Newsletter

May 2019 Issue

Hi and welcome to the F5J USA Tour newsletter. So far we have had six Tour events this season. For details and scores from past events you can always find links from the Tour Calendar page. **In this issue** we have a Team F5J USA Update followed by part 1 of an article series on competitive F5J planes. Good flying to you!

Tour events in June

Tour Calendar

Red Rooster F5J, West Kingston RI, June 1-2 (Eastern region). Event details here, CDs are **Maarten Broess** and **David Beach**. This is the second annual Red Rooster F5J. They have an impressive pilots list (25 as of this writing) that will ensure a very competitive event.

F5J in Visalia #2, Visalia CA, June 1-2 (Western region) This is the second 2019 season event at Visalia and is being hosted by CD **Tim Johnson** and the CVRC team. Details are here. This event always attracts a top lineup of pilots. If you have not yet signed up there is still time. And don't forget the BBQ on Friday.

F5J in Sacramento, Davis CA, June 22-23 (Western region) Event details here. This is the third year of SVSS hosting an F5J USA Tour event. CD is **Chris Bajorek**. They have a beautiful field with plenty of irrigated grass for landings and plenty of thermals too. Come on up to the Sacramento area for an excellent event.

Team F5J USA Update, May

by David Beach, Team F5J USA manager

Team Website

World Championship event: August 12-16, 2019 in Trnava, Slovakia

Three of the USA team members participated recently in the Vegas F5J contest near Sandy Valley, NV. The conditions were tough at times, with significant winds. Many of the strongest USA F5J pilots were in attendance. **Skyler Raver** and **Stoil Avramov** finished well enough to go into the fly-offs! Unfortunately, Stoil and his dad had to

leave for their return flight home so Stoil did not participate in the fly-offs. Skyler flew great and finished 5th in the fly-offs, with 2 short flights out of the 4 total flights. **Oleg Golovidov** did not make the fly-offs but was timing for Skyler.

Oleg recently received his Worlds models from the AeroVolo factory and started the assembly. He hopes to have them all flying in a couple weeks. Meanwhile he and his club mates had another great F5J practice at the field. Next contest for Oleg and Stoil is the **RISC Red Rooster F5J** event in Rhode Island on June 1-2.

The team is thankful for all your support and donations. We are a little over half way towards our fundraising goal. <u>Still a lot more money is needed to cover our expected travel, competition fees, and lodging expenses.</u> With your continued support we hope to reach our goal by August. Thank you!

Team Donations

World Challenge contest, Trnava Slovakia, August 2017

Tour Info

Pilot Standings

Got F5J?

Shirts

Competitive F5J planes - Part 1

If you have been participating in the F5J USA Tour for several years you have had a chance to see quite a few new competitive planes come on the scene. Because of the worldwide and still growing popularity of F5J things are moving fast in the development of new and improved purpose-built planes. It is hoped this article series will provide some useful information that can help you with plane selection.

Any discussion of F5J planes should acknowledge that a majority of the world's F5J pilots and plane manufacturers are based in Europe. Thus it makes sense that Europe has been driving much of the innovation in the F5J market. USA F5J pilots are the beneficiaries of years of overseas F5J competitions and plane evolution. In just the last few years so many new planes have been released that it has become a bit of a challenge just staying current.

Attracting new pilots – One topic that comes up periodically is how to attract new F5J pilots and what planes they should be considering. New guys are often initially hesitant to spend big bucks on F5J planes. There are some lower cost F5J planes out there but so far they are not seen in F5J USA Tour comps very often. So an open question is whether there is a real lower-cost market. Is their lack due to a lack of demand or due to hesitancy on the part of vendors to make them?

To shed some light on these topics a list of questions was compiled and sent to a short list of F5J plane resellers, top F5J pilots, and experienced F5J builders for their inputs. Part 1 of their responses is presented below. This is offered as a snapshot of where F5J plane technology is today, how to decide what planes to get, and how to get the most performance out of them.

For this installment we are very fortunate to have responses from **Mike Smith**-F5J pilot, **Ali Khani-**Flight Comp reseller and F5J pilot, and **Oleg Golovidov-**Volo reseller and Team USA F5J pilot. Thanks very much gents for your inputs. More coming in Part 2 next month.

Q&A with resellers and top F5J pilots and plane builders

Q1. How many planes do you need in F5J? If you were just starting out and were limited to a single F5J plane what type would you recommend? If you could buy 2 models what types would you recommend?

Answer from Mike Smith:

I have always told people looking for advice on what glider to buy for a certain discipline that they should buy the one model of the top 3 or so that they like the looks of the most and fly it a lot. The more they know a certain model the better they will do with it. Also, I am not obsessed with weight. Too light is a problem as is too heavy, more on this below. If I were just starting out, I would look for the best deal among the top 5 models. The one that is the least expensive is probably the best place to start. Look for 50 oz as a target empty weight and anything from 3.7 meters span and up. If I could buy two, I would have a lighter option. But I would still try and keep it around 45 oz minimum.

Answer from Ali Khani:

I think if someone is just starting out in F5J two models are not really necessary. Of course it depends on the person. If they are a TD pilot or coming from 3J perhaps even F3K then certainly they may possess the skills to be able to take advantage of a superlight F5J model so 2 models could benefit them. However a "mid-weight" somewhat floaty model could fit the bill if only using a single model. Something in the 50-55 oz range that does not have the latest 5J planform and airfoil could still be very capable. As well it could be strong enough to take ballast and be flown in windy conditions. Some models that come to mind are the Maxa and Ultima 1 Strong.

Having 2 models is a benefit in case of failures, damage and of course wind. I would always recommend having 2 of the same type. A light and a strong. When building the models try to make sure the parts are interchangeable so you could swap parts easily at the field if need be. Any current 5J model is capable of winning contests. However I have flown many types and tend to lean towards 3.9-4m span models that don't have a super aggressive aspect ratio.

I would also like to say that a 3J wing on an E-fuse is still a perfectly good option for windy conditions, and many people in soaring already possess one or more 3J models.

Answer from Oleg Golovidov

A single plane is enough to have some fun while flying in an F5J event or just to practice F5J with your club mates. But, when traveling to any RC competition, one should be prepared for various technical 'issues', broken parts, or even a crash. This means, ideally, one needs some sort of backup plane, even if it is a very simple foam glider. While breaking or destroying a plane will certainly put a damper on your weekend fun, if you have traveled to a long distance event, having even a simple low performance backup plane will give you more 'payback' for your time and travel expenses.

To start in F5J or any RC soaring class, the best approach is to buy a used plane. Doesn't matter what type or what level of performance, a used plane will save you a lot of money and time, and allow you to get familiar with the rules, technical requirements, equipment, etc. If you like the type of flying and decide to get more involved, the first used plane will be a great backup to your new shiny red sailplane that you can buy later.

Similar to certain other aspects of our life, size does matter in F5J (or soaring in general). A bigger plane on average will perform better both in slow flight and wind penetration, and can be flown and seen at much larger distances. So if you have a choice of planes of similar price and construction methods, go with the larger plane. If price is a limiting factor (it always is), there are some very cute and well performing 3.0-3.2 m (wing span) planes that will work fine as a first F5J plane. If you can afford it (or find a good deal on a used plane), get a plane with at least 3.5 m wing span. Closer to 4 m (max allowed wing span) is better. But anything at or above 3.4-3.5 m will be a good first F5J glider.

Q2. How much of an advantage is it to have three F5J planes ? i.e. a light (low 40oz's), a mid-weight (50-55oz), and a stronger windy plane.

Answer from Mike Smith:

Weight is an issue. But the guys that are shooting for lightest airframe are doing so knowing that this uber-light empty ballast configuration is really only useful for 1 flight a day in most circumstances. As soon as there is any activity in the air and convection starts, I prefer having some wing loading to help me glide to where I want to be...where the lift is. A light glider trying to push through sink will lose more altitude flying through the same patch of sink as one that has a higher wing loading and can travel faster....less time in the sink = less altitude lost. I prefer a medium weight glider in nearly all conditions. At 52-54 oz the airframe should be strong enough for all conditions so long as you don't bash it

into the ground really hard with a bunch of ballast loaded.

Answer from Ali Khani:

On paper this is a great option [having 3 models]. I find the "uber" light models, sub 40 or low 40's have a very limited operating window without some ballast. However now we are talking about more than $6000 worth of models. I've never gone to a F5J contest with more than 2 models and never have I felt disadvantaged. Often I put a heavier battery in my light model or a very moderate amount of ballast, now I have a "mid-weight" model. My opinion is that 3 models are absolutely not needed. I never think about having 3 and frankly never would.

Answer from Oleg Golovidov:

I think two is enough. A light and a strong. Ideally a light plane that can be ballasted somewhat. And a strong one that certainly takes some ballast, and has a powerful motor+ESC+battery for high winds.

Q3. Why do you think we are not seeing more low-cost F5J planes in F5J USA Tour contests? (where a low cost plane kit is <$1k). Do you think there would be a significant increase in USA F5J pilots if we had more sub-$1k kits available?

Answer from Mike Smith:

Technology is why. Molded planes are the best for many reasons, and molded gliders cost more. Other options could work too, but I have yet to see a open framed wing that performs like a molded hollow or solid core wing. I do not see price as being the thing that keeps people our of F5J. Price to enter RC in general has been dropping significantly over the years, and while its brought many new people into the hobby, it hasn't grown the market. I think it still continues to shrink in general. I don't think price accessibility is the thing that keeps people from RC or any segment of it.

Answer from Ali Khani:

Frankly if someone wanted to fly they could find or build a model to fit any budget. They could use an RES model, convert an old 3J model, build their own, etc. Would these models be competitive against the latest and greatest? Probably not. However would a brand new F5J pilot be competitive right off the bat with the latest and greatest model? Probably not.

There are construction methods that can be used to lower material costs and

tooling costs, but often they are more labor intensive than standard molding methods. For example vacuum bagging wings (no molds) and using slightly cheaper materials could reduce costs but increase the amount of handwork required in production. Built up structures are an option but give up a lot in aerodynamic performance. I've had an idea to produce a F5J model out of EPO foam like a radian, this would result in a fairly lightweight model that could potentially have good performance. However tooling costs could be north of $30,000 USD and who wants to spend that much money if you would never sell more than 500 models total?

I think if a manufacturer really wanted to develop a low cost model, it is possible using hybrid construction techniques. However the development time and perhaps even costs may be the same as if it was a high cost model. So what incentive does a manufacturer really have? Further, it's all about supply and demand.

Some may think if we only had cheaper models, we would have more pilots. But most manufacturers can't even keep up with their current orders. This is the common theme from all the vendors I work with. Too many orders, too little skilled labor, not enough time in the day. If you are in this situation and you have a good profit margin in the models you are currently making, you have almost zero incentive to develop a cheaper model. Further, the USA is not the only market: we maybe have 30 guys showing up at one of our F5J contests, but in Europe they have 80 guys showing up, and all those guys are buying models as well.

If there was a sub $1000 F5J model I think it would have some impact and help draw in pilots from other disciplines. However, I don't think it would have a massive impact. The used market is a good way to help guys get good models at a decent price. We see guys showing up to contests all the time with used models. Let’s say they may have bought the sub $1000 option if available. They are still at the contest with a model, so the impact is the same.

Answer from Oleg Golovidov:

Because we all want the best shiny red sailplane and they are expensive to produce. I doubt that price is a significant deterrent to contest participation, although it probably has some effect. We all carry nearly $1K phones in our pockets, and our small children have one too. And we buy them a new one every few years. People always have money for favorite toys.

Q4. What kind of performance differences have you experienced for a range of current F5J models from different vendors? e.g. penetration in wind, speed range, launching, low altitude thermal searching, at-distance turning stability, landing, maneuverability, structural strength, etc. Are there any major building differences between vendor's models?

Answer from Mike Smith:

Easy answer here. I have only flown one design in F5J. The same design that I fly in F3J and TD contests. The Vixen by SoaringUSA. I am sponsored by SUSA, but I had been tracking this model through its design and development phases and when it became available, I picked it up. Best flying thermal glider I have ever had. The 5J version at 53 oz flies extraordinarily good. I don't have any comparisons for you on other vendors products, but this re-produced 5j version of the Vixen now known as the Vixen 2 can be purchased at the low end of the airframe cost scale at around $1,300 USD.

Answer from Ali Khani:

I've seen some pretty big differences between some models. I'm not going to name anything specifically. I have flown some shorter span models and did not care for them greatly. I think span matters. Penetration is huge for me. I struggled with a few light models. Some turned really nice but had no legs, some had legs but did not have a "lifty" wing. As of right now I am flying models that have a really good balance between turning and penetration and I could not be happier with them. For me these are really the only two factors I think about when it comes to flying. I think speed-range is tied to penetration.

However I do have a “style” of flying and certain models suit my style, so that has an impact on what I think flies well. The models I’m flying now compliment my flying style, but perhaps would not compliment a different style. I did have one model that was terrible in the landing zone! That was a major surprise for me. So it is important to be comfortable with the way your model lands.

Structural strength is important. A few years ago I would have said the new solid core models are fragile, but my opinion has changed. The solid core models are now able to be stiffer at lower weights and I see traditional hollow models becoming more and more like egg shells as they try to shed weight.

There are some pretty big difference between vendors. Most of them have the

structural side down, but some are better than others in creating a good finish with the new solid core construction techniques. All in all I think most vendors are doing a pretty good job.

Answer from Oleg Golovidov:

(I co-designed and am distributing the Volo F5J, the best plane your money can buy ☺ so I am very biased). All high performance planes are of very similar performance, and some even use similar airfoils. So aero performance is very similar IMO. The size does matter, as I mentioned above. So I would still give preference to a 3.9-4.0 m plane versus a 3.4-3.5 m plane. Other than that - it is more about aesthetics, handling in the air, various construction details, convenience features, weight, reliability, etc.

Q5. What can you share regarding guidelines for using ballast in F5J? What are reasonable ballast limits* for today's ultralights, lights, and mid-weight planes? * regarding structural integrity in gusty conditions and harder-than-usual landings

Answer from Mike Smith:

Ballast is an interesting topic. The very light gliders will need to use ballast as soon as the thermal activity starts, but then the goal would be to just bring the wing loading up to a point where best glide can be achieved. Best glide is so subjective in RC since we don't have airspeed indicators or polars that tell us what our gliders should be flying at airspeed wise. A pilot should be able to fly at an airspeed that will allow for a brisk penetration into the prevailing wind without the need for a steep dive to maintain that airspeed. Wind is NOT the deciding factor on ballast or no-ballast. Thermal activity is the first parameter, then prevailing wind is second. If there is very light lift and some wind, then I am hesitant to ballast and I tend to error on the light side knowing that my strategy is NOT to follow some very weak lift down wind. My strategy in that scenario would be to set up for a minimum sink airspeed flight where penetrating back from down wind would greatly increase my sink rate and likely cause me to be short on time compared to guys just floating it out over the field.

Answer from Ali Khani:

Generally I would say if your light model is heavier than the same model in a strong layup you have too much ballast in it. I never really put more than 6 oz in my light models. Most vendors will actually give you wind limits for the models. This is the structural limit for the model. I would advise people not to "guess" about what the limits of the model are and actually get the information from the

vendor. Further, you could damage servos and burn up motors if you are trying to ballast up an "uber" light model. You may be asking too much of everything.

Answer from Oleg Golovidov:

Use your ballast in windy conditions! If you are planning to compete in F5J events, certainly do not buy/build a plane that cannot take ballast. Even the lightest planes IMO should be able to take some ballast. How much ballast - this seems VERY personal for different pilots. 6 oz is probably the smallest amount I would use, anything less is not likely to have a lot of effect. Maximum amount depends on the wind and strength of the plane of course. Up to 20 oz in extreme conditions or even lots more. The main thing is - have a way to ballast your planes, and do figure out how it makes your plane feel in the air before going to an event. Be ready to use it at a contest. Be ready to quickly add/remove ballast if needed on the flight line.

Q6. Are there any topics about F5J motors that you would like to share as they relate to getting more performance from your F5J planes?

Answer from Mike Smith:

I am not a motor guy at all but I will say that having tons of power is NOT the answer in most situations. Being first out of the gate is not the best strategic move for an F5J pilot.

Answer from Ali Khani:

I'm not the foremost expert on power setups. I try to have conservative and reliable power setups. I spend some time on eCalc and back that up with flight tests. I rarely just slap the motor in with one size of prop and call it a day. I generally experiment a bit, however I never try to push the rated limits of my motor or ESC.

For a light model I want a setup that will basically just get the job done. I don't have a bunch of power in reserve. For a strong model, I want a setup that can haul up the model and a full ballast load. When I do my eCalc setups I use the fully ballasted weight of the model.

I would advise everyone to do an annual or bi-annual check and rebuild of their motor’s gearbox. Check the gearbox for damage or slop. Clean it and re-lube it. Check the motor for damage or slop and clean it if possible as well with electronics cleaner.

Answer from Oleg Golovidov:

Do not obsess about getting the best performing motor. Efficiency is not as critical in F5J. As long as the motor is powerful enough to do the job, you can use a cheaper less efficient one. But less efficient motors overheat sooner from high power. You may need a slightly bigger (heavier) motor then. So keep that in mind when choosing a motor.

It is better to have more power than not enough power. The 20-30 g of extra weight in the motor is a very small price for not having a burnt motor on the next windy contest day. It is easy to underestimate how much power is needed to propel a heavy ballasted plane upwind 200-500 m and get to 200 m altitude also. The quickest way to lose the battle in windy conditions is to simply not be able to get high enough and far enough forward. So have extra power available especially in your windy plane.

Q7. Where do you see the light (low 40 oz's) versus ultralight (sub-40oz) battle headed? Do you want or expect to see manufacturers coming out with lighter and lighter models?

Answer from Mike Smith:

If a model is 44 oz or lower, I am not really interested. It's a one trick pony, and so far it hasn't been necessary for the win. There was one flight that I could have improved on with a lighter glider, but really only one.

Answer from Ali Khani:

I'm pretty happy with the way things are. I think there is an FAI wing loading limit, so at some point you would have start cutting down span to get anymore weight out of the models. In the short future (2-4) years I don't think we are going to see many 4m span models below 39 oz. I would prefer vendors start looking at aerodynamics and production innovation rather than just shedding weight.

Answer from Oleg Golovidov:

Not sure I would call it a battle. Both will exist and both have their application. The sub-40 planes are at the FAI limit for wing loading, so going lighter is not useful.

Q8. What improvements would you like to see in new F5J models in the next year or two?

Answer from Mike Smith:

I would love to see designers changing up their formula on 5J models. They all look the same. Except for the Vixen 2.

Answer from Ali Khani:

I like the trend towards portable models, i.e. 2 piece fuselages and multi-panel wings. I hope this trend is continued and developed. I would also like to see more independent design in regards to wing airfoil and planforms. We all know the SynerJ is good, but I would like to see vendors develop their own wings. Innovation in production techniques is another area that interests me. New methods of production, new materials, etc.

Honestly I can't see any big changes coming down the line in the short term. We have a few vendors like Muller and Vladimir trying to innovate with wing bending and inverted V-tails. For the short term we can see these models aren't terribly competitive but I applaud the innovation and given some time I think we may see these ideas becoming more competitive.

Q9. Do you have any other comments on planes that would be helpful to the USA F5J community?

Answer from Mike Smith:

I think the format for the 5J event is one of the most fun that I have experienced in RC thermal flying since F3B. And a ton less work. As a club, the Torrey Pines Gulls [in Southern California] are going to be starting an F5J series. We expect to run 4-6 contests a year once we get all set up. Also, I would encourage all that have experience with electric motor-launched gliders to give it a try, but in order to keep it fun and challenging, never set up the motor control for restarting the motor. That aspect alone makes flying powered gliders very boring. On that note, I would love to see all expert class pilots be required to engage pure F5J rules on their altitude/motor control devices. Some of the decisions I see being made by some very experienced pilots are based on the fact that they know they can restart their motors. Costs them the flight but not the glider. Restarts are ok for sportsman classes but not expert. That's just my opinion.

Answer from Ali Khani:

If you are going out to F5J contests and getting in the flyoffs every time, perhaps having the latest models could benefit you. Just keep in mind that in order to win you must first finish. Reliability cannot be understated. If your model is too fragile and you have the lightest servos and gear, etc. you may be asking for trouble. I learned this the hard way!

If you are still trying to figure out F5J and still trying to learn some basics like landing patterns, launch strategy, etc. don't waste your time chasing every extra gram or wishing you had a new model. Just go out and fly, practice with what you have. You may get an "Uber light" model but if you put one-too-many [control] inputs in the wing or keep turning in sink, etc. that "uber light" model is doing nothing for you.

We have to keep in mind that the new generation of models are designed to be flown with various camber settings. I am finding myself taking longer and longer to find good settings. The settings I am flying this season are totally different than settings I used on the same models last season. If you don't take the time to tune your model you may not be getting any advantage from that new super light toy. I actually think it takes a lot of work to squeeze all the performance out of the latest models. I have all kinds of practice routines to see what settings work best in what conditions. If you are the type of person that doesn't really want to put this kind of effort into setups, perhaps the latest and greatest would not really benefit you. I guess what I'm trying to say is that sometimes these newer models aren't really that user friendly and can require a high pilot workload. This is just one more thing to keep in mind when picking a model.

Practice with a purpose! If your idea of practicing is catching a thermal, climbing out to 1000 ft and flying around for 15 minutes you are not doing anything worthwhile. Practice starts under 50m. If you find air, try to figure out where another good piece of sky may be and go there. Shoot landings, practice your landing pattern. Never give up flying your model until it hits the ground. Practice thermaling a few feet off the ground. All these things will do way more for you than having the coolest new toys!

More answers coming next month in Part 2 of this series. Stay tuned!

About the Tour's Advisory Group

This group is responsible for managing the Tour and includes the following key supporters and pioneers of USA-based F5J: Lee Wolfe, Steve Neu, Lenny Keer, Larry Jolly, Jim Monaco, David Beach, and Chris Bajorek. Each advisor brings significant experience and energy to this group. If you have suggestions or feedback feel free to contact any of us directly, or you can send an email to Chris Bajorek here.

Video courtesy of Ali Khani, Flight Comp