F3B Distance

Distance is a much more teamwork/tactical task than speed: it depends soooo much on air reading skills and also height management. It is very tempting to accelerate and burn height in good air only to find that the last 1:30 minute on the course is spent under the lift at close to minimum sink trying to stay in the air for the 4 minute task. The model obviously has to be placed in the correct air, and this is where the tactics and teamwork play a vital role. Flying diagonal laps might take you to the better air, but you travel a longer distance, perhaps simply turning toward the air at both base A and B will take you there, perhaps something more aggressive is required. Better height conservation or a faster lap pace might be needed. A good caller will tell you that. After all you are just the pilot, not the caller, not the tactician, not the turn judge!

Before the distance run, you talk tactics with your team. Is the air thermic? Can the thermals be circled off course to gain height? Where is the best place in the sky to fly? How much ballast? Based on previous distance rounds how many laps gets the 1000?. Based on all this information (and perhaps more) target lap paces are set for perhaps the first 1:30. The important thing is that the team is aware of your plans. The air you find yourself in will make the whole diffference to the next 2:30. Here the team play a vital role too.

There are three members of the team: 1) the caller tells the pilot which direction to turn based on the tactical input, and estimates the turn for the pilot (breaking that down into simple language "turn out in 30...20...10...turn!"), tells him how many laps have been done and in what time (breaking that down into simple language "you're on 6 lap per minute pace") 2) The tactician feeds information to the caller, observing other models, pointing out the best air, and advising the pilot of the number of laps needed to get the 1000 points (again in simple language... "fly faster, you need 8 laps in the last minute". 3) The turn judge simply looks at the turn signal lights, and listens for the turn sound. Distance is very hectic, and a turn signal can easily be missed unless a team member is dedicated to that task only.

Add to that the fact that the task is flown man on man against up to 5 other models with you racing in the same working time as other pilots, avoiding midairs, and using other models to judge the turn position and air makes this task the most hectic, team based, and enjoyable tasks of all for me. A high lap count distance run is a prolonged release of adrenaline, not the same as speed where you have only a short time to enjoy it!

Launch

Basically the same as speed. I am a fan of carrying quite a lot of ballast for distance (at least 60% of speed weight if not higher).

Pace control on the straights

Distance is flown at a wide range of speeds. Slowest pace might be 4 laps per minute (ca 35km/hr, Cl=0.7..a guess!), and fastest might be 12 laps per minute(150 km/hr, Cl=0.05 another guess!). The model setup required changes radically between these two extremes.

At 4 lap pace, depending on the model, to conserve height a little positive camber might be needed. Dont worry about the camber slowing things down, the ballasted weight will easily provide the 4 lap pace, and the ballast provides the smug knowledge that the model can be accelerated at any time the pilot decides to "let go of the horses". The camber ensures that minimum height loss happens hopefully enabling the pilot to gain a height advantage over the other competitors.

At 12 lap pace, the model would be close to full speed mode (ie reflex camber)

In between these two extremes is a whole range of camber settings that are appropriate. I set my model up to have variable camber between the two extremes above. With a change in the camber setting, the elevator also changes setting. The elevator drives the speed of the model, the camber selects the lowest drag for that speed. To have this range of trims, the CG is set a little more forward than in the speed task.

Roll control
At 4 lap per minute pace, the model is flying at much higher Cl, so more differential is needed, and perhaps a little aileron to rudder coupling too. This trim is much closer to the classic minimum sink trim. At 12 lap per minute pace, we are in speed mode, where differential is closer to 50:50, and no aileron to rudder coupling.

I change the differential, and aileron to rudder coupling based on the *lap pace*.

Pulling the turn
The same comments apply here as with the speed turn. The optimum amount of elevator to camber coupling depends on the speed though. I find that more seems to be needed at slower speeds.

The radio can be set up to change the amount of elevator to camber mix depending on the amount flap position by enabling mixers based on *lap pace*. I use a Graupner JR MC 24, but there are a select few transmitters on the market that provide the same functionality.

Again the setup is designed to minimise the drag of the model at all of the reasonable speeds encountered. Also the setup is designed to ABOVE ALL make the model easy to fly. For *lap pace* I have a rotary knob set up on my transmitter that selects the appropriate camber and elevator setting and differential and aileron to rudder couple for 4 lap per minute pace. Wind it the other way, and it is set up for 12 lap per minute pace. In between, all the intermediate settings.

So, when my caller tells me to fly faster, i simply wind the knob a little, knowing that the model will accelerate, and find its next low drag trim at a slightly higher speed. The knob selects the lap pace for the model and the roll and pitching performance.

Good luck in distance, it is far more pilot/team skill than any other task I have flown, and the information overload at times can be amazing, especially when you are punching out 5 second laps!