EL TORBELLINO

NEWSLETTER OF SAN DIEGO ORBITEERS FREE FLIGHT CLUB

FEBRUARY 2019

The Prez's Corner – *Mark Chomyn*

Well we're one month into the New Year and activity for our club seems on a bit of an upswing. Our year end awards banquet was well attended. The mood was full, spirits were high and the food was great. Attendees pretty much filled the room. For all those who attended, our thanks for supporting the club. If you weren't able to attend the banquet you missed a great time. But no fear, will do it again next year. A big thanks to Linda Piazza for arranging all the details at Filippi's.

Awards were given out to all outdoor and indoor winners from first to third place and overall. Our Orbiteer of the Year was Mike Jester. Mike was the high total point's flyer for both indoor and outdoor events. Congratulations Mike! Full results are posted elsewhere in this newsletter.

After awards came the raffle. Great prizes this year, I think everyone who was fortunate to win walked away very happy with their prize. One of the more interesting raffle items was an amphibious plane built some years ago. It had a wingspan in the 4 to 5- foot range with a fully planked fuselage and built up wing, stab and rudder and the covering looked to me like silkspan. By its size, it looked like it might be a weighty ship. But when I picked it up to take a better look it was very light for its size. Would make a real nice addition suspended from the ceiling of a model building area.

We closed out the event with the presentation of a pair of etched wine glasses to Don and Arline Bartick with a recognition plaque to Don for his service as our president for the past 13 years. We hope Don and Arline put those glasses to good (and frequent) use.

Our first indoor meet of the year in January was well attended. Events were A-6, P-18 and Phantom Flash. The entire east side of the gym was fully occupied by flyers and a group of spectators (aka VSS, very supportive spouses). There was never any dead air time. Planes were constantly being launched and timed.

We also had some Science Olympiad participants doing trimming flights for glider and rubber power events. Hopefully some of the young flyers will "get the bug" and continue in the hobby. You have to do some pretty good trimming and flying to place in the A-6 and P-18 events. It takes at least a 2-minute flight in P-18 and 3 minutes in A-6 to have a chance at placing.

After being away from indoor flying for a while I decided to get back in action. I spent two hours on the night before the event patching bug eaten holes in my three A-6 planes and my Phantom Flash. It took me the full time we're allotted in the gym just to get them trimmed. But I'm ready for next time.

Our first outdoor event at Perris was also well attended. So much so that some adjustments need to be made to the prize money award sheet. It didn't cover the total number of fliers (ten plus) for the P-30 event. Some quick on-the-field math by Linda Piazza and Mike Pykelny got us back on track.

Field conditions after recent rains weren't bad. Access road was very passable and field itself was not wet. We still have to deal with the mulch piles, but air that day was not too drifty so deep chases into the mulch dunes were not common. In the gilder event we had hand, catapult and even some towline assist

Planes, great to see that kind of variety in any event.

The month of February will be another busy month if you're an avid flyer. We have indoor and outdoor Orbiteer contests. The indoor event (Feb 3) is history as I write.

Our outdoor event Feb 24 at Taibi Field, Perris will feature Old Time/Nostalgia Rubber, Glider and Power. As an added bonus the San Diego Scale Staffel has a two-day Flying Aces Club (FAC) event Feb 16 -17 at Taibi Field. The January El Torbellino has an announcement and event listing for that contest. Please check it out, give it some thought, dust off those FAC models and come on down.

I'm hoping to have a Max-Out X ready for the event, but I'll need to burn some midnight oil to get it done. If I show up at the contest with bigger eye-bags than usual you'll know why.

That's it for now. See you at the field.

"Never let an airplane take you to someplace your brain didn't get to five minutes earlier."

-Anonymous, from RC Universe website

Mark

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CALENDAR 2018 CONTEST RESULTS

OUTDOOR EVENTS

1. **Old Time Rubber/Nostalgia Rubber**

John Hutchison	8
Mike Jester	6
Mark Chomyn	5
Mike Pykelny	4
Don Bartick	4
Lance Powers	2

2. **Power**

Greg Hutchison	3
Mike Pykelny	3

3. **Glider**

Greg Hutchison	11
Mike Pykelny	8
Mike Jester	6
Mark Chomyn	2
John Hutchison	1
Don Bartick	1
Lance Powers	1

4. **P-30**

Don Bartick	12
Greg Hutchison	10
Mike Jester	7
Mark Chomyn	6
John Hutchison	6
Mike Pykelny	6
Don Brent	3
C. M. Kim	2
John Alling	1

5. **Coupe**

Mike Jester	10
Mike Pykelny	10
Greg Hutchison	9
John Hutchison	7
John Alling	3
Mark Chomyn	1

Top 3 outdoor point totals –

G. Hutchison 33

M. Pykelny 31

M. Jester 29

INDOOR EVENTS

1. **A-6**

Richard Wood	12
Mike Jester	11
C.M. Kim	10
Don Bartick	9
John Hutchison	8
Greg Hutchison	6

2. **Limited Penny Plane**

Mike Jester	20
Richard Wood	13
John Alling	11
Don Bartick	9
Greg Hutchison	8
Don Brent	6
John Hutchison	5

3. **Catapult Launched Glider**

Richard Wood	4
Don Bartick	2
Mike Jester	1

4. **P-18**

Don Brent	11
Don Bartick	7
John Hutchison	7
Mike Jester	7
Greg Hutchison	2
Nick Panousis	2
Richard Wood	2

Top 3 indoor point totals –

M. Jester 39

R. Wood 31

D. Bartick 27

Combined Indoor & Outdoor Top 3 point totals –

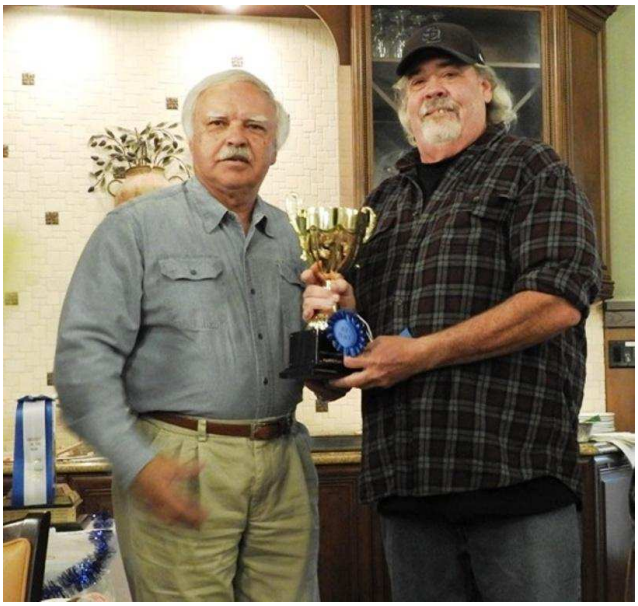
M. Jester 68

G. Hutchison 49

D. Bartick 44

CALENDAR 2018 CONTEST RESULTS
- Photos by Arline Bartick

Mike Jester - Orbiteer of the Year



Greg Hutchison - Power

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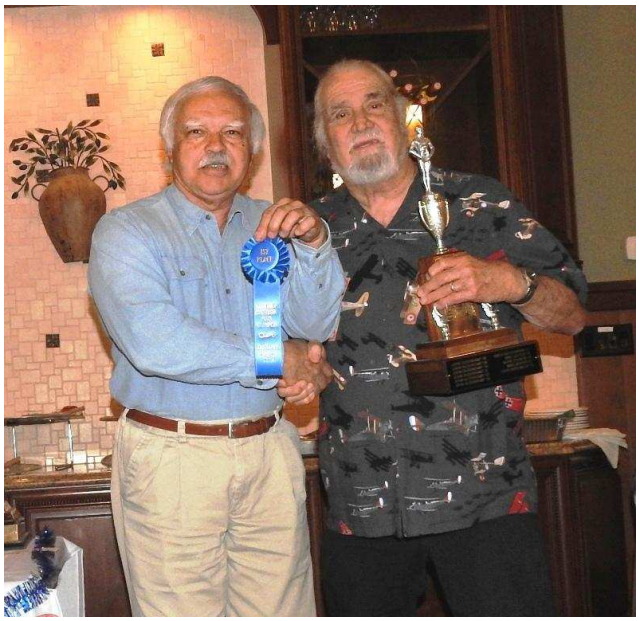


John Hutchison - Old Time **/** Nostalgia Rubber

Don Bartick – P-30

CALENDAR 2018 CONTEST RESULTS (Continued)
- Photos by Arline Bartick

Mike Pykelny – Coupe (Determined by coin toss)

Mike Jester - P-30

Don Bartick – Receiving Service Award for 13 years as President of the Orbiteers

Mike Jester – A-6

Trimming Outdoor Rubber Powered Models

By Mike Jester

There are many ways to trim an outdoor rubber powered free flight model airplane. Trimming such a model is a challenge because it must be stable in pitch, yaw and roll under varying conditions in different phases of flight without any active controls, unless you are flying a multi-function F1B (Wakefield) or F1G (coupe). The model encounters high power at launch, medium power during cruise, and no power during glide. The model must also be able to climb to a maximum altitude without power stalling, recover if upset by turbulence, and glide slowly in a circle without spiraling into the ground. Here is an explanation of my trimming method.

1) Set the CG at the location recommended on the plan with the prop and the rubber motor installed. Optimum rubber motor sizing for a particular model in terms of cross-section and weight is a subject which is beyond the scope of this article. Keep in mind that if you change the weight of the rubber motor this will usually affect the location of the CG. If the model has a movable wing or pylon, move the wing or pylon rearward to move the CG forward. Move the wing or pylon forward to move the CG rearward. If the wing or pylon is not movable, add weight to one end of the fuselage/tail boom to get the CG right in the correct location. Scale models and other models that have a wing which is not movable longitudinally typically require some nose weight to get the CG in the correct location. If the CG is too far forward it will be difficult to trim the model for a good slow glide. If the CG is too far aft it will be very sensitive in flight, especially powered flight, to small changes in down thrust, small changes in stab incidence, and warps, and will exhibit poorer duration in gusty conditions. For scratch-built scale models with no published plan, locating the CG about 33% of the wing chord aft of the leading edge (LE) is a good starting point. Don DeLoach published a formula for calculating the optimum location of the CG for a specific scale model which seems to come out aft of 33%. P-30's and coupes typically have a CG somewhere in the 50-70% range.

The Author Launching his Candy G Coupe at Otay Mesa, California

2) Start out with 3-4 degrees of down thrust and about 1 degree of right thrust. Down the road, as you wind nearer to maximum breaking turns on your rubber motor, if you have too little down thrust your model may power stall and crash. Therefore, you should start out with some down thrust because it will eventually be needed. You can always remove excessive down thrust to increase the climb. You will need some right thrust

to help induce a turn in the climb. If you have too much right thrust, your model may turn too sharply when launched, even with a low number of turns on the rubber motor. You may have to add right thrust to prevent the model from torqueing left into the ground when launched at high torque.

3) I don't do initial test glides very often unless the model has a folding prop. I start by putting in a test flight with a low number of turns, e.g. 100, and gradually increase the number of turns as I make adjustments. If you can, do your test flights over grass to lessen the chances of damage to your model. Initial test flights of a scale model that took a long time to build and detail should be conducted over alfalfa or some other very forgiving vegetation.

4) Some positive decalage is needed so that the model will recover from a nose down attitude if upset by turbulence, etc. and for a good glide. Decalage is a French word. In the context of model airplanes it refers to the difference in incidence between the wing and the stab. Typically the wing will need a little positive incidence and the stab will need a little negative incidence. If the model dives, increase decalage, usually by raising the trailing edge (TE) of the stab with a shim of a suitable thickness, e.g. 1/64 inch. If the model stalls, reduce decalage, usually by lowering the TE of the stab. Less often I will adjust the incidence of the wing, depending on the configuration of the model. For example, if I need less decalage and the TE of the stab has already been lowered as much as possible, I might shim the TE of the wing to raise it very slightly.

The Author Launching His Fairchild 24 at Perris, California

5) Turn is controlled by side thrust, rudder and stab tilt. They work in varying amounts at different stages of the flight. Right thrust prevents the model from rolling left into the ground when launched at very high torque. It also helps the model climb in a spiral pattern. Very little right rudder is all that is desired in most cases. Avoid too much right rudder as it can cause the model to spiral into the ground in a right turn soon after launch. Stab tilt helps the model glide in a circle. A model like a P-30, with a prop that free wheels after the motor run, should be set up to climb, cruise and glide right. The free-wheeling prop induces a right turn in the glide. Viewing the model from behind, the right end of the stab should be raised about a quarter inch from level. Stab tilt is very effective at low speed, e.g. during the glide. It does not seem to have much effect during the power phase of the flight. I generally trim models with folding props to fly a right-left pattern in which climb and cruise are performed by circling right and glide is performed by circling left. In this trim the left end of the stab is raised to induce a left glide circle. For some reason, low wing WWII fighters seem to perform best flying a left-left pattern. Stab tilt does not look good on a scale model so rudder is typically used on such models to control the turn in the glide.

6) Once the model has a nice climb, cruise, and glide, usually only thrust line adjustments are used to offset increasing torque that results from increasing the number of turns on the rubber motor. The purpose of down thrust is to prevent the model from going into a power stall, or worse, looping, when launched at high torque. Down thrust is needed to offset decalage. If the model climbs but stalls mildly during the climb, the addition of a small amount of side thrust will often cure the problem by pulling the model into a turn so that it won't stall. I gradually increase turns, e.g. from 100 to 200, 300, 400, 500, etc. and try to make adjustments between flights, as needed. Sometimes after making some initial adjustments you will find that no additional adjustments are needed until you begin to approach 85% of the maximum breaking turns for the rubber motor. That percentage is typically about as high as I wind for sport flying. In P-30 and coupe contests, I try to wind even higher.

The Author Launching His Jabberwock at Buckeye, Arizona

7) Only make one change at a time after each flight. If you make two adjustments between flights, then you don't know which was effective to cause the new behavior in the next flight. It could be some combination of the two. The changes should be small incremental changes, e.g. 1 degree of right thrust to 1.5 degrees of right thrust, not to 3 degrees of right thrust in one step. Another example would be swapping in a 1/32-inch shim for a 1/64-inch shim instead of swapping in a 1/16-inch shim for a 1/64-inch shim.

8) Tiny amounts of weight in the form of clay ballast can be added to the nose or tail to adjust the glide, i.e. in order to remove a slight stall or to alleviate a slight nose down attitude, without changing the climb pattern, as would be the case if decalage were adjusted. Weight can also be added to a wing tip to adjust the size of the glide circle if adjusting rudder or stab tilt is too inconvenient or too ugly. Usually adding ballast to a wing tip will not affect the performance during climb and cruise.

9) Gurney flaps can be added to various flying surfaces as discussed in an article I wrote that was published in the October 2018 edition of this newsletter. They are particularly useful in trimming scale models where options for adjusting the angles of flying surfaces are more limited than with sport models. I don't glue tabs to the TE of various flying surfaces to trim a model. They can deflect and don't look good on a scale model. Gurney flaps are easier to install, more durable, and less obtrusive than tabs.

10) Wash-out and wash-in on various sections of the wing are normally built-in during construction of the model. I don't usually adjust these during trimming. Equal amounts of wash-out on the wing tips can help prevent the model from spiraling into the ground if one wing tip gets low. If the model is spiraling down or otherwise showing a tendency for one wing-tip to fly too low, check to see if there are unequal amounts of

wash-out on the wing tips. Sometimes this can be corrected at the field with some brute twisting. Other times it will be necessary to steam a tissue covered wing or apply a heating iron to a plastic film covered wing in order to equalize the wash-out on the wing tips. Wash-in on an inner wing section can help hold the wing level on a model, especially during the power phase. It can be increased at the field by gluing a small balsa wood wedge to the outer portion of the underside of the TE of the appropriate wing section. Typically a model that is trimmed to climb right would benefit from a little wash-in on the right inner wing section. You can glue on a wedge with Duco cement and remove it with acetone if it doesn't improve flight performance.

11) Most outdoor rubber powered models are built primarily of balsa wood. The flying surfaces of a balsa wood model can develop warps over time, some of which cannot be readily observed. These warps are usually due to changes in humidity and/or temperature. They can require you to re-trim a model that flew beautifully a few months ago but not so well today.

12) Finally, always wind to torque, not to turns. Both Tan II and Tan Super Sport rubber vary a great deal in terms of the energy they can store depending on the batch, the number of previous windings, the aggressiveness of previous windings, the temperature at the flying site, etc. Therefore, the number of turns on a rubber motor is not an accurate predictor of how the model will fly. A coupe with a first 12 x 1/8-inch 10-gram rubber motor may power stall when launched with 380 turns. Yet a second 12 x 1/8-inch 10-gram rubber motor wound to 380 turns may cause the same coupe to climb too weakly and miss out on a max. It is easy to make several torque meters suitable for use in winding rubber motors for models in different size ranges. I have a log in a notebook which shows the rubber motor size and launch torque for each of my models. Winding to a specific torque is the best way to get consistently good flights with a well-trimmed model.

The Author Watching His Square Eagle P-30 Climb Out at Perris, California

I may have made some misstatements as to cause and effect in one or more of the steps described above. There are certainly other ways to trim outdoor rubber powered models. Some are probably superior to mine. For example, some fliers start trimming a scale model by performing test glides after installing a

dummy nose block without a prop. The dummy nose block weighs the same as the actual nose block with the prop.

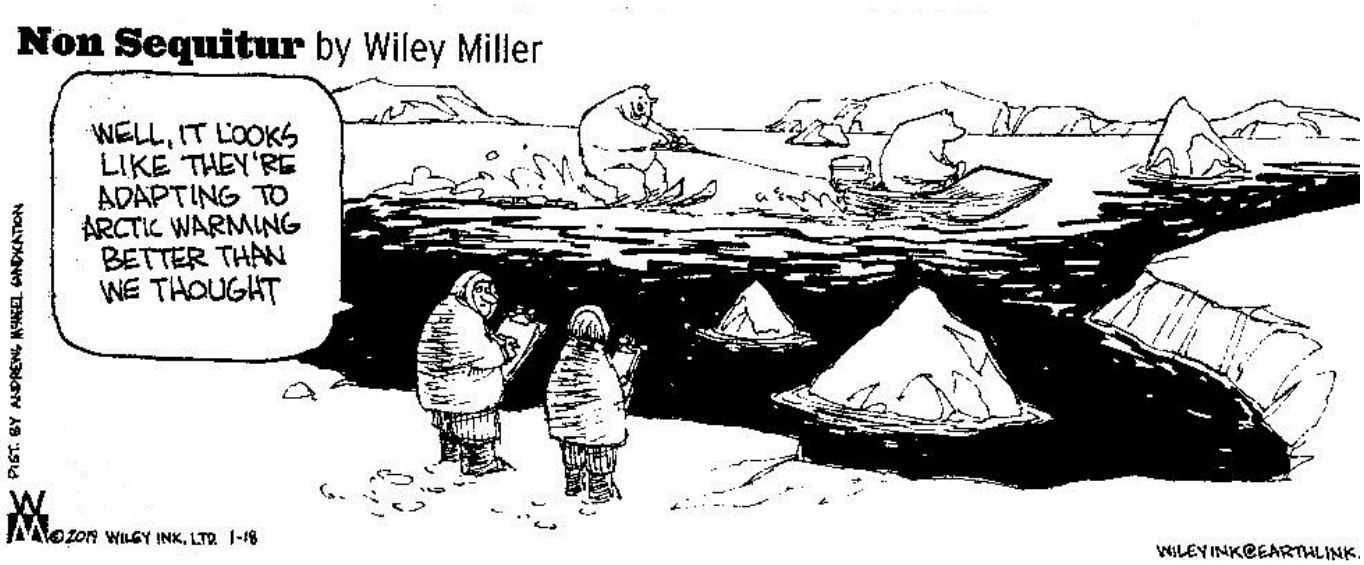
If you don't already have a copy, I recommend that you purchase the book by Don Ross entitled "Rubber Powered Model Airplanes" which sells for $14.95 on Amazon. He covers a wide variety of topics, including an entire chapter on flight trimming. I would rather you purchase this book from easybuiltmodels.com for the benefit of that small business that supports our hobby. An even better resource for trimming advice is the book by William F. McCombs entitled "Making Scale Model Airplanes Fly." It bears a 1981 copyright date and appears to have been typed at home on a Smith Corona type writer. However this book is very well written, very organized, and easy to understand. The numerous sketches in the book are very helpful in explaining the concepts covered by McCombs.

Here is an excerpt from the 10/2018 edition of the NFFS Digest that tells how to purchase the McCombs book:

> A GREAT BOOK! The late Bill McCombs' "Making Scale Models Fly," also non-scale types. The whole story under one cover for all types and aspects. Selecting-Improving-Constructing-Flying-Troubleshooting. Rubber-Gas-C02-Electric-Jet. Monoplane-Multiplane. Indoor-Outdoor. Tractor-Pusher-Canard-Tailless-Helicopter. No other book has all this reliable information. $18.95 + $6 S&H. Susan Creamer, 1925 Clark Trail, Grand Prairie, TX 75052. You may pay by Paypal at <creamer22@gmail.com>

Recently I observed an expert flier at our Perris flying field take a coupe he had just finished building, launch it once or twice, make a few tweaks in terms of trimming, and then proceed to put in three consecutive maxes and win the coupe contest. The climb and glide of this model were perfect in my opinion. On many occasions I have asked this expert and other experts for advice on trimming one of my models. Frequently such experts will inspect your model for warps, etc. They have the uncanny ability to observe one flight, and tell you not only what to adjust, but the precise amount of adjustment to make that will significantly improve the flight performance of your model. I guess that's why they are called experts. Don't be reluctant to ask for trimming advice from an expert! They are usually more than willing to lend a helping hand to a fellow flyer.

Orbiteers



Orbiteers - Indoor Contest Results – Feb 3, 2019

P-18

Flier	Best 2 of 5 flights		Total	Rank
John Hutchison	136	134	270	1
Don Bartick	132	75	207	2
Nick Panousis	100	104	204	3
Don Brent	32		32	4

Limited Penny Plane

Flier	Best 2 of 5 flights		Total	Rank
John Alling	286	274	560	1
John Hutchison	252	261	513	2
Don Bartick	249	258	507	3
Greg Hutchison	235	261	496	4

William Scott, John Hutchison and Greg Hutchison on the flight line at Grossmont College (Upper Gym)
Photo by Arline Bartick

Orbiteers - Indoor Contest Results – Feb 3, 2019 Picture Page

Scale Staffel No-Cal Scale event

Don Bartick with Penny Plane at launch

John Alling after a particularly good flight

Walter Ainslie with No-Cal Scale

← Nick Panousis with P-18

Photos by Arline Bartick

January 27th SDO Monthly

We had one of our best turnouts in several months. Fourteen (14) flyers, plus others, who flew but did not participate in our contest, which had warm weather, with little drift.

Linda Piazza served up delicious brownies.

Next contest will be on February 24TH featuring Nostalgia/Old Time rubber, Power and, Glider events. Bring a friend!

Orbiteers:

P-30
Lance Powers
Greg Hutchison
John Alling
Mark Choym

Glider:
Mike Pykelny
Greg Hutchison

Power:
Don Bartick

Top Three flyers:

Clint Brooks
1st place P-30
2nd place Power
$25.00

Stan Buddenbohm
1st place Power
2nd place Glider
$16.00

Don Bartick
3rd place P-30
3rd place Power
$15.00

More flyers, bigger payouts.

MP

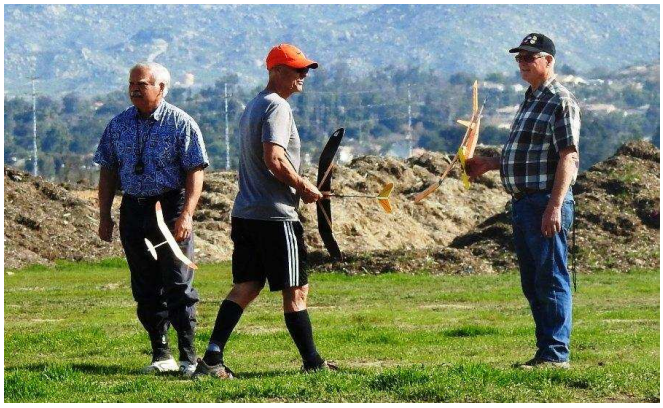
Mike Pykelny

Stan Buddenbohm

Photos by Arline Bartick

Orbiteers – Outdoor Contest Results – Jan 27, 2019 Picture Page

Photos by Arline Bartick



-------- Original Message --------
Subject: Indoor Nationals in Arizona!

The big news in the West is that the U.S. Indoor Free Flight Nationals are coming to the Round Valley Dome at Eagar/Springerville, Arizona, May 29-June 2, 2019. The RVD is a spectacular 104-foot high football stadium that's approximately 400 feet in diameter.

The FAC event schedule is substantial: Jet Catapult Scale, FAC Scale, FAC Peanut, Hi-Wing Peanut, Dime Scale, Embryo, Golden Age combined, No-Cal, Phantom Flash, Coconut Scale, Mooney Bostonian, USIC No-Cal. And Mass Launches: WWII No-Cal, Greve/Thomp. No-Cal, WWI, Coconut Scale, Greve/Thomp., WWII, Phantom Flash, Flying Horde. Not that all events have been Kanone-approved by GHQ.

There's also the usual assortment of AMA Indoor events such as Limited Pennyplane, Ministick, HLG, Catapult Glider, Easy B, etc. A smorgasbord of Indoor fun!

The twin villages of Eagar/Springerville are extremely excited to have our prestigious event in town. There are four reasonably priced hotels and 4-5 restaurants/fast food within 2 miles of the flying site. The nearest major airport is Albuquerque (ABQ) 3 hours 15 minutes' drive to the east. This is a remote area in the beautiful White Mountains, with National Forest, fishing, trails and tourist sites nearby. The weather in late spring at 7000 feet not at all like the dry desert areas in Arizona. Expect lows in the 50s and highs in the 70s-low 80s.

Based on strong response from an event survey conducted last fall, FAC events have been granted a very large percentage of the flying hours. Please show your support by attending this Nats. This is a rare opportunity to fly in a huge football stadium. The field turf will be in place, making for soft landings. This is likely to be the largest FAC indoor event in many years...don't miss it!

Pre-entry with be available soon on the AMA website, <www.modelaircraft.org>.

Don DeLoach
Contest Manager

P.S. Note the special events for Coconut Scale, Coconut Mass Launch and Walt Mooney 14g Bostonian, all Kanone approved.

<- Round Valley Dome Contest site
Eagar/Springerville, Arizona

AMA/NFFS Indoor Free Flight Nationals

May 29 - June 2, 2019 • Round Valley Dome • Eagar, Arizona

Wednesday		Thursday		Friday		Saturday		Sunday
5/29/19		5/30/19		5/31/19		6/1/19		06/02/2019
	6-7	HLG, Standard Catapult, Unlimited Catapult, F1N, FAC Jet Cat. Scale.	6-7	F1M, Limited Pennyplane, Pennyplane, A-6, Manhattan Cabin, Electric, NFFS Towline. FAC Scale , FAC Peanut, FAC Hi-Wing Peanut, FAC Dime Scale, FAC Embryo, FAC Golden Age combined, FAC No-Cal, FAC Phantom Flash, Coconut Scale, Mooney Bostonian, USIC No-Cal, AMA Bostonian, P-18, P-24. ***Mass Launches: FAC WWII No-Cal [10 am], FAC Greve/Thomp. No-Cal [11 am], P-24 [12 pm].***	6-7	F1M Limited Pennyplane, Pennyplane, A-6, Manhattan Cabin, Electric, NFFS Towline	6-7	FAC Scale , FAC Peanut, FAC Hi-Wing Peanut, FAC Dime Scale, FAC Embryo, FAC Golden Age combined, FAC No-Cal, FAC Phantom Flash, Coconut Scale, Mooney Bostonian, USIC No-Cal, AMA Bostonian, P-18, P-24. ***Mass Launches: P-18 [9 am], WWI [10 am], Coconut [11 am].***
	7-8		7-8		7-8		7-8	
	8-9		8-9		8-9		8-9	
	9-10		9-10		9-10		9-10	
	10-11		10-11		10-11		10-11	
	11-12		11-12		11-12		11-12	
	12-1		12-1		12-1		12-1	F1M, Limited Pennyplane, Pennyplane, A-6, Manhattan Cabin, Electric, NFFS Towline
Pre-registration, contestant packet pickup in Tom's RV, Dome parking lot.	1-2	F1D, F1R, Int. Stick, Hand Launched Stick, ROG Cabin, Easy B, A-ROG, Ministick, F1L, Helicopter, Ornithopter. ***Mass Launch: Ministick [6 pm].***	1-2	F1D, F1R, Intermediate Stick, Hand Launched Stick, ROG Cabin, Easy B, A-ROG, Ministick, F1L, Helicopter, Ornithopter.	1-2	FAC Scale , FAC Peanut, FAC Hi-Wing Peanut, FAC Dime Scale, FAC Embryo, FAC Golden Age combined, FAC No-Cal, FAC Phantom Flash, Coconut Scale, Mooney Bostonian, USIC No-Cal, AMA Bostonian, P-18, P-24. ***Mass Launches: FAC Greve/Thomp. [3 pm], FAC WWII [4 pm], FAC Phantom Flash [5 pm], FAC Flying Horde [6 pm].***	1-2	
	2-3		2-3		2-3		2-3	
	3-4		3-4		3-4		3-4	
HLG, Standard Catapult, Unlimited Catapult, F1N, FAC Jet Cat. Scale.	4-5		4-5		4-5		4-5	
	5-6		5-6		5-6			
	6-7		6-7		6-7			
	7-8		7-8		7-8			

V2.0

The Flying Site: Round Valley Dome is 104' at the peak and 99' at the 10-meter circle, making it an AMA Category III. It has three large skylights providing ample natural light (sunrise on 5/30 is 5:06 a.m., sunset is 7:23 p.m.).

Official Flying: Study color-coded launch windows carefully. Official flights in a given event must be made within it's colored window ONLY. Need not finish event on same day started.

Test Flying: All model types may be flown at any time during the contest beyond the 10-yard lines and walls behind the endzones. The ceiling is about 50 feet high at the 10-yard lines.

Table lighting: Bring your own lamps, long extension cords, and power strips.

Tables: There are about 15 tables plus chairs available on a first come, first served basis. If you are driving to Eagar please plan to bring your personal tables and chairs.

Dome lighting: Test flying may be available after 8 pm. If you plan to fly after dark you must provide your own spotlights, headlamps, flashlights, etc.

Steering: Helium will be available for a fee.

Static Judging: FAC Jet Catapult Scale - 5/30, 8-9 am. FAC Scale, FAC Peanut, Hi-Wing Peanut, Bostonian, Mooney Bostonian, and Coconut - 5/31, 1-3 p.m.

Turf: If field turf is in place ROG events will use tables for ROG, or may be hand-launched (CD's discretion).

Mooney 14-g Bostonian: Eligible designs: Back Bay Bellanka, Hyanis Helio, Revere Speedster, Nieuport Beech, Boston Found, Plain Jamaica Plane, Old Howard, Bostonian Beaver. All AMA rules apply, plus 14g minimum weight, and no deviations from plan except rear hook may be moved and any 6" prop used. Original airfoils and wood sizes must be retained and surfaces double covered.

Rubber Mass Launches: SPECIAL PROTOCOL FOR THE NATS - There will be no *signal to wind* for the first round. Be wound and ready to launch at the appointed time in the center of the arena. Two rounds maximum in FAC events (approval was granted by FAC-GHQ); single round in all others.

Coconut Scale Rules: Recognizable rubber powered scale model with minimum 36" wingspan (monoplanes) or 30" (multi-wings). Mooney scale judging from a 10 foot distance. Mooney flight rankings, ROG, best single of three flights. One ounce minimum weight (less rubber). Tiebreaker: best static ranking. (Note: Coconut and Coconut Mass Launch have each been granted Kanone status by FAC-GHQ.)

Awards: GREY ~1:30 p.m. 5/30; YELLOW ~8:30 p.m. 5/31; GREEN ~12:30 p.m. 6/2; BLUE ~5:30 p.m. 6/2.

Adult Grand National Champion: Choose up to 6 events before flying any. Three must be official AMA events. 5-4-3-2-1 points for 1st-2nd-3rd-4th-5th place. Tiebreaker: points score in all other events apart from your Grand Champ selections.

Youth (Junior/Senior) Grand National Champion: Choose up to 6 events before flying any. At least 3 must be official AMA events. 5-4-3-2-1 points for 1st-2nd-3rd-4th-5th place. Tiebreaker: points score in all other events apart from GC selections.

Rubber Category Champion: Need not make event selections before you fly. Unlimited number and any mix of AMA, FAI, NFFS, FAC rubber events; 5-4-3-2-1 scoring.

Glider Category Champion: Need not make selections before you fly. Unlimited number and any mix of AMA, FAI, NFFS, FAC glider events; 5-4-3-2-1 scoring.

FAC Category Champion: Need not make event selections before you fly. Unlimited number and any mix of FAC + Coconut events; 5-4-3-2-1 scoring.

Accomodations (all within 5 minutes of the flying site): Rode Inn & Suites 866-538-0154, and Ej Jo Motor Inn 866-925-9754 (mentioned AMA for $74 rate), Reed's Lodge 844-387-9551, Best Western 866-925-7881.

Registration and Entry: AMA website, <modelaircraft.org>.

Contacts: Tom Gaylor, Event Director, <wtgaylor1@gmail.com>; Don DeLoach, Contest Manager, <ddeloach@comcast.net>.

2019 OUTDOOR FLYING SCHEDULE

- - - - -

All are AMA Sanctioned & National Cup Events
(Contests at Perris CA unless otherwise noted)
(All Contests include E36, Power, & HLG/CLG)

Feb 24 - **Old Time Nostalgia Rubber**

Mar 17 - **Coupe**

Apr 14 - **P-30 Memorial (Hot Box)**

May 17-20 Dual Club Contest, Lost Hills CA

May 18-19 Scale Staffel Constest*

May 26 - **Old Time Nostalgia Rubber**

June 23 - **Coupe**

July / August - No Club Outdoor Contests

2019 INDOOR FLYING SCHEDULE

Mar 3 - Catapult Glider, P-18 & Embryo*

Apr 7 - A-6, P-18 & Phantom Flash*

May 5 - Limited Penny Plane & No-Cal*

June 2 - P-18 & Embryo*

July 7 - A-6 & Phantom Flash*

Aug 4 - Limited Penny Plane & No-Cal*

Sept 1 - P-18 & Embryo*

***Scale Staffel Event**

ORBITEERS MEMBERSHIP DUES

Annual Membership - $20
Lifetime Membership - $250
Non-Member Newsletter Subscription - $15
Junior Members 16 years old or younger - Free

Submit Dues to Club Treasurer:
Howard Haupt
3860 Ecochee Avenue
San Diego, CA 92117-4622

THE FINE PRINT **THE FINE PRINT**

El Torbellino is the official newsletter of the San Diego Orbiteers, an Academy of Model Aeronautics (AMA) Charter Club (#1113) and a California not for Profit Corporation. This newsletter is sent monthly to all paid members, selected exchange and magazine editors. Non-Members may subscribe at $15.00 per year within the U.S.A., offshore price will be adjusted to reflect the postage required. Materials from El Torbellino may be reproduced on an unlimited basis by other publications, but proper credit is requested.

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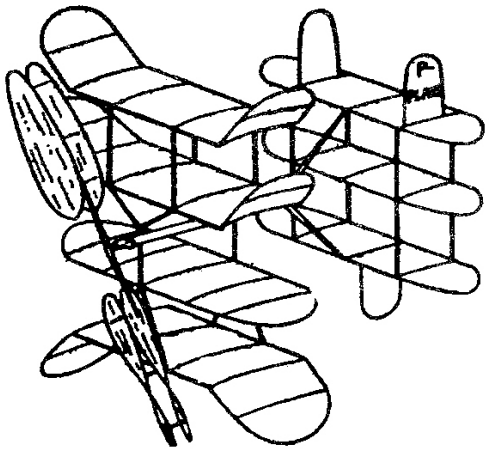


2019 Southwest Regionals Report - Don Bartick

Arline and I attended the Southwest Regionals January 19th – 20th in Eloy, AZ. This contest has been going on continuously for over 60 years. I first attended it when I was in high school. At that time, such notable flyers as San Diego's Denny Davis was flying his Hogan series. Attendance was in the hundreds. Oh, the good ole days. This contest was always well run with Al Lidberg at the helm. Al has since passed on and his son Chris has taken over doing an equally good job. Attendance was moderate in concert with today's contests. The weather was beautiful. Temperatures migrated between the 50's to the 70's. The wind held under 5 MPH. As for my flying, I came away with 2nd place in P-30. Maxed out and needed only to put in a decent fly-off flight to win. It was the end of the day and I was rushed to get in the flight before the contest ended for the day. In the rush, the fully wound motor slipped out of my hand while attaching the prop. Boom, there went the fuselage and my chances for 1st. One problem with the Gizmo Gizzer front end is there no way to hold on to the attachment piece that connects to the Gizmo other than using your hand. I also flew my new E-36. This event had a large participation. I put in 4 maxes at 10 second motor runs. But the 5th flight with a 5 second motor run was launched wrong and I didn't get the needed altitude for a decent flight. Dropped the flight and didn't place. Oh well, we had lots of fun.

2019 Issaacson Winter Classic - Lost Hills

Photo by Mike Pykelny

Liquid Battery Promises Safe Energy-Dense Power for Electric Aircraft

> LIQUID RECHARGEABLE BATTERY PROVIDES NONEXPLOSIVE ENERGY

> PROMISES HIGHER ENERGY DENSITY THAN LITHIUM-ION BATTERIES

Graham Warwick Atlanta

Imagine an electric aircraft that can be refueled like any other, not with aviation gasoline or kerosene, but with energy-storing fluids that can be recharged after each flight. The fluids are immune to thermal runaway and the risk of fire that comes with lithium-ion (Li-ion) batteries.

NASA is assessing the viability of this early-stage rechargeable liquid battery technology. The agency is researching the integration of nano electrofuel (NEF) flow batteries with rim-driven electric motors to produce a safe, clean and quiet propulsion system for aircraft.

The nonexplosive energy storage technology has been incubated by NASA Armstrong Flight Research Center under the Aqueous Quick-Charging Battery Integration for Flight Research (Aquifer) project. NASA Glenn Research Center is co-principal investigator.

In an NEF battery, positively and negatively charged fluids are pumped through a flow cell. Inside the cell, the water-based fluids flow on opposite sides of an ion-exchange membrane, producing an electric current in the same way a fuel cell does. Energy storage capacity is limited by tank volume, not cell size, and power is a function of the membrane area.

The NEF flow battery is being developed by Argonne National Laboratory, Illinois Institute of Technology and its spinoff startup Influit Energy. The technology suspends nanoparticles of battery-active materials in a water-based liquid electrolyte that can be charged and discharged multiple times in custom-designed flow battery cells.

The technology enables the liquid to be charged in one device and used in another, decoupling energy and power. Once charged, the fluids can be stored like aviation fuel, allowing rapid refilling of tanks rather than slower recharging of batteries between flights. Aircraft tanks can be any size and shape. The liquid is safe, nonflammable, and can be used to cool the battery and motor.

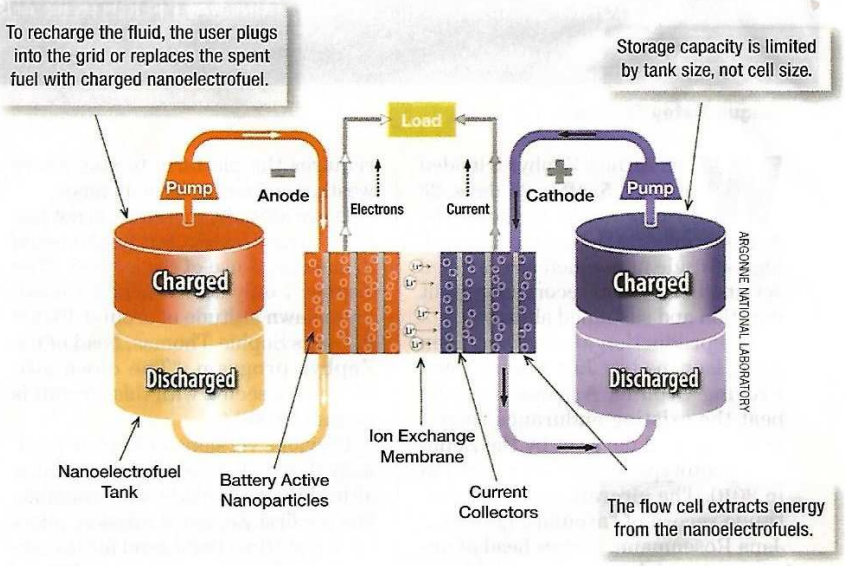
Flow batteries are not new, but previous designs had low energy densities because of the limit on how much energy-storing material could be dissolved in a pumpable liquid. Influit says surface treatment allows nanoparticle concentrations up to 80% by volume. As much as 65% of an NEF battery can comprise active material compared with 35% for a solid lithium-ion battery.

This promises energy densities more than 1.5 times higher than Li-ion batteries in the near term. Presenting the by fiscal 2020, for a system-level specific energy of 125 Wh/kg or 350 Wh/L, which outperforms Li-ion.

With industry cost-sharing, the power goal would rise to 200 mA/cm², for a specific energy of 530 Wh/kg—twice that of Li-ion. By 2023, Papathakis says, NEF energy density could be as high as 750 Wh/kg, compared with 325 Wh/kg projected for Li-ion in that time frame.

Fluids are pumped through the flow cell multiple times, until the battery-active materials are discharged. The spent fuel can then be recharged on the ground, potentially using solar or wind power to eliminate life-cycle greenhouse-gas emissions.

"We have demonstrated multiple recharge cycles and seen minimum to zero degradation," says Papathakis. Also, unlike Li-ion batteries, NEF does not pay a penalty in cycle life for charging above 80% capacity or discharging below 20%.



In the nanoelectrofuel flow battery, active nanoparticles suspended in liquid electrolytes are pumped from tanks across an ion-exchange membrane to generate electricity.

Aquifer project at the American Institute of Aeronautics and Astronautics Aviation 2018 conference in Atlanta in June, NASA electrical engineer Kurt Papathakis outlined a technology road map that could take NEF to more than twice the pack-level energy density of Li-ion.

Today, prototype NEF flow cells have power levels of a few milliamps (mA) per cm². If funded, NASA's research would deliver first-generation NEF technology with a current density of 100 mA/cm²

In the Aquifer concept, the flow battery would be integrated with the rim motor, which would drive a hubless fan. The battery would be installed behind the motor inside the fan cowling, eliminating long high-voltage distribution lines, thereby minimizing electromagnetic interference. The lack of a spinner on the fan would reduce drag and improve efficiency, he says.

NEF appears suited to aircraft because there is no fire hazard and it is quick to refuel. And, similar to using gasoline or kerosene, "for more power, you pump more fuel; for more range, you take more fuel," says Papathakis.

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WHAT'S HAPPENING - February / March 2019

Feb. 24 - **Orbiteer Outdoor Monthly**
SCAMPS Field, Perris CA, 8:00 am.
Feature Event: **Old Time Nostalgia Rubber**
Other Events: **E36, Power & HLG/Catapult Launch Glider**

Mar. 3 - **Indoor Flying**
Grossmont College (Upper Gym), 7:30 am to 11:30 pm.
Feature Events: **Catapult Glider, P-18 & Embryo***

Mar. 13 - Orbiteer Board Meeting
John Merrill residence, 6:00 pm.

Mar. 17 - **Orbiteer Outdoor Monthly**
SCAMPS Field, Perris CA, 8:00 am.
Feature Event: **Coupe**
Other Events: **E36, Power & HLG/Catapult Launch Glider**