



Thermals

Newsletter of the Rocky Mountain Soaring Association

May 2006

AMA Chartered Club 1245

Volume XXX Number 5

President's Message **Jim Monaco**

Well, the weather is getting nice now. We had a great day for the April contest, and we all had a bunch of fun. We still don't have a permanent place for the meetings. This month we will be meeting on Thursday instead of your normal Tuesday night. We are limited to 6 meetings at the Broomfield Library. One option is to alternate months and have one meeting at the library and the next one at the monthly contest. Please let me know what you think about where to hold the meetings. I'd also appreciate ideas for the meetings – what would you like to see or do?

Recently Mike Verzuh had an interesting battery failure. Fortunately he caught it on the ground, but I asked him to write up a little article for this newsletter to show you how several things can conspire to cause an unusual failure.

We have a lot of great club members and I'd like to take a second to thank George Blair who made a generous donation to the US F3J team through his company. As you may know, we have a number of Coloradans participating on the World Championship team. I am the US Team Manager and Bob Vixie is the Junior Team Manager. Skip Miller is a senior team pilot, and we have 2 juniors, Cody Remington and Joseph Newcomb.

We also have Chris Keller from Colorado Springs going as a tower. The bulk of the funding for this event is made through fundraising by the team members. If you don't yet have a team shirt, be sure to go to the website (<http://www.usf3jteam.com>) and order yours today!

This month we will have a swap shop at the meeting. Bring your stuff to trade or sell! If you are looking for something new – it could be there.

See you at the meeting.

Jim Monaco

Flatirons Solutions

(303) 544-0514 x144 (office)

(303) 906-6965 (cell)

Next Meeting:

Date/Time: Thursday May 4 at 7:00 PM

Location: Broomfield Public Library, 3 Community Park Road,
Broomfield, 80020 (See map in Jan Newsletter)

Program: Swap shop. Bring your stuff to trade or sell

APRIL OPEN CONTEST REPORT

After bad weather wiped out the March contest we finally had wonderful weather for the April contest. Fifteen pilots arrived at the field at 8:30 AM. The weather conditions were scattered clouds with the wind out of the south at 8 to 12 MPH. The temperature was about 55 degrees F. The wind remained out of the south until noon then it became variable 0 to 5 MPH. I wanted to try something different and take a 30 minute break at noon. We resumed flying at 12:30. There were several spectacular saves one of which I witnessed when Dr Dan was almost on the ground maybe 10 to 15 feet high. I thought he was going to land but he was able to work that small thermal to eventually sky out and did it twice in the same round!! Nice job Dan... And you were able to do it with that old ICON.

Congratulations go to the first place winner, BOB LEWAN with 4964.76 points.

Dr DAN came in second with 4823.97 points.

CODY REMINGTON came in third with 4649.09 points.

Fourth place went to MIKE VERZUH with 4572.17 points.

Fifth place went to old Don Ingram with 4522.31 points.

Congratulations to sportsman class first place winner STEVE SUNTKEN with 3105.66 points.

I want to thank everyone for their help with winches, and once again Jim Monaco for his computer expertise and for all the score keeping... Special thanks to Steve Suntken for coming early to retrieve the winch wagon... It was a great contest!

Don Ingram CD

Contest Announcements

SUNDAY MAY 7th Open Contest CD Bob Moffett

REGISTRATION 8:30 AM Seniors \$5.00 Juniors \$3.00
PILOTS MEETING 9:00 AM
FIRST FLIGHT 9:30 AM

Battery Masters - Please be sure to have your batteries at the field by 8:45 AM and "topped-up" charged
TASKS F3J rules using winches.

Landing: F3J landing tapes.

Scoring: Man on Man, random flight group assignment.

SATURDAY MAY 13th HLG Contest CD John Kappus

The Season's 1st Hand Launch Event!!! May 13th This is a SATURDAY Event

Entry Fee: \$2.00

Registration: 9:15 AM

Pilot's Meeting: 9:30 AM

First Flight: 9:40 AM

Tasks: Tasks derived from the International Hand Launch Contest. 6-7 rounds will be flown. There will be a 1st timer friendly format! New flyers get 1st choice of their timer/coach. Others pick in reverse order of last years standings. Alternate throwers OK for anyone outside the top 5.

SUNDAY June 25th RMSA Scale Aero tow

I just wanted to let everyone know that I'm planning to run another scale aero tow day again this year. This wasn't included in the original contest schedule, so you may want to mark your calendar now. I'll post more info in next month's newsletter, but this would be a good time to start getting your scale sailplane ready. Remember to check those receiver batteries and replace them if there's any doubt about them!

Lenny Keer

15th Annual Spring Fling Sacramento Valley May 20-21st

The Sacramento Valley Soaring Society is proud to announce its 15th annual Spring Fling. Organized by one of the largest soaring clubs in the world, this two day soaring event is scheduled for May 20th & 21st.

Spring Fling is also the second leg of the Triad. The Triad is a series of regional contests, beginning Phoenix and culminating in Visalia where the "best of the best" in our sport is recognized.

Please join us as we celebrate our 15th year with long days and lots of flights.

Complete details and entry forms can be found on the SVSS club website. www.svss.org

HLG Event New Mexico May 20-21st

On May 20-21, we are having a **two-day hand launch glider** event. Called [Blue Skies over New Mexico](#), it is similar to IHLGF in tasks, rules and timing. We'll fly 10 rounds plus 3 fly-off rounds, and enjoy lunch both days and a BBQ on Saturday afternoon.

It will be a great time to get together and enjoy a hand launch event close to home. There are pilots from the Four Corners states plus Texas, and a handful traveling from elsewhere.

For Joseph and any others attending IHLGF, it should also be great practice event. Feel free to telephone or email me. I'd also be happy to promptly mail information packets if you would like them for an upcoming meeting.

Aradhana Singh Khalsa

Phone: (505) 747-0990

[Blue Skies Over New Mexico](#)

Albuquerque Soaring Association

<http://www.soarabq.org/blueskies/home.shtml>

BlueSkiesReg@soarabq.org

ask@compu-quote.net

SURVEY REQUEST FROM AMA (respond directly to Joyce)

Dear AMA Member,

I am sending this E-mail to you in a request for your assistance. With recent advancements in electric R/C technologies and the advent of the very popular "Park Flyer" aircraft, the demographics of the modeling community are rapidly changing. In order to better serve our members the AMA Executive Council is considering instituting a membership program that is specifically aimed at addressing the needs of the park flyer pilots. We have defined these "park flyer modelers" as having models that weigh 2 pounds or less, do not exceed 60 mph, and do not fly higher than 200 feet.

This proposed program would have less insurance coverage, be limited to non-sanctioned events, and include a bimonthly magazine focusing on electric-powered aircraft. Additionally, we view this new membership group as establishing electric-power flying fields in urban areas and not being part of existing clubs. We have priced this program at \$29.95 per year.

To better assess the views of the membership, the AMA Executive Council is seeking your input in answering the following questions:

- 1) Given your current involvement in the hobby, would an "electric only" program as described above better meet your needs?
- 2) If such an alternative membership program was offered, would you be inclined to choose this program over your existing full-service membership?

Again, I want to underscore that this is a proposed program.

Thank you for your assistance!

Joyce Hager jhager@modelaircraft.org

Acting Executive Director on behalf of the Membership Development Committee

Program comparison details:

	Current Open AMA dues	Benefits	Park Flyer AMA dues	Benefits
Rate	\$58		\$29.95	
Insurance		\$2.5 million individual liability coverage		\$500,000 individual liability coverage
		\$25,000 medical coverage		No medical coverage
		\$1,000 Fire, Theft & Vandalism coverage		No Fire, Theft & Vandalism coverage
Participation in sanctioned events		Yes		No

Flying site		Fly at current AMA chartered fields		New park flyer E-fields to be established.
Magazine		Monthly <i>Model Aviation</i> magazine		Bimonthly E-focused AMA magazine melding MA E-type articles and E-flight articles from existing publications

Sailplane Reliability and the Single Point Failure Mode

By Mike Verzuh

April 29, 2006

I started to write this article to describe a very interesting battery failure that nearly caused a complete disaster on my prime Pike Superior. I'll do that, but I want to expand to include a discussion on reliability and the Single Point Failure Mode. I have worked in the area of Reliability Engineering and Quality Engineering for much of my career, the last two years at Ball Aerospace. NASA and the aerospace industry have led the development of many innovative reliability analysis techniques – after all you usually don't get to build a statistically significant sample of multi-million dollar satellites to test and break before you fly the real thing, so you better sharpen your pencil. We sailplane flyers don't have NASA's budget, our planes are orders of magnitude cheaper, BUT we certainly don't want to risk too many thousand dollar sailplanes learning about failure modes – that really cuts into the amount of kitchen passes we may get from our significant other to go out and fly. First I'll cover the autopsy of my battery failure.

After returning from this year's South West Classic (SWC), I pulled out my favorite contest Pike Superior to give it a quick checkout prior to an upcoming club contest. A charge the night before flying topped off the flight battery with about 300 mA, normal charge level and no indication of a problem yet. The next day I assembled the Pike for flight, flipped on the transmitter and then turned on the plane – nobody home! I carry an on-board Volt-Watch battery monitor in all my planes, and the monitor was indicating no battery life, totally dead. My first thought was, well, I must have left the plane on, but that didn't fit because I was sure I only flipped the power switch once. It was in the "On" position so the plane must have been stowed with the switch in the "Off" position. I put the plane back on charge and pulled out number 2 Pike to fly while Pike 1 charged. Shortly, the charger signaled complete. The battery on Pike 1 only charged to 250 mA – it is an 1100 mA pack, that's odd eh! Just then my buddy Jim called. We discussed the events, and he reminded me of the cardinal rule – "If it don't look right or feel right, it ain't right". Stop and figure out what is going on. This can't be overstated. How many times have you had an indication something was wrong, and you didn't heed that voice in your head that said "Get me on the ground now!" The good news is I immediately deemed the suspect battery pack BAD and DQ'ed it from flight.

Now comes the Root Cause analysis part. The battery in question was less than a year old. Purchase price \$15, cost of the sailplane it would have taken out \$1500, knowing why it failed and how likely it was to happen again, priceless. This battery is in a ship that I only fly for contests, so it doesn't get much use or abuse. In fact it only had two contests on it (November RMSA and SWC) – what happened? Frequently it is not just a single failure that causes a problem, but a series of factors that work together to contribute to a failure. The following description of troubleshooting illustrates how that happens.

When I attempted to pull the battery pack out it seemed stuck. After some investigation, I thought perhaps one of the screws for the nose skeg might have penetrated enough to catch the pack. I have attached my nose skeg with two screws into interior, secured, blind nuts. The screw lengths were adjusted so they don't get beyond the blind nuts – I thought anyway. Sure enough when I removed one screw the battery pack slid right out. Upon examination of the battery, I found the screw had in fact just nicked one cell in the pack cutting through the insulation to the cell's case. There was no obvious indentation of the cell or other mechanical damage. I measured the voltage of each cell in the pack, and they were all very close to 1.3V. The whole pack would only take 250mA after a discharge to charge cycle. What Happened? Mechanical Failure? Electrical? After some head scratching, I did a little circuit analysis. Because the four cells in the receiver pack are in series, the point where the screw contacted the pack was actually at 3.9v with respect to the battery ground. OK so what. The screw that nicked the battery went through a fiberglass fuselage, which should be isolated from the battery, right? And we all know we need a completed circuit for current to flow – so where was the sneak path? The

Pike is famous for its carbon fiber weave fuselage. It requires special antenna routing because of the shielding effects. So I clipped my trusty Ohmmeter on the battery negative lead and then touched the internal fuselage on some of the carbon fiber. Voila, I measured a 200 ohm connection between ground and the fuselage. Effectively this put a constant load on the battery whether the plane was switched on or not. Then some other pieces began to fill in. During the last day of the SWC I switched nose skegs on this plane to a more aggressive skeg. Of course I lost one of the screws in the swap, and the replacement screw was just a smidge longer, thus the contact with the battery pack. This still didn't explain how the supposedly isolated battery negative got connected to the carbon fiber in the fuse. I measured number 2 Pike for a short or connection, no problem on that plane. Then I started moving wires, looking for nicks or other shorts on Pike 1. As soon as I unscrewed and slightly lifted up the elevator servo the short went away. Ok, that is weird. These are JR 368 servos, and upon examination, in the Pike mount they can contact the fuselage interior wall on the bottom of the servo. There is a metal plate on the servo bottom, which must have a connection to the servo return (ground). That plate on the bottom of the servo was pressed hard against the fuselage interior carbon fiber when the servo mounting screws are torqued down. After installing a spacer between the servo mounting ear and plywood mounting deck and adding a little electrical tape on the bottom of the servo, no more short! Take a look at figure 1 for the circuit diagram of the final failure condition.

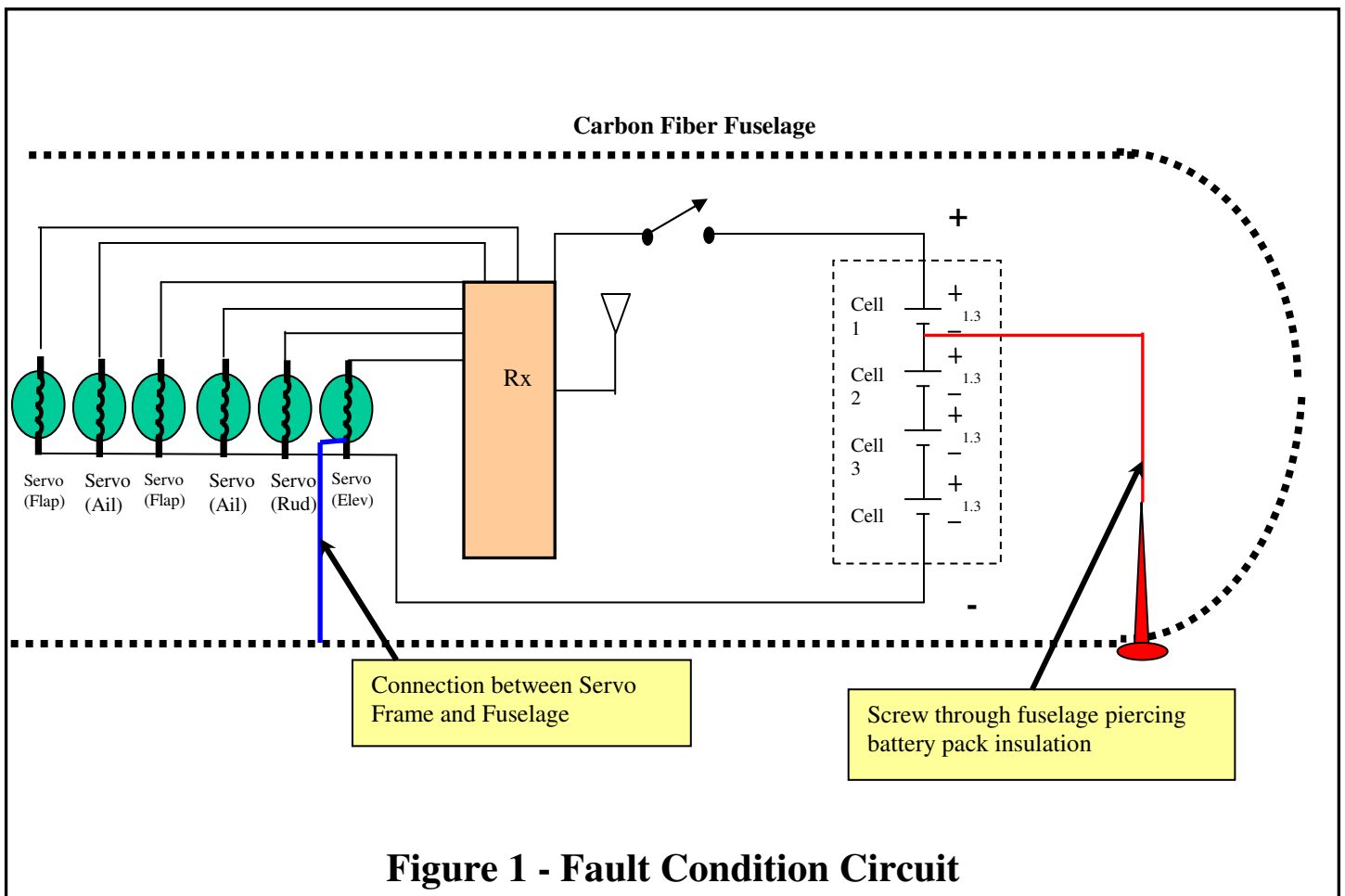


Figure 1 - Fault Condition Circuit

Much to my satisfaction the mystery was solved. I could not believe the bullet(s) I dodged. I put the new skeg on the plane at the SWC at about 10:00AM after round one, and flew the two final rounds, which finished up at about 2:00PM. Given the constant drain on the battery and the drain from the actual flight time my battery was on a path to complete discharge. I ended up in a tie for a contest place, and I was called to fly a tiebreaker flight after everything ended. The other competitor decided to concede the place so we didn't run the fly off. Had I flown that fly-off, and given Murphy's luck, I would have had enough battery to believe all was well, then launch and watch as my plane died during flight. The other bullet dodged was back in Colorado. After the 4

weeks of constant drain on the battery, the best the pack could charge up to was 250mA, remember I still had the constant drain in addition to any normal flight drain. If I had decided to charge just before flying the plane instead of the night before, I would have had enough energy to think all was well, launch and fly for about 15-30 minutes. Again Murphy dictates battery death would have occurred at 1000 ft of altitude! There goes that \$15 dollar trade for a \$1500 sailplane. So how can reliability analysis help us with this kind of thing?

What I'm going to cover is already known to the top pilots. They have learned the tricks through much experience (and probably a few low dollar for high dollar trades). Skip Miller took one look at an early Pike configuration I put together, and commented that the longer elevator servo arm I had selected to get more throw was not "beefy enough". Another time Skip commented he didn't like the thin diameter of a plane's stabilizer joiner. Skip recognizes immediately what reliability guys call a Single Point Failure (SPF). Breaking a servo arm on a flap may cause some erratic flight and a bad landing, but breaking a servo arm on the elevator will most likely be catastrophic! The moral of the story is: the same servo arm failure, but very different results. As NASA lays out the requirements for the new Crew Exploration Vehicle that will replace the Space Shuttle they require that a complete reliability safety analysis be performed for all systems and subsystems. All Single Point Failures and Faults must be identified and multiple redundancy and mitigation must be designed in. We don't use too much redundancy in our model sailplanes, but it is used in some larger scale ships, particularly in my favorite area, the power source. So how do you identify SPFs, and then what do you do?

Once again a common reliability tool is the Failure Modes and Effects Analysis (FMEA) or Failure Modes and Effects Criticality Analysis (FMECA). I'll boil this technique down into two words: WHAT IF. For full size aircraft and spacecraft the process is quite rigorous, with a metric applied to the combination of each failure mode's probability and impact level followed by complex mitigation actions, but we can take a very simple and effective approach. The classic full size military aircraft example goes like this: I have identified that the aircraft's elevator is a critical system, which if lost will cause the loss of the plane and perhaps the pilot. I look at all the systems associated with the elevator system and ask What If. What if I loose the hydraulics system or a mechanical stress failure occurs in a critical assembly. I decide that the probability of losing the hydraulics combined with the severity of loosing the hydraulics dictates I design in a redundant hydraulics control system. I'm done right? Not quite. What if the primary and redundant hydraulics lines are routed through the airframe on top of each other, and then some desert rat on the ground gets off a lucky shot with his AK-47 that passes right through both the primary and redundant hydraulic lines because I have stacked them so closely together in my design? Result one pissed off pilot! So what is the simple FMEA approach a sailplane pilot can use?

First just take the time to assembly your plane and contemplate what is in front of you. This is a great exercise best accomplished with your buddy while both of you enjoy your favorite beverage during your brainstorming session. Next list the critical systems, e.g. elevator, wing joiner(s), receiver, battery, transmitter, etc, and don't forget the tape you use to hold your wing tips on to the wing center section. Then look at each system and break out the simple elements that can fail. On the elevator they would be joiner, servo, servo linkage, push rods, push rod clevis. Now, rather than a lengthy reliability exercise, use some common sense to estimate the robustness of that system element and the likelihood of failure (is the glue or solder joint holding well on the push rod to clevis joint?). Yes go ahead and give it a quick test for robustness or operation under stress. Finally, decide what is the appropriate mitigation strategy; for example what preflight checklist will I regiment myself to use to check functions? Or do I want to use a Battery Elimination Circuit (BEC) electric motor controller verses a separate battery to run my receiver and servos. The choice you make is a trade-off between the risk of the failure; its associated cost (Is the BEC going in a \$150 foam park flyer or are you running a high dollar molded sailplane?) and the cost/effort of the fix or mitigation action. Here is an example of a very simple mitigation action: I notice that the crystal in my receiver is not held in with any secondary mechanism; just the force of the socket pins on the crystal pins. So, I decide to ALWAYS put a piece of tape over the crystal to hold it in – think this is trivial, I watched this failure mode take out an open class plane. Given the tape cost (lets say .002 cents) verses the plane cost (\$1300), I'd say this is a good trade!

I'll close with another great example of an SPF on a hot new sailplane. My buddy Jim was out with his new Supra. I was watching his beautiful slow landing and touchdown (it wasn't a dork landing, but the ground was hard) when to our mutual horror the stabilizer just popped off! What if that had happened as he pinged of the launch line? Bad things for sure! The Supra's stabilizer is held down with one screw – yes this is a great clue, a SINGLE screw. Thus this screw represents a single point failure potential. The Supra tail has the hold down screw captured in the stabilizer mount, and the nut is removed to remove the tail. In this case it turns out the manufacturer did not insure the screw was driven all the way into the stabilizer mount and it was held with only 1-2 threads. He should have recognized this as an SPF and put something in the manufacturing process to insure the screw has proper engagement. On our side a carefully executed pull test on the screw surely would have revealed the weakness. The moral of this story is take the time to do a simple FMEA on your planes, identify those SPFs and take some action before you learn the hard way!

For Sale

REDUCED PRICES

Two F3J models for sale. Both are in excellent condition with no damage. Both models were constructed by Byron Blakeslee.

1. Hobby Club Lazurite. White/Violet. 67 oz. ~~\$995~~ **Now \$750**
2. Fazer. Yellow/black. 77 oz. See skipmillermodeled.com. ~~\$1450~~ **Now \$1000**

New, never flown, ready to fly Blaster DLG built by Lenny Keer. Complete with receiver, battery and servos. ~~\$500~~ **Now \$350**

Ready to fly AVA complete with servos, skeg, battery and skeg. ~~\$850~~. **Now \$700**

Added this month- RES Resolution \$350

Call Tom Gressman at 303-246-6151 for details of any of the above models

WANTED BEGINNER

Art Reis's old 2M poly Wanderer is available again for some new beginner to have, enjoy and learn from! It is old & battered, but flies well and is a complete system ready to fly at no charge to the taker!

I only ask that it get's passed on (if still viable!) to some new person when you're thru with it!

The last "owner" learned very quickly using it and has now graduated to a Super Scooter (He prefers slope!)

Contact Tony O'Hara 303-948-2576 or email me at tonyoco@peoplepc.com if you know someone who would benefit from this model.



Phillip 600 Sport -- This is a nice 2-meter slope model for light to medium winds. Would also make a good warmliner electric model if you want to chop of the nose. Fiberglass fuse, obechi over foam wing, built up V-tail. Two piece wing, removable tail so the model breaks down nicely for travel. Includes 4 servos for ailerons and V-tail. Flown a few times, still in excellent condition. \$195

<http://www.nesail.com/detail.php?productID=1192>

Lenny Keer

Thermal Dancer Electric -- The 122" span Thermal Dancer is part of the Supra family. The Drela airfoils are beautifully cut and kevlar bagged by Phil Barnes. The bagged Supra style stab sits on a strong pod and boom fuselage. I built up this particular model to be competitive for F5J competition on a 16-cell power system. A more moderate power system could also be installed for sport flying. This model has less than 10 flights on it and is in like new condition. Includes 4 new 368 servos on the flaps and ailerons and D60 servos for the tail. \$595

<http://www.polecataero.com/products/thermal-dancer/> Lenny Keer



Rocky Mountain Soaring Association - 2006

RENEWAL _____ NEW MEMBER _____ SPONSOR _____

Please complete the following information for our records:

Family Memberships - Please make and complete a copy for EACH flying family member!

Name : _____ Need name badge? Yes

Address: _____ Year Joined RMSA: _____

_____ Home Phone: _____

_____ Work Phone: _____

AMA #: _____ AMA Contest Director? Yes No

AMA Class Open Youth Family Birth Date: ___/___/_____

LSF #: _____ LSF LEVEL: ___ NSS #: _____ E-Mail: _____

RMSA Membership Class Senior Only Senior W/Family Associate Family
(Note - Senior W/Family receive THERMALS - other Family members check Family Box)

Non-Flying Family members: _____

RMSA Competition Class Novice Sportsman Master

RMSA Offices Held _____

MODELS OWNED

PLANE SPAN COLOR (Top,Bott.,Fuse) CLASS (Open,HLG,Std.) FREQUENCY

Interests: Sports Flying T/D contests HLG Contests NSS Soar-ins F3J
F3B X-C contests Slope contests Other _____

Past Achievements: _____

Dues: \$ 7.50 New Member Initiation Fee
\$ 5.00 Junior - under 17
\$ 25.00 Senior - individual 17 and over
\$ 30.00 Family - any number (same address)
\$ 8.00 Associate (newsletter only)
Make checks payable to RMSA

Comments and suggestions are ENCOURAGED! Please include these with your form!

REMEMBER TO SIGN THE FIELD RULES!!!

Please send to: **RMSA**
% Bob Rice
1123 S. Oakland St.
Aurora, CO 80012

ROCKY MOUNTAIN SOARING ASSOCIATION FIELD RULES

1. The sod farm operations take precedence over **ALL** activities. We use the field at the convenience of the owner.
2. All members will follow **ALL** instructions from **ANY** sod farm personnel without question.
3. When sod farm operations are occurring during a flying session it is **OUR** responsibility to ensure that we will not interfere with operations. If it is unclear as to what is happening or where they intend to mow or work try to talk to workers or management and always move equipment or vacate the premises if necessary. Some workers do not speak very good English – in that case you must make every effort to avoid conflict or interference with operations.
4. Park only in the designated parking areas Do not park on grass, dirt or roads.
5. Avoid setting up on newly seeded areas or young grassy areas. The nice grassy areas are better to land on anyway!
6. Establish a frequency control pole and tag system! Frequency control is to be in effect at all times!! All members will post their frequency control tags on the pole and if there are conflicts, please exercise safety sense as well as share the flight time.
7. Parking and pit areas should be as condensed as possible for the safety of launch and landing.
8. Establish flight line areas for winch launch, high start launch, and hand launch that are separate for the sake of launch, flight & landing safety.
9. Flying over the parking/pit areas at less than 30 feet is prohibited. Doing so in competition **WILL** result in a zero flight score and during R/R flying a disciplinary action by the club.
10. No aerobatics or speed runs over the parking/pit/launch/Landing zones.
11. Do not launch if a plane is circling in a launch zone: vacate the launch zone as soon as possible if someone is waiting to launch.
12. When entering a thermal occupied by other aircraft, enter in the same direction as the first aircraft
13. Landing aircraft have the right of way!
14. In the event of no mechanical retriever, please shag your own chute/line for the flight
15. Please share the usage of club equipment so that all have equal flight time.
16. Please be courteous and helpful to your fellow flyers as well as informative to all guests/spectators. Enjoy yourself and others!!
17. Absolutely no debris or trash is to be left on the field! Please take it home with you for disposal.
18. Make sure that your plane and electronics are airworthy before each flight. Exercise good safety sense in your flight
19. The aircraft will have an identification name/address or AMA number on or in the model in case of loss.
20. You **MUST** tag your winch/high start spikes or stakes with fluorescent tape so they are easily spotted on the field by all concerned. Members may be fined \$10 for each stake or nail not so marked. Previous damage to sod farm equipment from spikes left in the ground have made this rule **EXTREMELY** important.
21. Absolutely no alcoholic beverages will be consumed, prior to or during participation in any model event on the flying field.

I understand and will comply with all RMSA field rules:

Signature

2006 RMSA Contest/Event Calendar

Date	Type	CD	Name/Notes
January 21	Combo (PPSS)	Joel Zellmer	Fun Fly
February 7	RMSA Meeting		
February 11-12			SWC - Phoenix
February 26	Combo (PPSS)	Bob Avery	Snow Fly
March 5	Pro/Am	Jim Monaco	
March 7	RMSA Meeting	Jim Monaco	
March 19	Open*	Mike Verzuh	
March 25	Combo (PPSS)	Chris Keller	March Madness
April 4	RMSA Meeting		
April 9	Open*	Don Ingram	
April 23	Combo (PPSS)	Mike Fritz	Humps and Bumps
May 2	RMSA Meeting		
May 7	Open*	Bob Moffett	
May 13	HLG**	John Kappus	SATURDAY
May 20	Electric	John Read	Watts O Fun
May 27-28	F3J in the Rockies*	Jim Monaco	
June 3-4			IHLG - California Event
June 6	RMSA Meeting		
June 11	Open* +2m + RES	Dr. Dan	Combination event
June 17	F5J	Steve Suntken	Electric - SATURDAY
June 24	HLG**	John Kappus	Saturday
June 25	Combo (PPSS)	Dave Kurth	Memorial
July 5	RMSA Meeting		
July 9	Open*	Mike Verzuh	F3J with winches
July 16	HLG**	John Kappus	
July 21-28			Soaring NATS - Muncie ID
July 22	Combo (PPSS)	Greg Tarcza	Height O' the Season
July 28-Aug 5	F3J WC		Martin Slovakia
August 1	RMSA Meeting		
August 13	Open*	Steve Suntken	F3J with winches
August 19	Combo (PPSS)	Greg Tarcza	Howling Coyote (night fly)
August 20	HLG**	John Kappus	
August 26	F5J	Steve Suntken	Electric -SATURDAY
September 5	RMSA Meeting		
September 10	Open*	Bob Rice	Colorado Challenge Cup
September 30	Scienturfic Appreciation Day		Also Family Day - SATURDAY
Sept. 22-24	MoM		Masters of Soaring (Muncie)
September 24	Combo (PPSS)	Bob Avery	Soar Bash
October 1	HLG**	John Kappus	
October 7-8			Visalia Fall Fest
October 3	RMSA Meeting		
October 15	Open*	Shannon Bingham	
October 21	Combo (PPSS)	Joel Zellmer	Witches Brew
November 7	RMSA Meeting		
November 12	Open*	Jim Monaco	
November 19	Combo (PPSS)	John Read	Turkey Shoot
December 3	RMSA Banquet		

*Club Open points contest (Best 6 Scores)

**Club HLG points contest (Best 3 including the PPSS HLG event)

Italics indicates PPSS events held at their location in COS



2006 Board Members

President:	Jim Monaco	(303) 464-9895	JimMonaco@earthlink.net
Vice President:	Mike Verzuh	(970) 532-0638	mailto:mike@verzuh.com
Secretary:	Bob Rice	(303) 745-5629	mailto:briceflyer@comcast.net
Treasurer:	John Pearson	(303) 306-6800	mailto:JTP1006@earthlink.net
Past President:	Dr. Danny Williams	(303) 903-2291	drdandc@juno.com

Member Support

<http://www.rmsadenver.com>

Chief

Instructor:	Mike Verzuh	(970) 532-0638	(303) 505-9488 (Pager)
Librarian:	Tracy Cochran	(303) 934-8838	Tcochran@idcomm.com
Newsletter:	Tony O'Hara	(303) 948-2576	tonyoco@peoplepc.com

Winch Master

Mike Verzuh (970) 532-0638 <mailto:mike@verzuh.com>

Battery Masters

Bob Lewan
 Skip Miller
 Jim Monaco
 Cody and Hal
 Remington
 Joseph and Jim
 Newcomb
 Steve Suntken (Temp)
 Mike Verzuh

For Winch Use:

If you are interested in using a club winch please contact Mike for the first time, and I will insure you have all the details for trailer access. Also if you are a new member and have not had a winch operation and safety briefing we will coordinate that.



Directions to Field

Take I-76 to exit 16. Turn left and follow the frontage road to the stoplight and turn east onto 120th eastbound towards the airport. Take 120th East to Tower Rd. Take 120th east of Tower Rd about 3/4 miles. We fly on the North side of 120th which is the SE quadrant of the sod farm.
Flying for RMSA members and accompanied guests only.



Rocky Mountain Soaring Association
1123 S. Oakland St
Aurora CO 80012

First Class Mail

Forwarding Address Requested