Monthly Glider Postal events , Reports, Promo's and other stuff from the **Australian Electric Flight Association**. # 7. Jan 2023

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2023 POSTAL COMPETITIONS

Both the F5J and ERES competitions will go live on this Friday 27th January. This day is also the start of the Armidale Expo.

From that day you have until the end of February to fly three consecutive competition flights any time and any where. You can also use the first three flights of an actual comp—such as the Armidale Expo. Then enter the flights into your personal Postal GliderScore page on your mobile. But first, like any competition you have to enter. Anyone, anywhere can enter.

Just email *redshiftxyz@hotmail.com* and tell me you want to enter F5J or ERES, or both. Then I will send you the QR code(s) for the month.

Full rules are again attached to your emf mag email.

This is your competition. For your benefit.
It simulates a formal comp in almost every way without the pressures but with the skill improvements it can bring. But it needs your participation to succeed.
Can *you* improve on your 3 scores during this year?

Southern Region Electric Glider Competition 2023

Cooma Round 1

Sunday 12 February 2023

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Round 1 of our 2023 Southern Region Electric Glider Competition will be held at the Phoenix Model Aero Club field at Cooma on Sunday 12 February 2023. The event is based on a simple rules format that encourages flyers of varying ability to participate and enjoy the days gliding activity.

The event will again consist of two classes, up to 2.6 meters class and above 2.6 meters to a maximum of 4.0 meters.

More details? Go to

https://cooma-aeromodellers.org.au

If you do not do a constant speed, constant bank circle (and it is more like a rollercoaster) then it is impossible to see which side of the circle the thermal is strongest.

Generally when I am thermal:

1. I don't change the direction I am turning in the thermal.

2. I rarely move in a thermal to follow other pilots and just rely on the above technique to centre my thermal.
3. Often, the less pilot interference is in the process the better. Sometime, I just do a constant speed and constant bank circle and let the thermal pull me into the core. This then lets me concentrate on where I am going to go next.

To get a constant bank, constant speed circle you need to set your plane up properly. This takes practice and makes a huge difference to being able to optimise or stay in a thermal.
I modulate the Aileron stick to control my bank angle (as needed) and Elevator stick to modulate the speed. By keeping the speed constant, it means I pull harder on the Elevator (and use more camber) in strong lift and I use less Elevator in weak lift. This optimises my climb rate while keeping my plane at its optimal flying speed for best efficiency.

6. Plane setup

Start with CG.

CG primarily determines the stability of the plane. This means how much a gust, turbulence, trim, speed change or stick input effects the plane. The optimal point is between having the plane unstable enough to show lift without losing efficiency from too many control inputs.

First I use the dive test to determine the level of stability I want. Trim the plane for normal slow flight and then dive the plane at 30 degrees and let go of the stick. You want the plane to do a loooong slow pull out. If it pulls out quickly then it is too stable. If it does not pull out it is unstable.

I like a plane more on the unstable side than the stable side of the dive test. I move my C.G. slowly

5. Thermalling

Once you have used the combination of ground signs, air signs and plane signs to find the thermal, you now need to optimise your climb rate in the thermal. Generally I start circling as soon as I encounter the lift (this is a Hand Launch hangover because you are often not high enough to explore the thermal) and then I optimise my position in the thermal from there. Sometimes I find exploring the size of a weak thermal can cause me to lose contact with the thermal, especially down low.

To optimise your position in the thermal you must do a constant speed, constant bank circle and watch which side of the circle the plane rises the most. You can then extend the circle slightly in the direction the plane rose on, and then keep circling. I tend to only move half a circle size at a time to avoid the risk of losing contact with the thermal. You want to hunt the core of the thermal over a number of circles.
If you do not do a constant speed, constant bank circle (and it is more like a rollercoaster) then it is impossible to see which side of the circle the thermal is strongest.

Cont. next issue

Editors note and warning. The care and charging of lithium polymer batteries used in our sport is well documented and the battery and charger suppliers warnings should be heeded to prevent possibly disastrous consequences. However, our search for more performance always continues so the following are presented to enhance our knowledge.

CARING FOR HI-VOLTAGE LIPO's

It's no secret that more voltage equals more power and speed, and that is why we buy bigger batteries for the bigger and faster RCs in our lives. But what makes these LiHV batteries different? Do I need to treat them differently? Well as someone who go into LiHV about a year ago and has done extensive research and testing to see just how different they are, I now have enough information to let you guys know what is up with this newer battery technology.

So, what is LiHV? Well, in reality the basic chemical and materials makeup is no different than a standard LiPo, although most LiHV options tend to be "Graphene" models with a very small mount of the element infused into the cell construction to boost performance. However, Graphene models are also available in standard 4.20V LiPo packs, so this is in fact not a difference.
So what is different about LiHV? Well, to be honest, NOTHING. See in reality, most standard LiPo cells can take 4.35V without exploding, but it will degrade the lifespan of the cells rather quickly and there is a BIG chance of an explosion when overcharging a standard LiPo and you should NEVER try this. So wait then, how do LiHV deal with the extra voltage? Why is it safe on LiHV and not standard LiPo? Well simply put, its the quality of the cells put into the packs. The cells that get chosen to go into LiHV packs are ONLY the absolute best, most resilient, and most powerful cells a manufacturer has to offer, which is why the packs are so expensive.

So how do I care for these LiHV packs? Nearly the same way you care for standard LiPos with one exception. I did an experiment a while back. This experiment showed that dropping voltage to absolute minimum 3.0V per cell actually slowly damages a LiPo pack over time, and that most LiPo packs will actually hit their rated capacity going from full charge 4.20V per cell down to about 3.3-3.4V per cell. These tests were performed on new batteries, all of which had either never been cycled or had been cycled less than 20 times. Batteries are a CONSUMABLE item and do not last forever no matter what you do and will loose capacity and performance as they degrade over time, its simply an unfortunate fact that cannot be avoided.

With testing, I was able to determine that MOST LiHV packs hit their capacity rating when being discharged slowly at under 0.5C discharge rate from full 4.35V per cell to roughly 3.40-3.50V per cell. Now luckily the "bottom of the fuel tank" is only slightly higher than the standard LiPo so I have been running with my same 3.4V per cell cutoff as I always have, despite running LiHV batteries. Its such a small difference that the LiHV packs should not suffer degradation, especially considering that when on throttle, your pack voltage sags and so when LVC occurs, voltage usually bounces back up to 3.5+V per cell by the time I stick the pack back on the charger.
As for Storage Voltage, 3.80-3.85V per cell is still perfectly safe for both LiHV and LiPo, so do not worry about making any changes here.

One last thing, lets talk longevity. Because LiHV packs are just over-charged, very high-end standard LiPo cells, I imagine you are concerned about the lifespan of LiHV , All Lithium cells degrade when charged or discharged, PERIOD. The amount of degradation depends on a number of factors including how hot you get your battery, how fast you set your charge speeds, and our topic today will be how far you charge and discharge your batteries. You can look up hundreds of articles that will tell you that LiHV does not last anywhere near as long as standard LiPo, so lets see if we can alleviate some of that degradation...
You see, if you did very tiny cycles to your LiPos or LiHVs, like charging to just 4.1V per cell and discharging to just 3.8V per cell, your Lithium batteries would actually last thousands and thousands of cycles before needing to be replaced. However, this would make for extremely short run times, so short that most would find it unacceptable. The average 5000mAh bash LiPo would become a puny 2000 or even less mAH pack. So, what is a good balance? What is the ideal voltage start and ending for a cycle? Well, since standard 4.20V cells are much cheaper, just go ahead and charge those to standard full charge and try to set your LVCs to 3.4V per cell. A standard, slow-ish charge rate of 0.5-1.5C will ensure maximum lifespan, and of course don't mistreat them. This practice should yield a LiPo that lasts for about 500-600 cycles, or roughly 4-5 years for the average basher who runs once per week with 2 packs and 2 cycles per pack that he/she alternates between so they don't have to drag a charger to a bash spot or can charge one pack while running the other. LiPos and LiHV do have shelf life limits. After a few years sitting around any LiPo or LiHV will degrade badly so the best way to get the most bang for your buck is to make sure you buy batteries you will actually use regularly.

As for LiHV, because they are overcharged cells, the less you push past 4.20V per cell, the longer they will last. I personally charge my LiHV packs to exactly 4.31V per cell. Why such an odd number? Well any battery regardless of chemistry will drop a slight bit in voltage when unplugged from the charger because the act of "shoving amperage" into a battery has the same effect of a motor causing voltage sag, only in the opposite direction. My goal is to be as close to 4.30V per cell as possible when my vehicle starts up. This still gives me a noticeable advantage over competition running standard LiPos but prevents some of the degradation caused by the over-charging. Unfortunately I have not used LiHV long enough to have fully degraded a battery to be sure about this, but performance is still above a brand new standard LiPo after a year and so I believe this is a good sign so far. Just as with standard LiPo, do not abuse or over-discharge the pack.

I hope I was able to help some of you guys considering the LiHV route. Get out there and have fun with RC!

emf

From Joe Wurts:

The "HV" label on the battery is just that, a label. There is the occasional time where I want to get a bit more "oomph" out of a battery so I will charge it at the HV setting. I do this with any LiPo, it doesn't need the HV label to be charged at an elevated voltage... Every lipo battery on the market is an "HV" battery. You are just trading number of cycles with charge voltage.

Increasing the charge voltage will reduce the number of cycles before battery degradation. Another important element on lipo batteries, is that you shouldn't leave the batteries fully charged for any extended length of time. If I know I am flying tomorrow with the battery, I still put it on storage charge after using it today.... If charging to HV, it is best to charge just before flying so that the battery is at full charge for the least amount of time.

As to over-discharge on a battery... this will also degrade the battery although not significantly as long is that the cell voltage doesn't get too low. The really important part is that a multi-cell battery isn't discharged to zero volts as that typically results in negative voltage on at least one cell. This

results in a battery time bomb. I've run single cell lipo batteries down to zero volts numerous times now, and have been able to get them working perfectly via initially charging at 1 mA on a Nimh setting until the cell voltage gets over 3V, then charging normally on a LiPo setting. The first time I had left a DLG plugged in for a couple of weeks, finding the problem the next time I went flying. I went through the above charge process, and then cycled the battery and found almost no degradation. I've a few single cell batteries that have had this treatment over the past few years, and they all still seem to work normally. I've also wrecked a couple multi-cell packs via over-discharging. The higher the cell count, the worse the result. Joe Wurts 2020

- - and David Leitch:

I am not a chemical engineer nor an electrical engineer so my views are very amateur. My understanding is that different cell chemistries, and this can either be on the anode or the cathode can have marginally different voltages.

The main thing that kills lithium batteries of all kinds is heat. Heat can be caused by over charging, over discharging or by drawing more current than the chemistry in the battery is comfortable with. If you are interested in learning more about lithium batteries from RC perspective I recommend downloading the very professional presentation linked at:
https://www.rcgroups.com/forums/show...95&postcount=1

You will read there about dendrites caused by over discharge which reduce the future performance of the battery by building up deposits on the anode. For those interested one of the reasons advanced by analyst for Tesla being Maxwell is because the latter's cathode coatings may reduce dendrite issues. Musk referred to the Maxwell concept in his recent battery day presentation.

I personally take care these days to try and avoid discharging packs below about 20% and often only charge to 95%. Also warming them up a little in winter conditions will make them last longer and perform better. David Leitch 2020

ARMIDALE EXPO

24 Entries so far, hopefully more to come. Close to equal numbers in F5J and eRes.
Les Safarik has confirmed that Arijun Hutcaljuk will be coming. Expect an interesting lesson in tactics for F5J.
Get your entries in so we can plan catering.
Just a reminder to all eRES and F5J pilots that the Armidale (NSW) Sailplane Expo will be on from 27th to 29th January 2023. The organisers are hopeful that multiple world champion (F3J and F5J) Arijan Hucaljuk will not only compete but provide demonstrations and classes for all interested pilots.
As usual, a great (long) weekend is expected on one of the best flying fields in NSW.

F5J DIGGERS REST DEC 2022

Final event at Diggers Rest

We had a cracker of a day with light winds in the morning and challenging windy conditions in the afternoon.

Marcus and Hugh started well with some launches in the 30-50m range, but it was Jim who came home the strongest in the tough conditions to take out the win. Well done Jimmy!

Marcus finished in 2nd and Dan had some excellent flights to jump into 3rd place.

F5J 18Dec2022 - Overall Results

[Diggers Rest 18/12/2022]

www.GliderScore.com

Rank	Name	Score	Pcnt	Raw Score	Rnd1	Rnd2	Rnd3	Rnd4	Rnd5	Rnd6	Rnd7
1	HOUDALAKIS, Jim	5901.5	100.00	6837.1	983.0	980.6	937.9	1000.0	1000.0	1000.0	*935.6
					Time 9:55	9:56	9:56	9:56	9:55	9:56	9:56
					Height 75m	72m	93m	80m	210m	195m	210m
					Landing 50	45	40	50	50	50	50
					Over75m -	-	-	-	-	-	-
2	STENT, Marcus	5874.0	99.53	6566.2	972.5	1000.0	1000.0	994.9	*692.2	1000.0	906.6
					Time 9:55	9:56	9:55	9:56	6:34	9:56	9:58
					Height 68m	38m	33m	75m	175m	189m	216m
					Landing 40	40	50	30	50	50	50
					Over75m -	-	-	-	-	-	-
3	HASKELL, Dan	5807.2	98.40	6084.3	910.2	977.3	986.0	995.8	937.9	*277.1	1000.0
					Time 9:57	9:53	9:55	9:55	8:34	2:57	9:57
					Height 159m	80m	92m	112m	132m	140m	191m
					Landing 45	50	50	50	35	45	50
					Over75m -	-	-	-	-	-	-
4	BLACKBURN, Hugh	5758.3	97.57	6260.6	1000.0	1000.0	950.6	902.8	904.9	*502.3	1000.0
					Time 9:56	9:55	9:39	9:58	9:56	6:01	9:56
					Height 46m	39m	43m	128m	225m	168m	203m
					Landing 45	50	20	0	45	0	50
					Over75m -	-	-	-	-	-	-
5	MILLWARD, David	5732.4	97.13	6532.9	1000.0	953.6	1000.0	950.5	836.5	*800.5	991.8
					Time 9:57	9:55	9:57	9:30	7:43	8:51	9:55
					Height 88m	57m	79m	88m	133m	179m	196m
					Landing 50	30	50	50	0	0	50
					Over75m -	-	-	-	-	-	-
6	WATKINS, Rod	5157.2	87.39	5157.2	954.7	977.6	*0.0	1000.0	1000.0	243.0	981.9
					Time 9:52	9:54	0:00	9:58	8:08	3:25	9:56
					Height 94m	55m	0m	83m	108m	142m	159m
					Landing 45	45	0	35	40	0	25
					Over75m -	-	Yes	-	-	-	-
7	PRATLEY, David	4833.0	81.89	5228.6	961.0	954.4	961.8	*395.6	406.1	942.6	607.1
					Time 9:56	9:55	9:51	5:59	4:05	9:54	6:10
					Height 103m	96m	73m	210m	165m	204m	168m
					Landing 35	50	50	5	30	35	40
					Over75m -	-	-	-	-	-	-
8	CARTER, Gerry	4232.1	71.71	4232.1	936.2	925.4	859.3	908.4	519.0	*0.0	83.8
					Time 9:52	9:54	9:46	9:55	6:20	0:00	2:01
					Height 115m	126m	128m	179m	228m	0m	162m
					Landing 30	40	0	45	50	0	5
					Over75m -	-	-	-	-	Yes	-
9	CLAPERTON, Bruce	3784.4	64.13	3784.4	297.7	894.7	887.8	954.6	619.2	130.4	*0.0
					Time 3:17	9:52	9:16	9:56	6:12	2:30	0:00
					Height 115m	160m	96m	105m	187m	177m	0m
					Landing 40	40	50	35	15	10	0
					Over75m -	-	-	-	-	-	-

emf

EMF

2022 Dec 03 - F5J South Island New Zealand (Lincoln)

Flight Scores | Results

Round 13 | Update Rounds List | Refresh Result

Results To Round 13

#	Name	CTry	Score	Pcnt	RawScore
1	Wurts, Joe	-	11789.4	100.00	11789.4
2	Griffin, David	-	11660.0	98.90	12088.1
3	Drabble, Len	-	11508.3	97.62	12257.2
4	Botherway, Kevin	-	11107.5	94.22	11107.5
5	Williams, Peter	-	10977.9	93.12	11203.2
6	Campbell, Kevin	-	10733.9	91.05	11302.1
7	Shaw, John	-	10307.5	87.43	10615.3
8	Knox, Allan	-	10215.1	86.65	10697.3
9	France, Peter	-	10111.7	85.77	10111.7
10	Nikoloff, Anton	-	8638.9	73.28	8638.9
11	Patel, Aneil	-	8545.6	72.49	8711.4
12	Whitcher, Warren	-	8541.3	72.45	8751.8
13	Hiscock, Andrew	-	7923.3	67.21	7923.3
14	Harvey, Ian	-	7429.7	63.02	7429.7
15	Elliott, Keith	-	6922.8	58.72	7075.8

Millennium Cup Rnd 1 2023 - Overall Results

[Appin 15/01/2023]

www.GliderScore.com

34 Entries

Rank	Name	Score	Rnd1	Rnd2	Rnd3	Rnd4	Rnd5	Rnd6	Rnd7
1	WOODWARD, Colin	1987	251	341	282	330	350	344	340
2	WATSON, Rob	1954	190	332	341	327	291	343	320
3	BLAND, Bill	1904	175	338	332	343	299	243	349
4	KEEP, Steve	1868	305	349	286	246	326	327	275
5	ANDREWS, Gary	1856	320	125	286	297	276	330	347
6	STEVENSON, Phil	1823	293	316	334	344	199	337	152
7	FARRAR, Don	1798	305	136	319	345	223	264	342
8	COHEN, Nick	1713	282	268	220	263	323	241	336
9	RANDLE, Jeremy	1703	135	230	332	314	166	339	322
10	METZGER, Klaus	1691	248	156	348	199	290	309	297
11	MANWAERING, Grant	1591	335	324	301	200	327	104	91
12	WADESON, Dave	1576	169	338	170	330	198	339	201
13	GILLOTT, Mel	1572	133	261	326	284	142	332	227
=14	FUNKE, Rob	1567	294	127	289	184	189	303	308
=14	MURPHY, Jack	1567	290	131	274	296	278	298	121
16	CLIFFORD, Tom	1533	296	214	298	217	190	152	318
17	STERRETT, Ron	1504	267	183	329	153	286	280	159
18	LACEY, Doug	1487	285	250	197	159	142	270	326
19	PEMBER, Vic	1481	288	321	201	218	158	295	153
20	RODRIGUEZ, Veron	1462	181	170	228	218	203	336	296
21	MCDONALD, Doug	1448	169	258	320	240	283	178	143
22	WOODWARD, Ken	1433	299	118	329	177	150	142	336

Go to GliderScore for full results

A big day at Appin, SW of Sydney with 33 entrants, an all time MC record. 7 rounds completed between 9.30 and 2.30 with BBQ kebabs and more for lunch. Thanks Appin club for the hospitality.

Lots of big thermals but plenty of down as well. So many periods of short flights, but generally the luck was shared around. As usual the cream still rose to the top.

Colin Woodward continues his winning ways, Rob Watson was second flying an OziRES not a Radian, and Bill Bland was third.

Most people were flying ERES type models with the spoilers disabled and still managed good landing scores.

Obviously the MC has attracted a good following with its relaxed schedule and attitude. Few rules and no rushing to make your group. See History next page.

Grinners are winners. L to R, Bill Bland, Colin Woodward, Rob Watson

Appin MC winner Colin Woodward

Millennium Cup History and unique format.

The Millennium Cup has been a local Sydney region 2m glider event for over 25 years. It was initially bungee launch, then peddle winch and power winch, and in the last 5 years changed to electric power. Due to some small fields and to prevent a launch race it was always a sequential launch from a single bungee or winch, supplied by the event organisers, and this has carried over to electric launch.
Sydney is not blessed with big glider fields and being able to use relatively small fields allows us to run 6 rounds in a year at different venues, which also then attracts flyers from all the participating clubs.
So unlike most modern glider events with group launches and group scoring, the MC has a set order of flying with the order determined randomly. Its not strictly regulated due to timing commitments, gear faults etc but generally everyone is encouraged to fly close to their allocated order.
We all launch from a nominated spot and walk to one of the landing circles, the number of spots as many as we can fit in the field, usually at least 5. You launch when it's obvious a landing spot is coming available, so we often have 6 or 7 models in the air at a time. In periods of dodgy air resulting in some short flights, the launch frequency increases. But the good flyers always seem to find lift.
Competitors enter their flight score directly into GliderScore obtained via a QR code on their mobile.
The result is that we all get more flights in the day and consequently the good and bad luck with the lift is mostly balanced out.
The flight task was originally 6minutes for the line launch events, and was increased to 6m30s and 150m launch height when we changed to electric power. For 2023 we changed this to 5min and 100m HL to match ERES and allow ERES models to be used without resetting the height limiter.
Flight time allows over/under time reduction in traditional Aus/US style rather than the F5J type overtime cut off. The landing circle remains the 10m tape with 5pts per metre, F5J style. With no spoilers or brakes getting good landing points is the toughest part of the flight.
There are some other specific rules like motor restart allowed with a 50pt penalty. Without group scoring you never know how well everyone else has done. You do your best with whatever air you get and get a good landing.
Model restrictions have always been 2 function RC, mostly rudder/elevator, but one or two aileron/elevator with no material restrictions. The recent growth of ERES and the availability of very good modern models has changed the pits significantly.
There are still some Glass pod/foam/veneer models and even all carbon models and Radians but the majority of models are now ERES types with spoilers disabled.
Changes to the rules over all the years have been only after much consideration and discussion and only happen at the end of each series/year. Already it's clear that allowing spoilers and moving towards the ERES build rules will be discussed later in 2023.

X-Dream seen at APPIN MC. Available from Modelflight and retailers.

Hot and happy flyers at first round of 2023 MC, Appin. Murphy photos

But the sequential flight system has proven so popular and unlikely to change. It's one of the reasons the event has been so popular, enough flexibility, no hassles, no one on the PA bossing you around, and no one embarrassed by their early landing and watching the hotshots in their group doubling their flight time.
Next round scheduled for Goulburn in February.

Phil Stevenson

Boom, Boom Boom Boom

Sometimes you have to have a leap of faith

Last year I severely damaged my Vladimir's AVA. It nosed in on launch under full power, which resulted in breaks in the wings in several places, damage to the elevator and rudder and a broken tail boom.

I was pretty despondent about this, but after a few months decided to attempt repairs.

Careful alignment of the wings, rudder and elevator resulted in acceptable repairs.

Then I attempted the repair of the boom. That did not seem difficult after reading some online posts. I cleaned up the broken joint. Used an aluminium angle as an alignment jig and mated the broken ends together. All looked good. A few pieces of carbon tow CAed across the joint to make it sort of stiff and then Phil Stevenson applied a few layers of carbon cloth.

The repair looked mint until…

Until I flew the plane again and I noticed that the elevator (and rudder) were now not aligned with the wing. I had failed to check the alignment of the elevator before gluing up the boom.

So what was I to do? The obvious answer is – fix it. But how?

Here I had a lovely repaired boom, and now I had to break the boom on purpose to repair it.

This is what I used to make sure the wing and elevator were correctly aligned. Its an old technique used by cabinet makers and carpenters. In the photo above you can see that the aluminium angle and the elevator form a parallel.

By siting from the aluminium to the elevator its possible to very accurately get the two surfaces parallel. A few tweeks of the pod and boom and it was all aligned.

Some pieces of carbon strip glued inside the boom held it temporarily in alignment, and Phil Stevenson applied the final wraps of carbon cloth.

So I broke the boom by just sawing it . The picture left is the boom in the aluminium angle getting a test alignment

Its amazing what some old fashioned techniques can do to help repair a plane.

I was quite reticent at first to do this repair, having failed the first time. But the result has been successful and the model will fly again soon

Robert Budniak

With assistance from the MAAA and LSF, **Philip Kolb** will travel to **Brisbane** after the Milang event and be hosted by the **Moreton Region Sports Soaring Association**. Philip will give a **talk** on F5J model design, GPS Racing and flying strategies on **Wednesday 22 March** 7pm to 10pm at the Grange Community Hall, 185 Wilston Rd, Newmarket QLD 4051
Light refreshments will be available. A **flying day** is scheduled from 10am on **Saturday 25th March** (with Sun 26th as the bad weather alternate) This will be held at the MRSSA Munbilla Field. Check out the map at this link, noting "No right turns to enter the property" https://mrssa.net/

RCGA CALENDAR

29/1/23		OT 3		Fun			Open Thermal	Diggers Rest	RCGA
5/2/23									
12/2/23						F5J5	F5J	Diggers Rest	RCGA
19/2/23									
26/2/23			F3K3	Fun	eRES3		eRES in the AM, 3K/5K in the PM	Diggers Rest	RCGA
5/3/23							Airshow 2023		
11 - 13/3/23						F5J6	F5J - Milang (Sat, Sun, Mon)	Milang S.A.	SSL
14 - 19/3/23							GPS racing - Milang (Tues-Sun)	Milang S.A.	SSL
26/3/23									
2/4/23			F3K4	Fun	eRES4		eRES in the AM, 3K/5K in the PM	Diggers Rest	RCGA
9/4/23							Easter		
16/4/23						F5J7	F5J	Diggers Rest	RCGA
23/4/23									
29 - 30/04/23						F5J8	Horsham (Sat, Sun)	Horsham	RCGA
7/5/23									
14/5/23							Mothers Day		
21/5/23		OT4		Fun	eRES5		Open Thermal and 2m eRES, interleved	Diggers Rest	RCGA
28/5/23						F5J9	F5J	Diggers Rest	RCGA
4/6/23									
10 - 12/6/23	10 - 12/6/23	OT5			eRES6	F5J10	F5J, eRES, Open Thermal - Jerilderie	Jerilderie NSW	LSF Australia

Al contributions, including free Classifieds, welcome. Send to editor Mel Gillott at reshiftxyz@hotmail.com

** Electro Motive Force . The emf magazine, including all back-issues is also available on the AEFA website. Thanks Ralph Dephoff.

1. a) E=W/Q. b) *Inside* a source of emf that is open-circuited, the conservative electrostatic field created by separation of charge exactly cancels the forces producing the emf. c) Electromotive force is the characteristic of any energy source capable of driving electric charge around a circuit.

2. A force, metabolizing as a passion to get airborne in a more environmentally responsible way without unduly disturbing other humans or the wildlife by using only the power of electro (not Max Dillon) and nature.

3. A catchy name for an electric model binary transmitted memory of interesting clutter. John Quigley.