	B4	C1	D5	E2	F6	G3	A7	B5	C3	D1	E6	F4	G2

<i>Round 7</i>							
Group 1	A1	B7	C6	D5	E4	F3	G2
Group 2	A2	B1	C7	D6	E5	F4	G3
Group 3	A3	B2	C1	D7	E6	F5	G4
Group 4	A4	B3	C2	D1	E7	F6	G5
Group 5	A5	B4	C3	D2	E1	F7	G6
Group 6	A6	B5	C4	D3	E2	F1	G7
Group 7	A7	B6	C5	D4	E3	F2	G1

(d) The organisers should have the matrix displayed where it is readily visible to all competitors.

- (e) Competitors are entitled to a 5 minute preparation time before the starter gives the order to start the working time for a new round.
- (f) The first flight will be those competitors in group 1 to be followed by group 2 and this numerical order of group flights will continue until a round has been completed. A minimum of a 1 minute gap will be allowed between the working times of consecutive groups. The Contest Director will announce the actual gap at the contestant's meeting. For large entries at least 2 minutes gap is preferable.
- (g) The working time is 11 minutes, and will be commenced and terminated with a readily audible signal plus and optional visual indicator.

3.3.3 Scoring

- (a) One point will be awarded for each full second from the time the towline is released until the model first touches down (Rule 2.3) up to a maximum of 600 points (ie. 10 minutes maximum).
- (b) One point will be deducted for each full second flown in excess of 600 seconds.
- (c) Landing points scored as per rule 2.4.4. Flight and landing scores are totalled.
- (d) For models still in the air when the 11-minute working time expires, timing will stop when the audible signal is operated. The elapsed flight time only will be taken into consideration for scoring, without any additional points for precision landing.

3.3.4 Definition of an Attempt and Official Flight

- (a) For each round during the 11 minute working time allocated, the competitor is entitled to an unlimited number of attempts. An attempt starts when the model is released from the hands of the competitor or his helper(s). The official flight is the last flight performed during the working time.
- (b) Due to the operational difficulty of repeating working time periods, a competitor will only be entitled to a new working time period in the event of:
 - (i) Proven radio interference;
 - (ii) Some other unexpected event duly witnessed that the Contest Director considers has grossly disadvantaged the competitor.

*Note: A new working time period will not be granted for:
Timekeeper errors. (It is up to the competitor to ensure that the timekeepers are doing their job); or
Launching problems such as line breaks and winch malfunctions.*

- (c) All the competitors who originally flew in the group with the pilot who has been granted a new working time, must re-fly in the new working time. The better of the two results will be their official score. The last flight is the official score for the pilot for whom the re-fly has been granted.
- (d) The granting and scheduling of a new working time will be at the discretion of the Contest Director.

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3.3.5 Number of Rounds.

The contest will be void unless a minimum of three rounds is completed. There is no limit on the maximum number of rounds.

3.3.6 Partial Scores

(a) For each group the winner receives a score of 1000 points.

(b) For other competitors in the same group the partial score is determined as follows:

$$\text{Partial Score} = \frac{P1}{Pw} \times 1000$$

Where P1 = points for the competitor obtained as for 3.3.3

Where Pw = points for the winner in the relating group.

(c) Total Score

The total score is compiled by adding the Partial Scores from all rounds for each competitor, with the winner recording the highest total score.

3.4 CLASS D : THERMAL FORMULA 500

This event combines an 8 minute duration task and a 2 minute precision flight and landing task into one contest.

3.4.1 Launching: The launch of the model may be by one of the following means:
hand tow; electrical powered winch ; hand operated pulleys

3.4.2. Only one model is permitted for all tasks. If a model becomes unflyable it may be replaced at the CD's discretion.

3.4.3 Duration Task

One point will be awarded for each full second of free flying up to a maximum of 480 points (8 minutes), one point will be deducted for each full second flown in excess of eight minutes. A landing bonus of 20 points will be awarded if the nose of the model rests within 15 metres of a defined spot.

3.4.4 Precision Task

Points will be awarded for flight time in accordance with the table below up to a maximum of 400 points. A landing bonus will be awarded as per rule 2.4.4 up to a maximum of 100 points.

Flight	Score	Flight	Score	Flight	Score	Flight	Score
1:59 2:00	400	1:39 2:20	300	1:19 2:40	200	0:59 3:00	100
1:58 2:01	395	1:38 2:21	295	1:18 2:41	195	0:58 3:01	95
1:57 2:02	390	1:37 2:22	290	1:17 2:42	190	0:57 3:02	90
1:56 2:03	385	1:36 2:23	285	1:16 2:43	185	0:56 3:03	85
1:55 2:04	380	1:35 2:24	280	1:15 2:44	180	0:55 3:04	80
1:54 2:05	375	1:34 2:25	275	1:14 2:45	175	0:54 3:05	75
1:53 2:06	370	1:33 2:26	270	1:13 2:46	170	0:53 3:06	70
1:52 2:07	365	1:32 2:27	265	1:12 2:47	165	0:52 3:07	65
1:51 2:08	360	1:31 2:28	260	1:11 2:48	160	0:51 3:08	60
1:50 2:09	355	1:30 2:29	255	1:10 2:49	155	0:50 3:09	55
1:49 2:10	350	1:29 2:30	250	1:09 2:50	150	0:49 3:10	50
1:48 2:11	345	1:28 2:31	245	1:08 2:51	145	0:48 3:11	45
1:47 2:12	340	1:27 2:32	240	1:07 2:52	140	0:47 3:12	40
1:46 2:13	335	1:26 2:33	235	1:06 2:53	135	0:46 3:13	35
1:45 2:14	330	1:25 2:34	230	1:05 2:54	130	0:45 3:14	30
1:44 2:15	325	1:24 2:35	225	1:04 2:55	125	0:44 3:15	25
1:43 2:16	320	1:23 2:36	220	1:03 2:56	120	0:43 3:16	20
1:42 2:17	315	1:22 2:37	215	1:02 2:57	115	0:42 3:17	15
1:41 2:18	310	1:21 2:38	210	1:01 2:58	110	0:41 3:18	10
1:40 2:19	305	1:20 2:39	205	1:00 2:59	105	0:40 3:19	5

3.4.5 Contest Format

- (a) A contest will comprise two flights of the duration task and two flights of the precision task with the best three flights scoring.
- (b) The flights may be made in any order, but the contestant must nominate to which task the previous flight will be recorded before any further flights are attempted.

3.5.1 CLASS E : THERMAL ELECTRIC 7X7

The object is to fly three 7 minutes flights over 3 rounds on a single charge, with a bonus for landing in the marked circle.

- 3.5.1.1 There are no restrictions on motor, plane, motor control or cell size. No more than 7 x 1.2 volt nicad cells are permitted.
- 3.5.1.2 The battery SHALL NOT BE RE-CHARGED between flights and the same battery must be used for all three flights.
- 3.5.1.3 Flights will be scored one point for each second flown up to 7 minutes (i.e. 420 points) then one point lost for each second flown over this time.
- 3.5.1.4 A landing bonus of 50 points will be awarded if the whole of the model stops inside a 30 metre diameter circle; 25 points if any part of the model touches the circle; zero points if outside the circle.
- 3.5.1.5 Timing of flight is to commence at the end of the motor run. There is no limit to the length of motor run. Time keeping starts when the timekeeper sees the transmitter operated to stop the motor.
- 3.5.1.6 The motor may not be restarted during the flight. Should the motor be restarted for any reason, the timekeeper will stop the watch immediately and landing points will be lost. No re-flights are permitted.
- 3.5.1.7 Contestants are advised to have a backup watch (or timekeeper)
- 3.5.1.8 Each round counts. The final score is the total of all points over three rounds.
- 3.5.1.9 The duration of each round will be decided by the CD taking into account the number of competitors, the weather conditions, and any other pertinent factors.

3.5.2 CLASS E2 : THERMAL ELECTRIC PRECISION

The object is to fly exactly 60 minutes on 5 minutes total motor run, with bonuses for landing in a marked circle.

- 3.5.2.1 Apart from the specifications defined in NZMAA General Competition Rules, Section 1, there are no restrictions on motor, plane, motor control or cell size.
- 3.5.2.2 One flight only. As many competitors as frequencies, safety and organisation allows should fly at the same time. No re-flights are permitted. Each pilot is allowed one helper / caller who may also be the timekeeper. Contestants are advised to have a backup watch (or timekeeper).
- 3.5.2.3 Flights will be scored one point for each second flown up to 60 minutes (i.e. 3600 points) then one point deducted for each second flown over this time.
- 3.5.2.4 The motor may be restarted as often as desired during the flight. The total motor run time is to be timed on a separate stopwatch and this time (in seconds) is deducted from the flight score. In addition, a penalty of 20 points per second will be deducted for motor run time of over 5 minutes.
- 3.5.2.5 Before launch the pilot will demonstrate to the timekeeper how the motor is turned on and off.
- 3.5.2.6 Timing commences when the model leaves the hand or ground. Timing ceases when the model or part of it touches the ground
- 3.5.2.7 A landing bonus of 30 points will be awarded if the nose of the model stops within 5 metres from the landing spot; 20 points if the nose stops between 5 and 10 metres from the spot; and 5 points if the nose stops between 10 and 15 metres from the spot.

3.6 NZ SLOPE SOARING CLASSES

Definition: Slope soaring is flight on or near rising ground or obstructions which cause deflection of passing air to an extent sufficient to sustain model flight.

For contest purposes, a slope soaring site is unsuitable if:

- (a) The wind velocity measured at 2 metres above ground level is less than 3m/s or, more than 20 m/s.
- (b) The direction of the wind is incessantly deviating more than 45 degree from a direction perpendicular to the slope; or
- (c) In the Contest Director's opinion conditions are contrary to safe operation (ie. storms, rain, fog, radio interference etc).

Note: Should a contest be terminated part way through due to any of the above conditions, the contest will be scored on the basis of completed rounds to that time.

3.6.1 CLASS F : SLOPE SOARING - CLOSED CIRCUIT DISTANCE

- (a) The object is to make as many passes up and down the slope between two markers placed 100 metres apart in 4 minutes (1 lap = 2 passes - 200 metres flown).
- (b) Scoring. Each 100 metre pass scores 25 points. Only completed 100 metres passes within 4 minutes from the instant of launch shall be scored. Each contestant has three flights, the best two to score.

3.6.2 CLASSES G1 and G2 : SLOPE SOARING - PYLON RACING

Class G1 has no size limit; G2 is limited to 60inch maximum wingspan

- (a) The course is marked by flagmen 100 metres apart along the slope. The object is to start at the main flagman /timekeeper position and fly up to the other flagman and back 5 times (10 passes for a distance of 1000 metres) in the shortest possible time.
- (b) Up to 4 models may be flown at one time.
- (c) Four races per competitor will comprise a contest with the best three races per competitor scoring.
- (d) Models may land and be re-launched during a race.
- (e) Models must clear the course and land as soon as possible after the completion of each race.
- (f) Race Procedure

- (i) The Contest Director gives a 1 minute warning, at which point models may be launched and 'mill' aloft.
 - (ii) A 10 seconds to zero countdown is then given with the models making a flying start from behind the start finish line at count 'zero'. If a model crosses the start/finish line before 'zero' it must return to the start and cross the line again.
 - (iii) Timing starts at the count 'zero' (not when models crosses line).
 - (iv) All turns are to be made into wind (away from the slope) and the timekeepers count laps, stopping their stopwatches at the end of the 5th lap (10th pass). In the event a model turns before the flagman indicates, it must return and cross the line or be penalised by adding 1/5 of its flight time for each cut. Final time then scored as per 3.6.2 (g)
 - (v) Each contestant may have a caller to assist him in judging turns.
- (g) Scoring
- (i) The time in seconds for each racer is deducted from 200. The resultant is the score for that round.
 - (ii) Placings are determined by ranking each flier's total points in order, with the highest number of points winning.

3.6.3. CLASS G3 -SLOPE SOARING COMBAT.

The object of the contest is to score points by knocking the other aircraft to the ground.

General

- (a) Consideration for safety for spectators, property, contest personnel and contestants is to be given the utmost importance.
- (b) The C.D. will be the judge of model suitability and construction for combat.
- (c) The C.D. may disqualify any model or person on the grounds of safety.
- (d) **The model**
 - (i) The model must be an all foam combat glider.
 - (ii) There is no limit on wingspan or number of servos used.
 - (iii) Wings shall have a plastic foam leading edge at least 25mm wide measured chordwise at any point on the wing. The wing LE may be covered with film covering material, vinyl tape, fibre reinforced vinyl tape or any combination of the three. Wood, metal, solid plastic, carbon fibre, kevlar or

any resin impregnated fibre material on or in the wing LE will not be permitted.

(iv) Wing spars of any non-metallic material are permitted provided they do not violate the provisions of (iii) above. Must be more than 25 mm away from the LE at any point. Maximum total cross section area for spars shall not exceed 3/4 sq. in. (484mm²).

(v) The fuselage reinforcement to finish at least 25mm from the nose and the total cross section area not to exceed 1 sq. in. (625mm²). The fuselage may be covered with film covering material, vinyl tape, fibre reinforced fibre tape or any combination of the three. Wood metal, solid plastic, carbon fibre, kevlar, or any resin-impregnated fibre covering material on the fuselage will not be permitted.

(vi) A maximum flying weight of 1 kg will be permitted.

(d) **The Contest:** A group of 4 to 6 aircraft will fly in each round.

(e) **Scoring.**

(i) No points for touches. Two points are scored for each knock-down.

(ii) After a knockdown, the victorious model must perform a full loop or roll before points are awarded. This manoeuvre must be performed before entering into the next engagement.

(iii) The "killed" model may re-enter the round but must launch from the designated launch area.

(iv) In the case of multiple hits, e.g. 3 aircraft, the following scoring shall apply: If one aircraft recovers and two are "killed", then the recovered aircraft shall be awarded 4 points on completion of a roll or loop. (Two points per model). If two aircraft recover and one is "killed", then both recovered aircraft will be awarded 2 points upon completion of a roll or loop.

(v) If whilst manoeuvring in a round, a model ceased to fly due to contact with the ground or a ground based object, the model then loses one point. This rule does not apply to "killed" models.

(vi) A suggested round duration is 15 to 20 mins, the actual time being decided by the C.D.

(vii) All rounds will start with a simultaneous launch from the designated launch area.

(viii) A contest will consist of at least 3 rounds for each competitor using a matrix system to mix up the competitors in each round.

Note. Team Combat rules are withdrawn at present pending further experiment with the scoring system.

3.7 CLASS H : NEW ZEALAND THERMAL 2 METRE RULES

A straightforward contest in which basic models can be used.

NOTE: These rules were derived from the World 2m Postal Contest organised by a Danish Club.

3.7.1 The model

Maximum (projected) wingspan of the model is not to exceed 2 Metres. The maximum number of operating servos is two, used according to the pilot's wishes.

3.7.2 Launching

Models may be launched by **bungee or hand tow only**, and not by winch or pulley tow.

- (a) Bungee - refer to rule 2.2.2(e)
- (b) Hand Tow - refer to rule 2.2.2(b)

3.7.3 Flying

(a) The contest director may determine a maximum contest time suitable for the weather conditions and the number of competitors. It is suggested that 3 hours is a suitable contest time.

(b) During the contest time pilots will be required to complete flights of 3,4,5,6 & 7 minutes duration **in that order**. When to launch is up to the individual. However when the allotted contest time expires only flights already completed or models in flight that have already been released from the tow or bungee and are being timed will be counted.

(c) One point is awarded for each second of flight up to the target time.

(d) One point is deducted for each second in excess of the target time.

(c) More than 60 secs in excess of the target time will result in all the points for that flight being forfeited.

3.7.4 Landing

50 points will be awarded for landing within the 15 metre radius of a spot measured to the nose of the model. All flight and landing points will be forfeited if the model lands outside the appointed flying field.

3.7.5 Scoring

All flight and landing scores will count towards the individuals total. The competitor with the highest accumulated score wins.

3.8 CLASS 1: HAND LAUNCH GLIDER

3.8.1 General

- (a) All flights will be conducted without the assistance of launching devices, slope ridge or obstacle lift as identified by the CD at the contestants meeting.
- (b) Each contestant must hand launch their own glider, or another person may launch the pilot's model provided the pilot either touches the plane before launch or touches the thrower after the previous flight is complete.
- (c) All launching must be within a designated flying site (field) as specified by the CD.
- (d) A contest will be run in rounds of 10 minute duration. A contest can be comprised of 1 to 4 rounds, with national contests being 4 rounds.

3.8.2 Rounds

One round is a time slot of 10 minutes duration, announced audibly at the beginning and end, to all contestants and time keepers by the CD. Within a round, contestants can launch up to 6 times.

3.8.3 Timing

Timing shall commence at the moment that the aircraft leaves the hand and when the aircraft comes into contact with either the ground or an object attached to the ground. The time keeper must re-set the clock rapidly in preparation for the next launch and record the time on a card provided by the CD. An aircraft still in the air after the end of the round forfeits the score of that flight.

3.8.4 Scoring

- (a) Within the round, only the best 5 flight times of the 6 count. A maximum flight time is TWO MINUTES (120 points), with no penalty for a flight time in excess of the maximum. In order for the last flight to count, it must end before the end of the 10 min round time.
- (b) In centralised contests, the best 5 flights for all contestants in each round are entered and normalised with the winner gaining 1000 points. Up to 4 rounds are totalled for each contestant.
- (c) In decentralised contests, the total time of the five best flights in seconds for each of the 4 rounds flown in one day are added together for each contestant.

3.9 CLASS J : THERMAL 2,4,6,8,10

A thermal contest requiring flights of 2,4,6,8, & 10 minutes in any order, plus landing points, with all flights counting.

3.9.1 Launching

The launch of the model may be by one of the following means:

- hand tow
- electrical powered winch
- hand operated pulleys

3.9.2 Scoring

(a) A point is awarded for each complete second up to the target time. A point is deducted for each complete second in excess of the target time.

(b) Any landing points scored as per rule 2.4.4. are added to each flight score.

(c) Flights may be made in any order but the contestant must nominate to which task the score will be recorded before attempting the next flight.

3.9.3 Contest time

All flights are completed at any time during the period allocated for the contest. The duration of the contest is to be nominated by the CD at the contestants meeting.