

F2D News - April 2013

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For many around the world, the 2013 combat season is already in full swing. In New England, the season will kick-off on the 21st with some Formula GX action. My season is set to start one week later, at the Avios Cup in Aleksin, Russia. Despite the winter hanging tough around here, I've had a few chances to practice in the last several weeks to get tuned up (last weekend, we flew in between sleet showers...). It should be a very tough and exciting contest; look for a report on it next month.

The first item on the agenda this month is about the new rules. After the Phoenix March Madness contest, it came to my attention that the new rules are a bit ambiguous concerning the conditions under which a match can be stopped. In particular, it is not explicitly stated whether or not both pilots must be in the air in order for the match to end due to either 1) both pilots having no streamer left or 2) one pilot having no streamer left and declaring that he/she wishes to cease combat. I checked around, and the consensus is that *both pilots must be in the air* in order for the match to be terminated before the 4 minute time period expires. This is a very reasonable interpretation, and in the end seems like it is the most fair way to implement the rule. Anyway, this is something to keep in mind for upcoming contests.

The second item on the agenda is to report a breakthrough in my experiments with an electric-powered F2D model. Over Christmas, I picked up a selection of new motors (more power!), with the aim of getting the performance closer to that of a state-of-the-art F2D model. It took quite some time until I had the chance to test any of them, but finally an opportunity presented itself two weeks ago so I gave it a go. The motor that I tested is an NTM Prop Drive 3536 (1800 KV), available online from Hobby King for \$18. Expecting it to turn something in the low 20,000 RPM range, I tried one of my old custom 7.5" x 6.5" Fast combat props. This was the prop that worked best on the all of my previous test with a less powerful motor, so it seemed like a reasonable place to start. How did it run? Like a champ! Out of the box, it turned in 22.4 seconds for 10 laps, which is right about 100 mph. That's easily competitive with the best Foras out there. Although the plane was a bit heavy (I don't have a scale to weigh it now, but I estimate about 40 g heavier than its internal combustion counterpart with a full bladder), this little guy put out tons of power and it felt surprisingly great through the turns. You can see a video of the maiden voyage here: <http://www.youtube.com/watch?v=ELb8PzgJMrc> (or just go to YouTube and search for electric F2D). My impression is that it was actually a bit over-propped. Unfortunately I haven't had time to test any other props yet, but I expect we can get it even better (planning to try a 7" x 6.5" next). Speed is no longer an issue (this is plenty fast), so now the goal is to optimize for efficiency.

For me, this is a major milestone in the project. We have now reached the level where the electric model is competitive against today's top equipment. Run time is still an issue, of course. With the battery I'm using now, I can get about 1.5 minutes per charge. This is where efficiency comes in – by working with props I hope to extend this out to 1:45 or 2 minutes. We could go to a bigger battery to get more time, as well. That will add weight, but actually it feels like there's enough power here to carry it if we go to a slightly bigger model. So far, I'm just using a standard model from a few seasons ago, with slight modifications to accommodate the battery and speed controller.

Even without increasing the size/weight, the current setup opens many new opportunities for practice. The flight in the video that I linked to above was made in a park just behind my office. There's no way I could run a Fora in that park, but the electric model seems to generate more excitement than complaints from onlookers (so far no complaints, knock on wood). This means, if time permits, it would be possible to put up a few 1.5 minute long training flights every day after work with minimal setup and cleaning time (no greasy sludge left behind on the model or me/you). Since the motor can be started remotely, the self-launching setup is trivial as well (any short ramp that points the plane up at a slight angle will do, perhaps even the side of a pitbox). This could have many benefits for sharpening one's flying skills, and also for increasing exposure to the public. At this point, anything we can do to drum up interest in control line would be a big help to the hobby. I hope others will start thinking about pursuing this technology as well. If you're interested, just email me and I'll be happy to share everything I've learned so far and all of the details about the components I've tested.

Okay, now get off the internet and start flying!