COLORADO FREE FLIGHT

THE MAX-OUT

Newsletter of the Magnificent Mountain Men

AMA CHARTERED CLUB #177

Issue 2026-04
(July-August)



Don makes a rainbow connection, Bill shows off his cool Trail 90-mounted glider carrier, and Sean looks skyward asking, "Why am I surrounded by knuckleheads?" From the Late-Day Scramble

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Club Website: themmmclub.com
Group Chat: MMMFreeFlight@groups.io

Upcoming Events

Outdoor Scramble (Frito Pie Contest)	November 1	Pete McQuade Chuck Etherington
Indoor at Manitou	November 8	TBD
Indoor at Beth Eden	November 20	John Christensen
Indoor at Manitou	December 13	TBD
Annual Meeting	January 9	Chuck Etherington

Upcoming Beth Eden indoor dates are announced via the Group Chat. Directions to Beth Eden may be found on the club website "Club Documents" page.
From John Christensen: "Anyone not receiving announcements about indoor at Beth Eden can be added to the email list by contacting me at: cloverdale1955@gmail.com"

MMM Club Officers and Contact List

President
Chuck Etherington **720-201-6218**

Vice President:
Bernie Olson **682-333-4802**

Sec'y / Treasurer and Flying Site Coordinator:
Chuck Etherington **720-201-6218**

PR:
Don DeLoach **719-964-7117**

Newsletter:
John McGrath **719-963-9227**

Indoor Coordinator:
Sean McEntee **314-910-2097**

Club Records Monitor:
Don DeLoach **719-964-7117**

Safety Officer
Ken Phair **303-771-3263**

Club Points Monitor:
Jace Pivonka **720-202-2936**
Pete McQuade (backup)

The President's Corner
By Chuck Etherington



Team selection Finals:
Todd Reynolds, Frank Menanno and I attended the Finals at Lost Hills, CA in Mid October. Todd, as you've already heard, won F1C on the first day securing a place on the U.S. team for the World Champs in Mongolia. Frank was a paid timekeeper, helper where needed, and motorcycle instructor for some kids. I was head Jurist. The weather was perfect and the results were "sporting" to use FAI lingo.

Sierra and Kotuku World Cups:
Prior to that, Todd flew in the Sierra and Kotuku winning F1C in both. Frank won F1J in both and had a 2nd in one and 3rd in the other in F1S. The MMM should be very proud or our club representatives.

MMM Club Structure and Culture:
Let me start with the example of our own SAM 1. For you newer members, the first chapter of the Society of Antique Modelers (SAM) was our companion club, SAM 1/Model Museum Flying Club. They were big in their day and it was speculated that they might outlast, or even absorb MMM. But they, along with many other model clubs, went under. It was due in part to the age of their members, but also their complacency. They made little or no effort to bring in new members and their often repeated motto was, "The last member left turn out the lights."

Many model airplane clubs, as well as other kinds of clubs/organizations, are often pretty apathetic. They fill their elected positions with criteria like: "he's willing to do it," "it's his turn," "he's a good buddy," or maybe even "he has a pulse." What's his vision for the club? What are his ideas for growing the club? What are his specific goals? As president, I don't pretend to be a perfect leader, but our elected leaders and appointed Leadership Council should be people who are willing to roll up their sleeves and go beyond just "keeping the lights on."

Our Leadership Council (LC) is an exceptional example of making sound decisions and strengthening the club. As stated in the club's by-laws: "To provide seasoned and informed advice to the President, and to ensure the President has at his/her disposal the best "corporate knowledge" and judgment available within the club when making decisions." There are also decisions that require Leadership Council approval. Our LC members are the first to jump in to implement required tasks. The LC is the brain child of Pete McQuade. He borrowed the idea from the Leadership Council of an organization he belonged to called the American Institute of Aeronautics and Astronautics (AIAA). Jerry Murphy also provided input from his association with the Pikes Peak Soaring Society's Executive Committee. Leadership Councils advise the elected officers and take on numerous tasks themselves.

Lastly I would like to talk about the membership at large. The members of many different types of clubs depend on the leadership to do most of the work. They show up for events, do very little to help, and head for home. One of the reasons our club has been successful, in a climate of diminishing interest in model airplanes, is that we have a culture of helping each other and the club. Art Hillis of SAM 1 used to say, "Many hands make light work." Instead of assuming other people are taking care of what needs to be done, jump in and offer, "May I help you with that?" "What needs to be done?" Or to use Frank Menanno as an example, just jump in and help. For the benefit of the club and each other, let's continue to embrace a culture being involved.

Magnificent Mountain Men Individual ethical behavior for Free Flight Competition

by Frank Menanno

The Golden Rule: "Do unto others as you would have them do unto you." This one Idea reminds us of the many facets of how we should treat each other.

Respect the hobby. Play fairly, be honest and follow AMA, NFFS, FAC, FAI & SAM rules as well as MMM safety regulations and bylaws.

Accept the decisions of the Magnificent Mountain Men Club officers and AMA Contest Director with grace.

Demonstrate good sportsmanship before, during and after the contest. Win or Lose.

Refrain from gossip. Be responsible for your behavior and professionalism. Avoid engaging in negative conversations about flyers, address issues directly with individuals if necessary, maintain a positive attitude, and prioritize building a supportive club culture where open communication and respect are valued.

Help Maintain. Keep the flying field, Clubhouse, roads and storage silo in good condition. Look for hazards & obstacles that could harm others. Leave gates as you find them, once you pass through.

Flight Line etiquette at officially sanctioned Contests. Remember whether you're flying, visiting or helping during a contest be mindful of the incredible effort a flyer has made, building or preparing his model airplane. A simple distraction could lead to mishap and crash. Be cautious and thoughtful when engaging in conversation that could lead to distraction of a flyer on the flight line.

Timing flights. Actively offer to time when you're able. Maintain a clear understanding about who your timer is when flying. Thank your timer for the hard work timing calls for.

Frank—Excellent contribution. This will certainly spark a few conversations.

2026 14-Rounder

John McGrath, Co-CD
Sean McEntee, Co-CD



Friday night, while headed to join Sean for some dinner at the Smoky Hill Chili's, I and my car were nearly flattened by a storm cell that passed right overhead while I was on Quincy. Sure enough the cell passed right through the flight line. On return I found my tent knocked down and my E-36 inside with broken wing and stab--unflyable. Grrrr! Even Don's bike had been blown over by the blast. Don and Sean returned to the field to help me sort stuff out in the dark. Not a great start to the weekend.



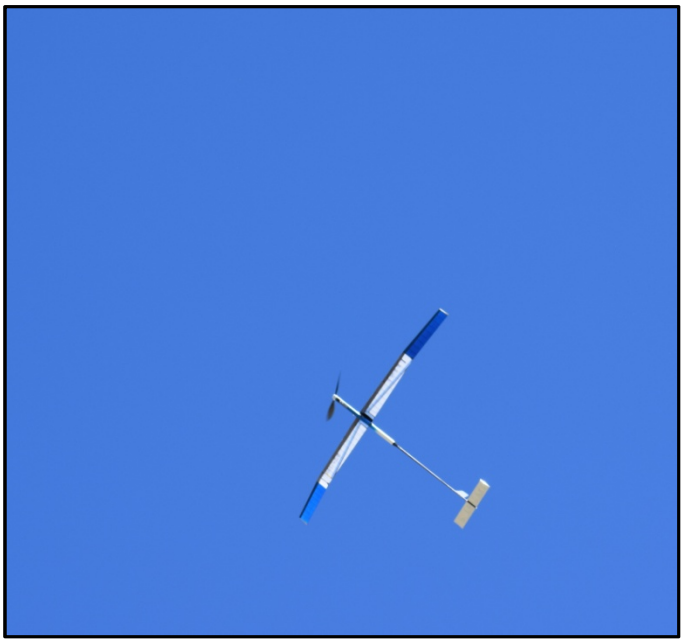
Saturday started with a breeze out of the south-southwest, but with thermals present pretty much immediately. Round flying for FAI started at 0800 with F1B, F1Q, F1G, F1J, and F1S in contention. F1B flyers were the brothers Jensen—Dane and Blake. Q was flown by Jack Murphy and Frank Menanno. F1G had three contenders—Tiffaney

O'Dell, Don DeLoach and yours truly. Frank flew F1J (mini FAI gas) solo on Saturday, but F1S was flown by Jack, Don, Frank, and VP Bernie Olson.



As the day wore on, conditions improved, with winds diminishing considerably and plenty of thermals. There were even complete wind reversals as thermals drifted over the contest. Bernie had arranged for the food service, and on Saturday—with Frank manning the grill, we had a nice burger-chips-water-Gatorade meal at the shelter. Thank you to all who contributed to the meals!





It was all fun and games until towards the end of the contest when the wind increased to a pretty steady 12-15 with gusts higher than that. The final two rounds for the F1B were starting to get a little sporty. Still, all FAI flyers got through the day safely, with no models lost, and no models broken (I think?). By day's end, though, there was only one flyer—Dane Jensen in F1B, who was clean for all seven rounds. This was kind of a surprise, because there were thermals all day long, but they weren't all perfectly peachy and easy to spot. In F1G all flyers dropped exactly one flight, and in F1Q there were only four maxes between the two contenders. In fact, the Q fliers decided to stop at five rounds (normally seven for Q) because of the growing wind. In the end, Tiffany took F1G win on Saturday, her single dropped flight still allowing her to beat Don and me.





On the AMA side, the CDs made two decisions that played out reasonably well. One, we permitted AMA flights to take place on either day (rather than our usual practice of having certain ones on Saturday, others on Sunday). Two, after kicking it around a bit, we decided to permit strings of flights to continue on Sunday even if the string was begun on Saturday. The idea was to encourage as many flights as possible, and to afford maximum flexibility for those who were constrained by the FAI structure on one hand but who were also flying AMA or NFFS events. However, CLG was kept to Saturday only, and HLG to Sunday only. No high level reasoning there—just keeping Pen People doing pretty much the same thing at the same time. It's more fun that way, I'm told.

On Saturday, Bill Groman took the CLG event by more than 100 seconds using his own design by flying four maxes in a row. Great job, Bill! *(And maybe you spotted Bill's kind nod to Don in the Group.io chat. Don had given him a final bit of advice to decrease incidence just a tiny bit to cure a transition issue—which aided Bill in his win. Great sportsmanship, Don.)*



E-36 had four contestants—Don, Jack Murphy, Troy King and his son Eli. Great seeing Eli. Eli—keep coming to the field! Among the adults—same as in F1G, they all dropped exactly one flight. The winner was Jack Murphy with his Leapin' Lizard high thrustline model.



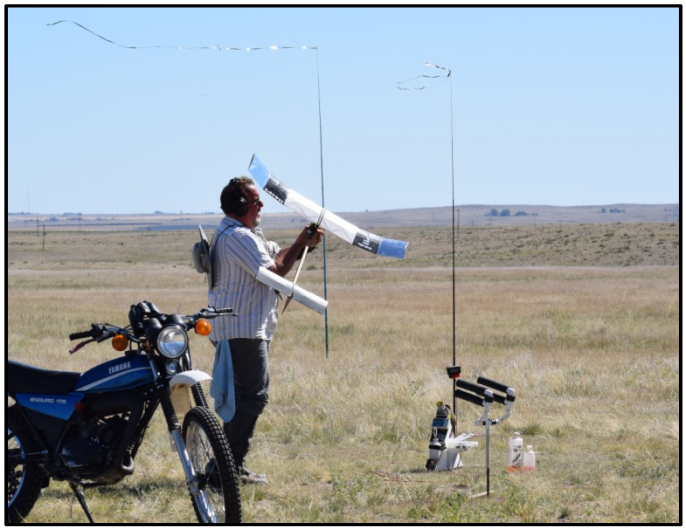
Electric A and B were flown as a Combo event, which means that fliers could fly either or both classes, and the best result for each flier counted in the ranking. Jack won here as well flying an A model, with four straight maxes and just a single drop. In fact, if there's an event other than the FAI classes where the Gods of Good Air were smiling, it was AB Combo. Among the seven strings of flights recorded, there were 14 maxes. Not bad—and there were four maxouts.

In E-20 ("Get your binoculars out immediately when timing"), Frank won the event on Sunday using his foam Blue Magoo. Man, you should see that thing climb! I'd flown my string on Saturday and was doing okay until for some reason the model went out of trim and I ran into a wall on my fourth flight with a 47 second time. Still investigating. Bernie was in the game also, flying his Mini Pearl. These things are a blast when they're flying well. When they're not…

Hand-Launched glider's always a blast to watch. Don't see how those guys do it. My shoulder hurts just watching them. Only Don completed six flights, due to damage that Co-CD Sean McEntee and Troy King picked up along the way. Sean took the win, though, with a best-three-of-six flights total of 283. Stand by for the Rocky Mountain Champs—that's where you'll see lots of fireworks in HLG.

Then came Sunday in FAI…As you may know, in FAI events we fly the 14-Rounder as two

distinct contests—the Saturday Centennial Cup, and the Sunday Columbine Cup. Both of those contribute to overall 14-Rounder Champion awards. If one of those flying one of the full-sized, World Cup eligible classes (F1A, B, C or Q) completes two straight days of maxes (that's 14 in a row!), he or she earns one of our coveted Blue Jackets. Sunday's weather was almost a repeat of Saturday's. It began with about 5-7 knots out of the Southwest, then around midday or early afternoon reversed itself, putting chases down toward the new swing gate in the southwest corner of the field—and beyond.



In F1J, after some initial trim struggles early in Round 1, Frank was able to fly a full ten rounds over the two days to take the win. It wasn't always pretty, but he completed all rounds. Great job, Frank, persisting with F1J.



On Saturday, no one was clean in F1G, but on Sunday Don came through with five straight maxes for the win. The drama there was whether the two-day total would earn him the trophy. In fact, Tiffaney's total was 14 seconds greater over the two days, so she takes the win! Congratulations, Tiffaney!

In Big Electric (F1Q), the issue was decided on Saturday, as neither Frank nor Jack flew F1Q on Sunday. Jack takes the win—and the trophy—with a 779 total.



Now to the big drama: In F1B all through the day, Blake and Dane brought home max after max, and were head to head at the end of five rounds. Near the end of Round 5 (the last round for the mini events), the wind began to blow—then blow harder! In Round 6, Blake and Dane again nailed their flights, but the chases were getting longer and longer. Plus, the final two rounds are shortened to just one hour each, so there was greater time pressure to a) wind and prep, b) find a thermal!, c) chase the model and return to the line.

By Round 5 we had realized we might have a 14-round maxout Blue Jacket winner on our hands with Dane. Guess what the CD forgot to do! Bring the blue jackets. I shot a text to Pete at home in the Springs. Sure enough, he had them. Not so close that we could have retrieved one by the end of the contest, but at least we had a grip on the situation. Sadly, after 13 straight maxes, Dane dropped his 14th flight. Despite a really high launch, his model flew into some sink. Blake maxed out for the day, claiming the

day's win. What a finish, and congratulations to both!



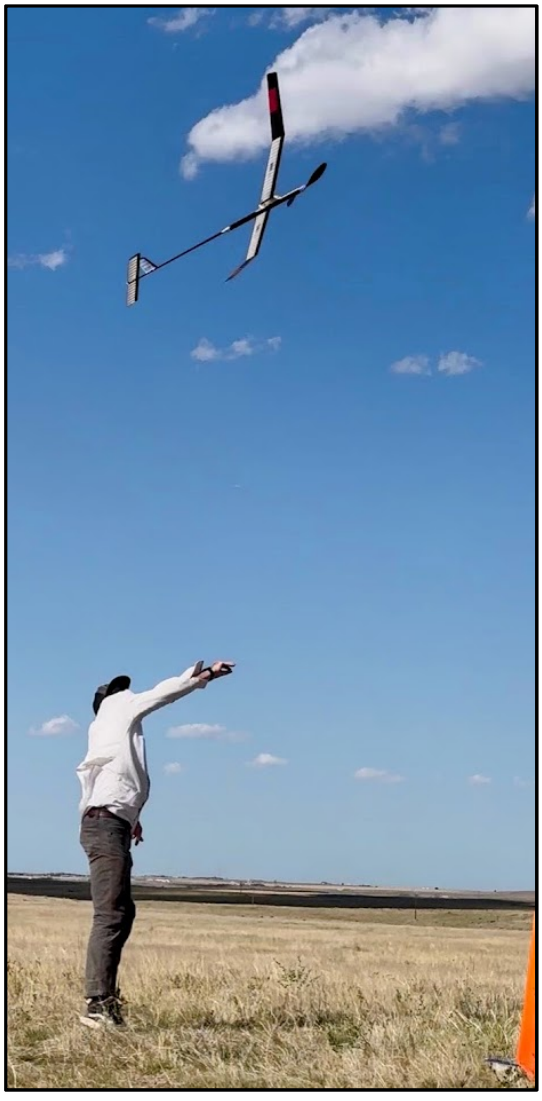


14-Round Winners: Frank Menanno, F1J; Don DeLoach, F1s; Jack Murphy, F1Q; Tiffaney O'Dell; F1G; Dane Jensen, F1B

The award ceremony followed shortly after the end of the last round, and was much like others with two notable exceptions. The first was a small but well received shift from champagne to margaritas as our celebratory beverage. Thanks to Sean for this excellent innovation! The second—again thanks to Sean—was that we were able to stream Pete McQuade into the ceremony via a Facetime link. Man, it was great to have you there, Pete. We really miss you and Marilyn and look forward to seeing you at the field in November!

A huge thank you to all who helped bring this year's 14-Rounder in for a smooth landing. Bernie (Food), Chuck (Field Prep), Don (Rules Consultant), Murph (Food), Bob (More food!), Frank (Food) and especially Sean, who was a superb Co-CD, running the pen and making sure the whole circus ran smoothly.





Catapult Glider		
Contestant	Score	Place
Bill Groman	398	1
Sean McEntee	256	2
Don DeLoach	238	3
Karren Groman	224	4
Troy King	58	5
Eli King (Jr.)	10	6

Fast Gas Combo		
Contestant	Score	Place
Troy King	326	1

E-36		
Contestant	Score	Place
Jack Murphy	348	1
Don DeLoach	338	2
Eli King	285	4

P-30		
Contestant	Score	Place
John McGrath	309	1

A/B Electric Combo		
Contestant	Score	Place
Jack Murphy	585	1
Frank Menanno	450	2
Don DeLoach	438	3
Bernie Olson	160	4
Don DeLoach	111	
Jack Murphy	401	
Frank Menanno	353	

E-20		
Contestant	Score	Place
Frank Menanno	405	1
John McGrath	319	2
Bernie Olson	192	3

Hand Launched Glider		
Contestant	Score	Place
Sean McEntee	283	1
Troy King	255	2
Don DeLoach	190	3

F1B Centennial Cup (Saturday)		
Contestant	Score	Place
Blake Jensen	1098	2
Dane Jensen	1260	1

F1B Columbine Cup (Sunday)		
Contestant	Score	Place
Blake Jensen	1260	1
Dane Jensen	1234	2

F1B 14-Round Championships		
Contestant	Score	Place
Blake Jensen	2358	2
Dane Jensen	2494	1

F1Q Centennial Cup (Saturday)		
Contestant	Score	Place
Frank Menanno	510	2
Jack Murphy	779	1

F1Q Columbine Cup (Sunday)		
Contestant	Score	Place
Frank Menanno		
Jack Murphy		

F1Q 14-Round Championships		
Contestant	Score	Place
Frank Menanno	510	2
Jack Murphy	779	1

F1G Centennial Cup (Saturday)		
Contestant	Score	Place
Don DeLoach	540	3
Tiffaney O'Dell	582	1
John McGrath	579	2

F1G Columbine Cup (Sunday)		
Contestant	Score	Place
Don DeLoach	600	1
Tiffaney O'Dell	572	2
John McGrath	519	3

F1G 10-Round Championships		
Contestant	Score	Place
Don DeLoach	1140	2
Tiffaney O'Dell	1154	1
John McGrath	1098	3

F1J Centennial Cup (Saturday)		
Contestant	Score	Place
Frank Menanno	437	1
Don DeLoach		

F1J Columbine Cup (Sunday)		
Contestant	Score	Place
Frank Menanno	344	1
Don DeLoach	61	2

F1J 10-Round Championships		
Contestant	Score	Place
Frank Menanno	781	1
Don DeLoach	61	2

F1S Centennial Cup (Saturday)		
Contestant	Score	Place
Frank Menanno	574	2
Don DeLoach	585	1
Bernie Olson	319	4
Jack Murphy	562	3

F1S Columbine Cup (Sunday)		
Contestant	Score	Place
Frank Menanno	532	2
Don DeLoach	583	1
Bernie Olson		
Jack Murphy	447	3

F1S 10-Round Championships		
Contestant	Score	Place
Frank Menanno	1106	2
Don DeLoach	1168	1
Bernie Olson	319	4
Jack Murphy	1009	3

August Late day Scramble/cookout

By Chuck Etherington, CD

Unfortunately, my co-CD and griller, Jeff Pakiz, was unable to attend due to illness. I hope by now he is back in the pink.



Frank Menanno was at the field when I arrived and had already retrieved the grill from the storage silo. Apart from a shower at 5:00, flying was good all day. Following that, the weather again became flyable and several went back at it until after 7:00. Clara McEntee was welcomed back on the field after spending the summer in Texas. Possibly the biggest news was that Bill and Karren Groman are now mobile! They were chasing on my Honda CT90 that Bill had done some work on, including a careful carb rebuild. It looked brand new!

The cookout took place around 4:00 and it was a lot of fun. Frank did the grilling for the 15 of us congregated under the CD shelter. Several people brought sides but the centerpiece was Karren's world famous pasta salad.





As dinner wrapped up, Don DeLoach was recognized for winning the 2026 Nationals (NATs) coveted Mulvihill trophy. Long before RC and control line, there was Free Flight. The very first NATs was held in 1923 with only one event: Mulvihill. 103 years later, our own DD was the recipient. Cindy (wife), Skilly (daughter), and Rita (dog) brought a cake they had decorated to the field. Sticking out of the top was a photo of Don holding his winning model and the trophy. The AMA museum asked if they could have the model and Don reluctantly donated it. Did he bring the trophy home you ask? Oh heck no. AMA won't let it out of their sight. I would like to thank Jerry Murphy for initiating the idea of recognizing Don.



The competition? Well, 58 flights were recorded. Don won with 6 maxes, John McGrath was 2nd with 4 maxes, and Frank was 3rd with 3 maxes. Honorable mention goes to Bill for a max-out in Catapult Launched Glider (CLG) beating 4 others in that class.

The following day I received an email from Abe Medina of the State Land Board with IR photos of Don and John at the missile silos walking to Don's bike. It was after dark and Don was giving John a ride

back to the cars. Abe was asking if they were associated with the MMM club and stated, “They look like trespassers by their behavior.” So bottom line is: if you’re around the missile complex after dark, don’t behave like John and Don or I’ll get another call.



Shady: One guy stealing a bike, one guy doing a little dance.



August Scramble Results		
	Contest Date:	23-Aug-26
Scramble Place	Name	Points
1	Don DeLoach	100
2	John McGrath	71
3	Frank Menanno	56
4	Bill Groman	46
5	Karen Groman	31
6	Bernie Olson	29
7	Sean McEntee	8



More dancing.
Tryouts for <u>CLG: The Musical</u>





Guillows and Gollywocks

By Don DeLoach, CD



I arrived at Norris about 9 a.m. to sunny and perfectly calm though hot conditions. Frank had already been there an hour and a half and had enjoyed some great test flights. I needed to trim my recently resurrected 2011 Gollywock that had crashed badly in 2021. The fuselage had been totaled so I used one given to me by Todd that his late father Randy had built. I just added the covering and rigged it for my wing, stab and noseblock. A couple of screw turns and the model flew off the board...ready for contest flights by the third test. Meanwhile other flyers started arriving but by about 11 the wind speed was steadily increasing.

Frank and I were joined by Stan, Chuck, Bob, Bernie and finally Murph. Bernie had two new Gollywocks he was trimming, along with two new and beautiful Guillows bipes (a Fokker D.VII and Albatross). Unfortunately the increasing wind speed made it very hard to meaningfully trim, and Bernie retired with minor damage and no officials logged. Frank also got some trim flight in but then he suffered major fuselage damage when his front end failed, tearing up the fuselage. He did get one short official flight posted.



John McGrath proved the hardiest of the group, posted two booming 120-sec. maxes and a 60 for 300 total on three long chases. For his efforts he won an AMA Nats 2026 cap and will get his name on the MMM Gollywock perpetual trophy.

<u>Not so fast, Don</u>! Don chased my model after my 2nd flight, but the plane was ripped from his hands when he encountered a hard blast on the way back to the line. With my wing broken and the stab damaged, Don very graciously offered me the use of his gorgeous Dyna-Moe to finish the contest. With his coaching I was able to have a reasonably good 3rd flight in the gale. And if that's not enough, Don offered to repair my wing (and I'd never turn down an offer for a DeLoach-fixed model). Amazing sportsmanship, sir!—Ed



The meet was a great success despite triple digit heat and windy (10-20 mph) conditions. I look forward to doing it again next year!

Final Results

John McGrath	300
Don DeLoach	240
Frank Menanno	26
Bernie Olson	DNF
Jerry Murphy	DNF
Bob Radney	DNF



Projects and New Builds

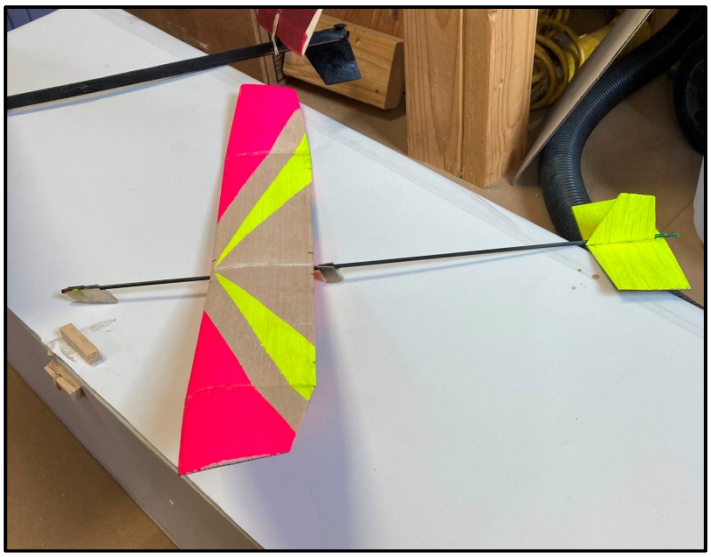
Frank's Shooting Star



From Frank: "Thirty one years ago my Shooting Star 784, with a DubJet 40, climbed straight up at our Lowry Field. She bunted over perfectly, but the glide had a considerable stall. The plane was supposed to DT at the top of the power pattern, but it didn't, and eventually it went nose in and shattered the fuselage. I finally repaired the fuselage and updated the timer and ran new lines for the VIT!"

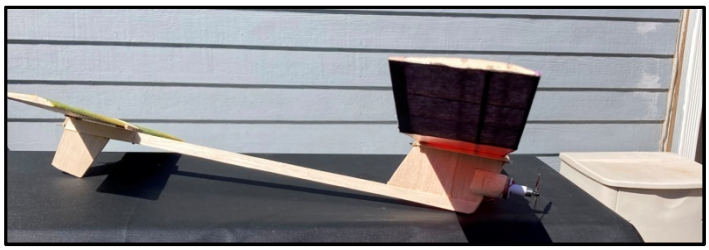
(Don't want to rush these things, Frank. Just sayin' :) Cool open-air wingmount.)

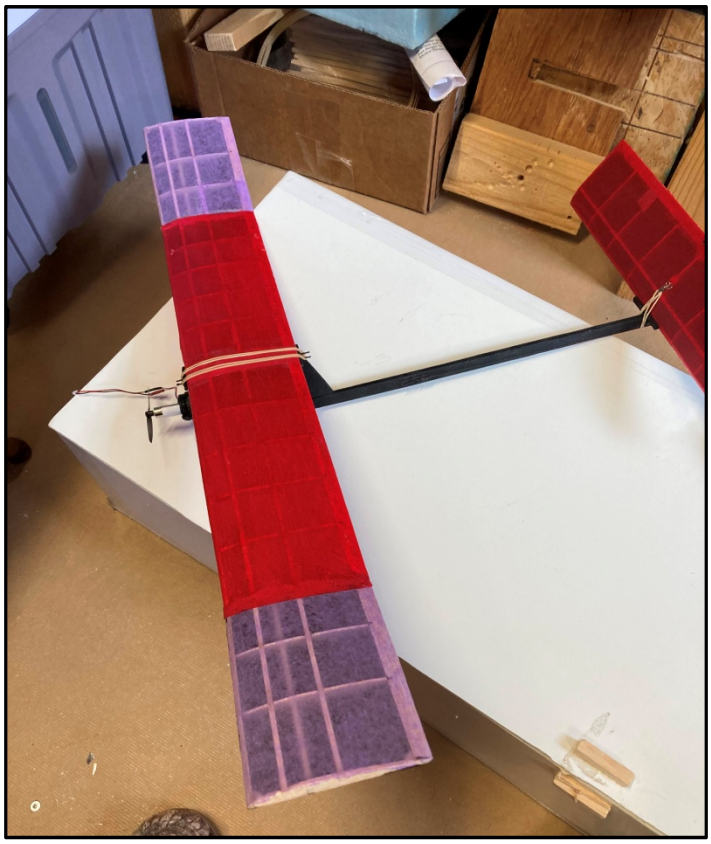
Bob's CLG



Really Neat design, Bob. Tell us more!

Bob's EP-30





From Bob: "As long as I was in the building mood I designed and built a EP-30 also. I based it off of the plans of the PeeWee-B which was a 25 in span model powered by a .010 Cox motor. My wingspan is 28 in and chord 3.5 in, and if I remember the weight is 26+ g without timer and battery."

Bob, this is cool! Make it fly!

Bill's Cutback E-20



From Bill: "The design, called Cutback E20, started as an attempt to enlarge my CLG design to 20" span in order to test a few concepts I've been curious about. Main design goals included:

--Use the same near-true ellipse planform of my CLG models to see if it can be built light enough with a 20" span
--Configure the model to DT using a popup wing in order to have the convenient incidence adjustability of a CLG.
--Place the thrust line as near the center of aerodynamic drag as possible in order to reduce force-offsets, use prop blast for wing lift boost, and see if the wing will straighten the prop slipstream over the empennage (actually these ideas have been tested extensively in full-scale aviation going back to early days so I knew they worked, I just wanted to apply them to my model to do something different than the traditional pylon arrangement)
--Run the motor CW, to create a Left-Left pattern

The model in the pics is my second version after building a new fuselage to shift the CG back. It has a dozen or so flights on it now, and some of the goals were met but some weren't.

What worked:
--The thrust line configuration: With no fin offset, wing wedge or thrust offset, the model climbed dead straight with wings level until it stalled under power and kept climbing in a series of stair-stepping stalls. I added a very small amount of left thrust (barely visible) and the climb became a nice left corkscrew with a flat transition to left glide at the end of the power run.
--The DT system: The usual screw adjustment and DT system from CLG's worked very effectively. Too effectively, in fact.

What didn't work:
--The DT system!: In spite of the DT being reliable, this heavier model comes down harder than my CLG's and since it hits nose first, the prop and motor take a beating. Darn it.
--The carved balsa wing: Oh, it flies nice and looks pretty but it's heavier than some of the built up or foam E20 wings. I still want my elliptical planform but I'm looking at light construction methods.

I'm not sure if I'll compete with this model yet. It has a cheap, nothing-special motor/prop/battery power system, and the whole model is still too heavy. But next year..."



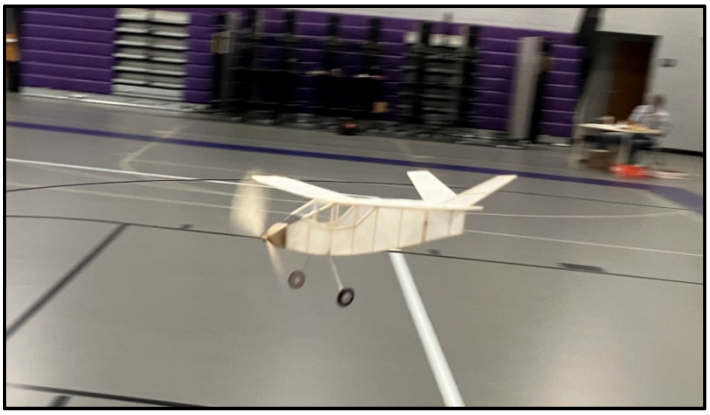
Late-breaking news: At the October scramble, this model maxed out, providing a Scramble win for Bill! Regrettably, it's still at the field, having gone quite a ways downwind. Repeated searches by a few of us failed to discover it, despite great guidance from Karren.

Bill—you will make another one! I insist! --Ed

John Christensen's Half-Sized Boston Beancraft



From John: "Hi John, 1/2 Scale Boston Beancraft Part 2 After having pretty good performance with the the pistachio size Beancraft featured in a previous newsletter I decided that lighter weight would improve performance. I built a new bare bones version weighing 1.3 grams compared to 1.6 grams that the first one weighs. On June 26th Beancraft number two rewarded me with a 1:09 flight! For me experimenting with these little characters has been fun."



John, this model has more character than anything I've seen recently. As I can attest, it will successfully ROG! Great job.—Ed.

John McGrath's C-Otter



Thank God the Sci Oly flight event is back to airplanes. For the high schoolers, anyway. The middle schoolers have a glider event. I thought I'd try a development of an existing model I had, but at Beth Eden a few weeks back, it wasn't very good. After listening to David Aronstein (<u>always</u> listen to David Aronstein) I scaled up the stab by a whole bunch, and the model came alive! This one's for C-Division (High School).

The rule is an 8g minimum, 1.5g of rubber. The model's shipping with .07 rubber, which is probably too wide, but for student winders, who often don't go near breaking strength, it'll probably be okay. 14.5" span, running on an Ikara molded 6" prop and a self-produced hanger.

Frank's Satellite 500



Developing the Gem 36

By Bernie Olson



Several variations of the Pearl 222 have come out of my shop over the previous couple of years; all with molded fuselage pods. One had a plug-in wing and a couple of others had conventional wing attachment with rubber bands. Also, tried an E-36 model based on the 1/2A Viking which I had trouble taming. It was time for something completely original so a clean sheet was started for a new model with the goal of further reducing drag. Ken Phair and I bounced ideas around for this effort. I think this is when model aviation is most satisfying!

The process was started with a pair of NFFS Symposia articles for guidance: Harry Grogan's paper in the 2021 Symposium; Stability and Control of Fixed Surface Power Models and Pete McQuade's 2008 Symposium; Theoretical Optimal Design of 3-Panel Wings for Free Flight Models. Having participated in a wide range of model aircraft activities since the 1960s, I'm truly impressed with the free flight community, who have amassed a tremendous treasure with their annual NFFS Symposia that are available to all.

A spreadsheet was created to automate the math that is specified in the Grogan article and a couple of existing models were test-loaded to verify that it was functioning as intended. New parameters were then applied to evaluate new designs that included four- and six-panel wings, various tail geometries, boom length and vertical fins located fore and aft of the horizontal tail.

Pete McQuade's paper was rolled into the study and when combined with the Grogan methodology it showed that six-panel wings offered stability benefits by pushing the more highly angled panels further outboard while keeping the polyhedral angles shallow for reduced drag. The Gem uses 4.6º, 7.6º and 10.2º for the three panels which fall well under the Lee Hines/Hank Cole rule of thumb that calls for polyhedral angles to remain below 15º as pointed out in Pete's article.

The spreadsheet page for the final configuration looks like this:

Geometry

Wing			Horizontal Stab			Vertical Tail		
S_W	223.212	in^2	S_H	65.3	in^2	S_V	12.70	in^2
S_P	216.2	in^2	B_H	17.4	in	L_V	17.67	in
S_P/S_W	0.969		C_H	3.75	in	S_V/S_P	5.9%	*
B_W	37.168	in	AR_H	4.64				
B_{WP}	35.95	in	$L_{T\ Cole}$	24.31	in			
C_W	6.01	in	$L_{T\ Hanford}$	26.01	in			
AR_W	5.98							
$C_{L\beta}/T_1$	0.000220	(fig 9)						
$C_{L\beta}/T_2$	0.000190	(fig 9)	Notes:					
$C_{L\beta}/T_3$	0.000068	(fig 9)	*Rear fin area starting point:					
T_1	4.626	º	~4.0% of Sp					
T_2	7.605	º	~4.5%					
T_3	10.24	º	~5.0%					
x/b_2	0.333	dihedral break	Underlined numbers are calculated					
x/b_3	0.667	dihedral break						

Stability

Stability - Cole		
$T_{VO} = (S_H/S_{WP}) \times (L_T/C_W)$	1.22	s/b 1.20 to 1.40
CF	0.473	(fig 4)
$NP = .25 + CF \times T_{VO}$	0.83	
SM	0.05	5% fast climber
CG = NP - SM	0.78	
Stability - Hanford		
T_{VO}	1.31	s/b 1.25 to 1.50
$CG = .20 + .45 \times T_{VO}$	0.79	Hanford design line
$CG = .25 + .44 \times T_{VO}$	0.82	Hanford border line
Spiral Stability		
$C_{L\beta} = (C_{L\beta}/T_1) \times T_1 + (C_{L\beta}/T_2) \times T_2 + (C_{L\beta}/T_3) \times T_3$	0.0032	
$T_{VV} = (S_V/S_P) \times (L_V/B_W)$	0.028	
Spirally stable per fig 15		
PH *(Pylon height)*	2.948	
PH/CW	0.49	

The resulting model shows that it should have good spiral stability characteristics using the Grogan methods. The blue triangle is the Super Pearl 222E;

the yellow triangle is the 1/2A Viking E-36 and the red triangle is the Gem 36.

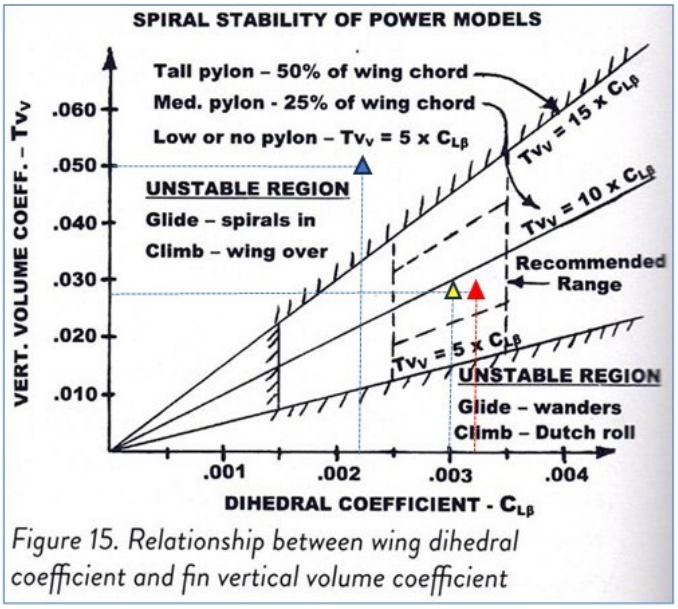
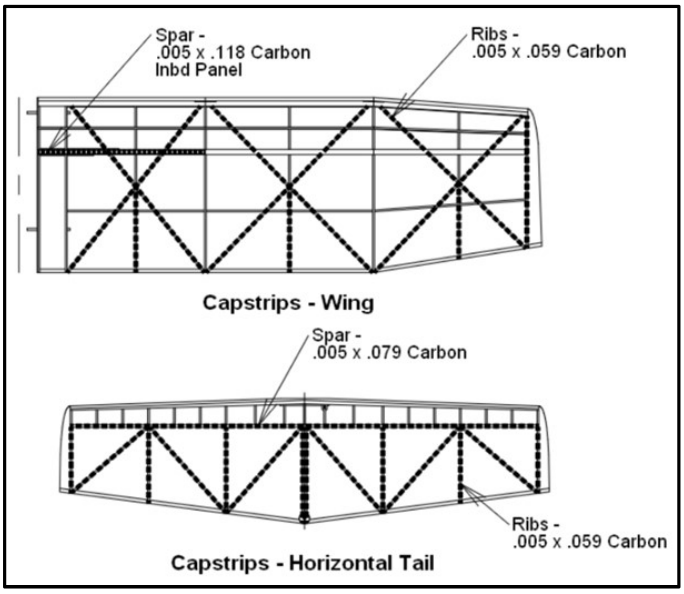


Figure 15. Relationship between wing dihedral coefficient and fin vertical volume coefficient

A molded fiberglass fuselage pod, plug-in wings and a tapered carbon boom were baselined for the model's configuration. It was also desired to incorporate a thin, under-cambered airfoil on the wing and a symmetric section on the horizontal stabilizer. The pod was sized to house the motor, ESC, battery and a BMK E-36 RDT. The RDT system is wrapped in John McGrath's mechanics which assemble into a clean, compact installation.



The wing and stab trailing edges were made from 0.034-inch carbon strips to minimize warpage. Rib and spar stiffening was accomplished with 0.005-inch carbon strips. The resulting wing and stab panels came out straight and stiff.



Scotchweld 420 was used for bonding the pre-cured carbon bits. Jack Murphy brought this epoxy to my attention and it has proven to be excellent for this application. Expensive, yup, but it really works well. I picked up the 3M applicator gun but a cheap substitute plunger could be fabricated from a pair of dowels. The adhesive is available in white and black.



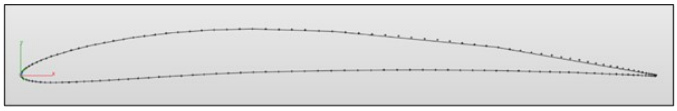
Gem 36 specs:

CG range per the Grogan article:

- 78% Cole method
- 79-82% Hanford method

Wing:

- Airfoil –NACA 4407

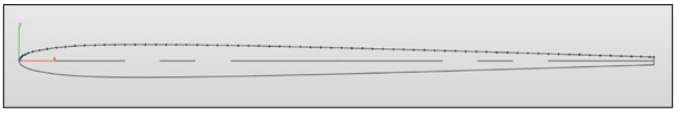


- Plug-in, two-piece

- 6-panel polyhedral
- Tapered outer panel
- Span 36-inches
- Area (projected) 216 in^2
- Aspect Ratio 5.98
- BMK GPS transmitter installed in left hand wing

Horizontal stabilizer:

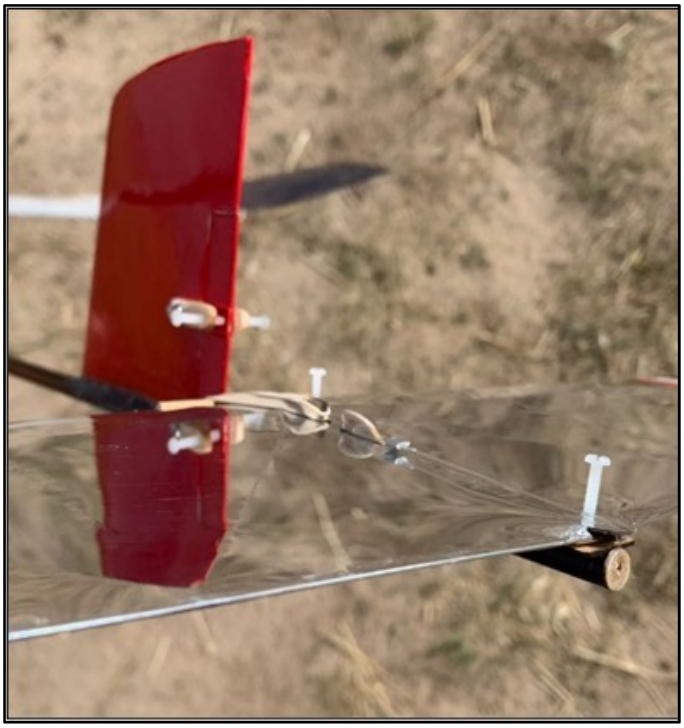
- Airfoil – Drela HT21 (5% symmetric)



- Span 17.4-inches
- Area 65.3 in^2
- Aspect Ratio 4.64

Vertical fin:

- Area 12.7 in^2
- Moving the fin forward offered the benefit of providing a clear path to route the DT line inside the boom then exit at the back through a drilled wooden plug.



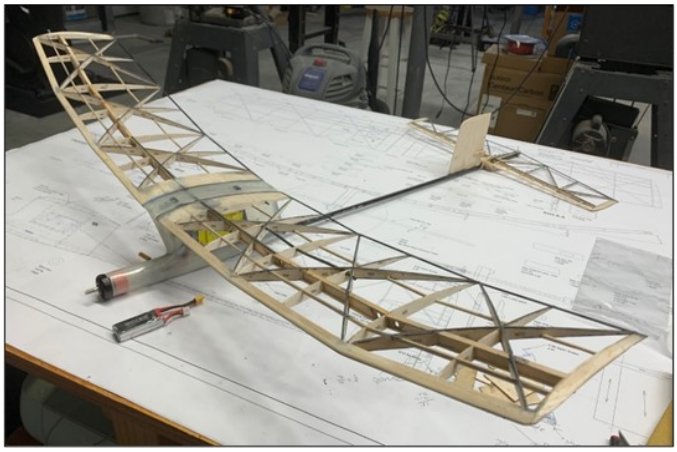
Power:

- Xing F2205 KV3300 motor
- 20A May Tech 32 bit high speed controller w/BEC
- 3D printed motor mount
- 6 ½-inch folding prop

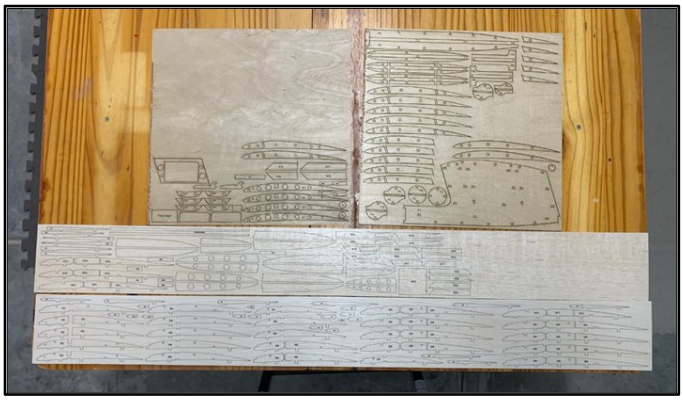
Covering:

- Stab ½ mil mylar
- Wing and fincovered with Parklite and Ultracote Lite

Flying weight 210 grams



Laser cutting was provided by National Balsa. This included parts for the model from 1/16-inch balsa and 1/32-inch plywood plus parts to make a plug for the pod's mold from 3/32 plywood. As National Balsa often does, the parts were cut and delivered to me about a week after they received my emailed cut file and the cutting and labeling were excellent.



Fiberglass molds were created for the pod. The nose is purposely longer than needed then shortened to balance the model. The plug used to create the molds is shown on the right.



Notes for a second Gem:

Time will tell whether this aero conglomeration works well or not. Either way, it's fun to try stuff. A few opportunities are apparent for reducing weight, however:

First, the covering and paint added 30 grams to the airframe. Don Deloach suggested using ¼ mil mylar for the wing and stab since, even without any covering, they were already quite stiff. I didn't have any so went with what I already had in hand. I also have this affliction that I want my models to look colorful. The ½ mil mylar that was used on the stab was bonded with a purple glue stick following a suggestion from John McGrath. It worked very nicely and John also recommends sealing the adhesive with the iron when shrinking the mylar.

Second, the 0.005-inch thick carbon strips used for rib stiffening were the thinnest I could find and were procured from CST. 0.003-inch would likely work fine and save some weight but I failed to locate a source. A nice project for this winter will be to attempt to layup, bag and strip my own from unidirectional carbon. We'll see how that works out.

Third, molding the pod from 2-ounce carbon fabric rather than fiberglass would save further weight and wouldn't require paint but, boy, is that stuff expensive!

Bernie, what a tour de force! After seeing the Gem climb, it's clear you hit the nail on the head. For those who haven't seen Bernie's masterpiece in the flesh yet, not only does it climb like nothing else, but Bernie's color scheme lights up when seen from below. Superb job, Bernie!

Live Sightings—Helicopter Edition



As the column in Punch used to go, "Let's Parler Franglais!" I'm not gonna get this right. Gazelle? Something by Aerospatiale, at any rate. That thing in the back looks more like a bow thruster than something on a helicopter, but that's just me.



Some sort of SH-60. There are so many variants that I give up after that. Probably not a Seahawk though, this far from the coast.

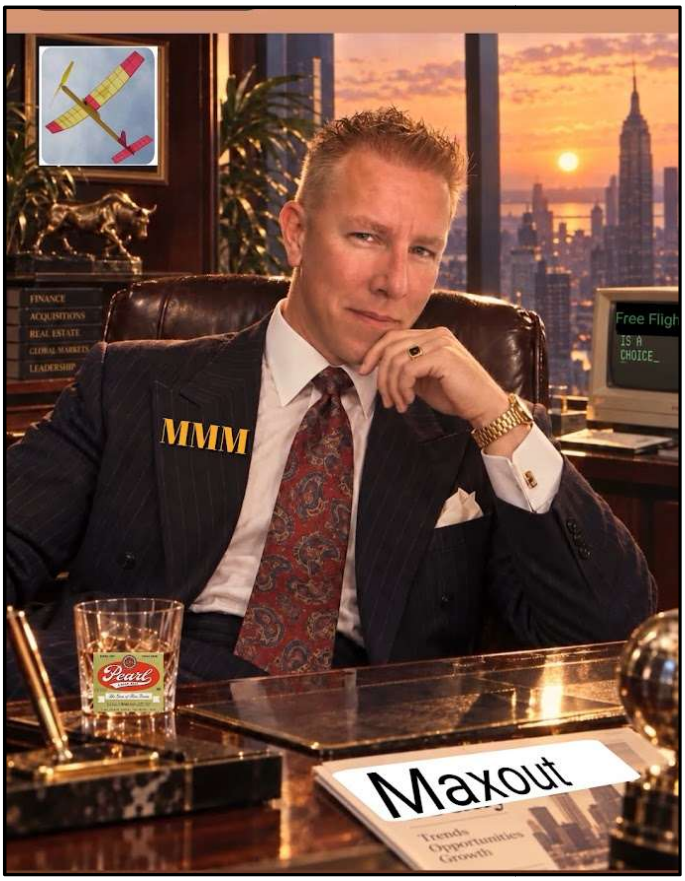
Kritter Korner



From Chuck: "A bull walked up to me while I was working on the clubhouse. He was just curious, as bovines are wont to be. His significant other was more interested in my antique bike."



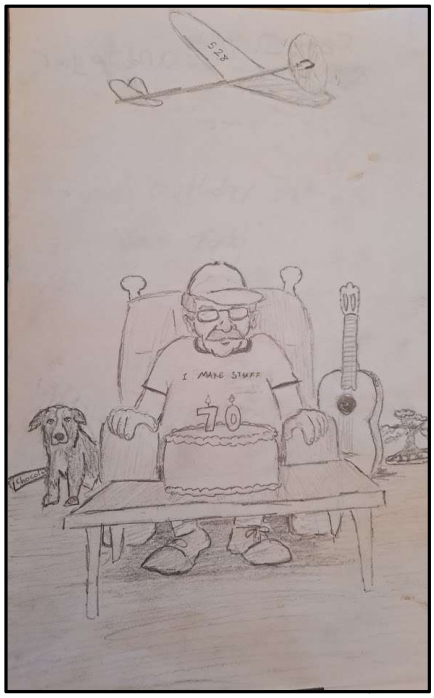
Definitely not Live Sightings. Prairie dog components gathered by Caleb and Paul Finn at the RMCs.



"I don't have much time for reading—but when I do, I read The Maxout."—World's Most Fascinating Modeler.

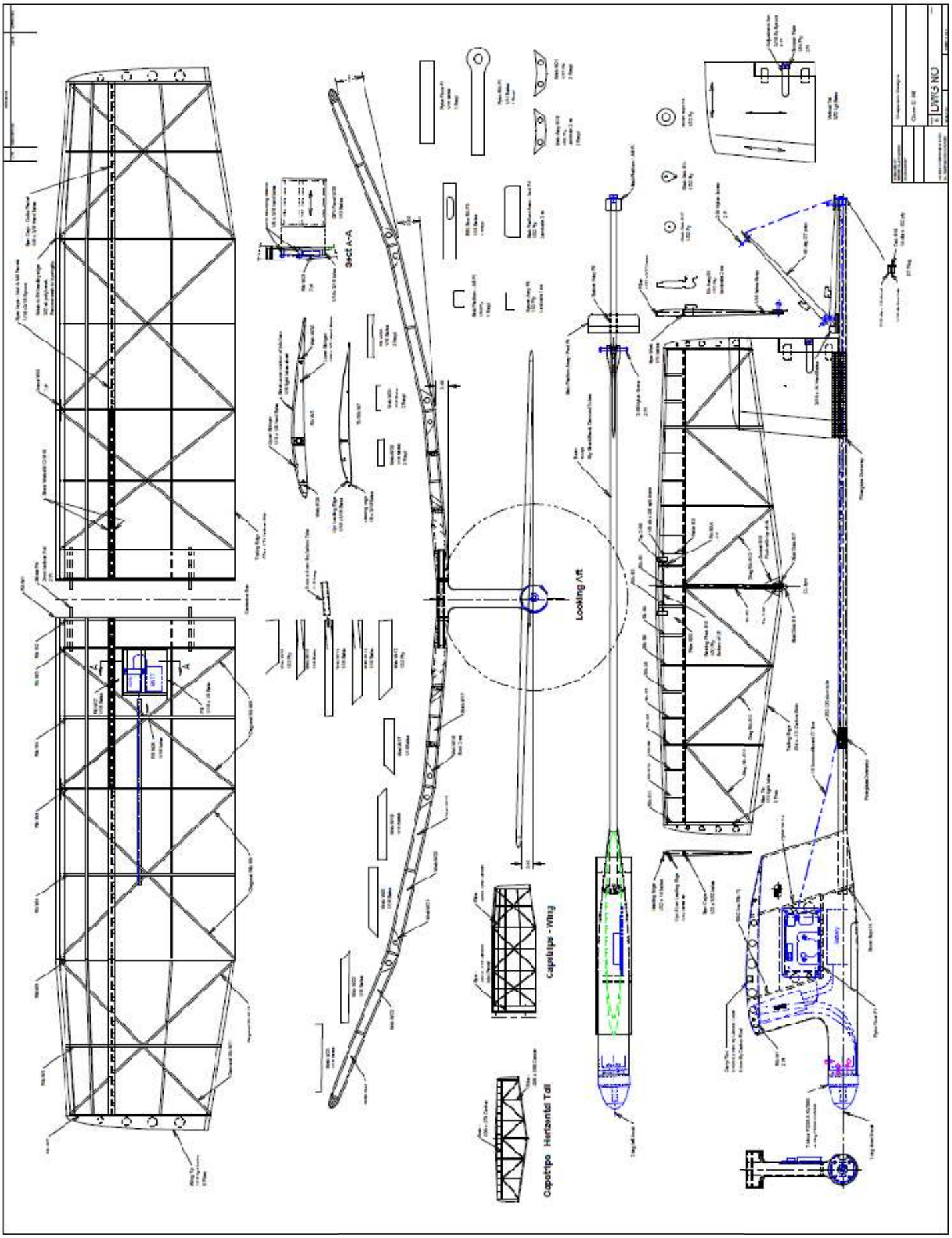


After seasons of preparation, the Clubhouse is better than ever. I'm guessing this puts the MMM club in the lead as far as on-field facilities are concerned. It's mounted on a trailer for towing, strapped down with chain ground anchors, steadied by German trailer struts, and equipped with custom-built stairs by Frank. This is just one of two portable Porta-Pottis that are now installed on our flying sites. Thank you, Chuck! (And Frank).



Randy Reynolds, as drawn by Todd's son on the occasion of Randy's 70th. "I make stuff" on the t-shirt. We miss you, Randy.

Bernie's Gem 36



Scramble Results

Entrant	Total Points	Overall Place	April	May	June	July	August	September	October	November
Frank Menanno	463	1	100	100	100	63		100		
John McGrath	381	2	63	87	60	100	71			
Don DeLoach	251	3			100		100	51		
Bill Groman	232	4	61		26	43	46	56		
Bernie Olson	179	5	44		28	21	29	57		
Karen Groman	172	6	34		22	34	31	51		
Sean McEntee	121	7	41	35	14	23	8			

Scramble Results through September. Who is this Frank Menanno, and how does he keep winning? Thanks to Jace for keeping score!

IF YOU WANT TO BECOME A MEMBER, OR IF YOUR PERSONAL INFORMATION CHANGES, PLEASE USE THIS FORM

Use this form and send it in regardless of how you pay

NAME_____

STREET ADDRESS_____

CITY/STATE _____ZIP_____

PREFERRED PHONE _____EMAIL:_____

AMA NO._____

DESIRED STATUS (CHECK ONE):

MEMBER____2025 DUES: Adult - **$45.00**
16-20 years - $10
(Under 16 yrs. old – FREE!)

NEWSLETTER SUBSCRIBER _____2025 RATE: $15.00 PER YEAR

SEND CHECK PAYABLE TO: MMM CLUB, C/O CHUCK ETHERINGTON
33946 GOLDFINCH DR.
ELIZABETH, CO 80107

Note: ***MMM also accepts PAYPAL for Dues, Contest Entry Fees, Etc.***

Paypal does charge a fee, so maybe add an extra buck to help us out.

The Magnificent Mountain Men (MMM) Free Flight Club Proudly Present Their 2026/2027 Indoor Contest Season

The 2026-2027 Indoor Free Flight season is underway! Please join us at Manitou Springs High School. Science Olympiad and TSA students are welcome! The MMM club members are happy to help assist with any questions the students may have. Sorry, NO R/C planes allowed.

Donation to MSHS is $5 to fly and **FREE** to spectate!

For Event Info Contact: **Sean McEntee** sean.p.mcentee1@gmail.com
For Info on Free Flight Planes: **freeflight.org**

Location: **Manitou Springs High School**
401 El Monte Pl
Manitou Springs, CO 80829
Time: **10 am to 4 pm**

NOTE: Once you reach the High School, drive around to the rear of the school for parking and access. Go down the steps to the door and call the phone # listed on the door to enter the building. These doors are to remain locked at all times, one of our fliers will let you in. This number may be different for each event depending on who the Contest Director is for that day.

Contest Dates:
November 8
December 13
January 10
February 14
March 14
April 11





















11/12/2024 TN

BUT WAIT, THERE'S MORE! The club also has some flying sessions at the Beth Eden Baptist Church in the Denver area throughout the year.
Located at: 2600 Wadsworth Blvd, Wheat Ridge, CO 80033
Contact John Christensen for more info: cloverdale1955@gmail.com