

An alternative proposal for the new shutoff rules.

As a lot of other pilots, I don't think the flyaways are a big problem, but now it seems that this issue had become a political issue in CIAM. With the proposal from the Chairman of the F2 Subcommittee, Dr Laird Jackson, there is a high risk/chance that we will have to face a rule change after the CIAM meeting in Lausanne, 22-24 March 2007.

Instead of passively waiting for a rule change I have set up an alternative proposal for the shutoff rules. I think these rules will lead to a smoother introduction of the mandatory shutoff system than the actual proposal from Laird Jackson.

For the accurate text of these two proposals, see <http://www.modelflyvning.dk/f2d.htm>.

Here are a few comments to my proposal:

#### Section 4.4.6: Controls - Technical Verification:

In the demonstration the shutoff must stop the engine within 3 seconds of activation.

Last year I did some experiments with a simple spring system that shuts off the fuel supply by squishing the fuel line. The engine stopped after approximately 1.9 seconds which is very close to the 2 seconds proposed by Laird Jackson.

A 2 second limit might lead to discussions on how to measure the response time in the demonstration. When has the engine actually stopped? When the engine is not making any combustion any more, when it is not turning over anymore or when the propeller comes to a complete stand still?

With a shutoff system that stops the fuel supply a combat engine will normally stop working after 1.5 seconds and will typically come to a complete stand still after 2.5 seconds. Therefore a 3 seconds limit seems more suitable for practical use.

You will find a video clip with the test here: <http://www.modelflyvning.dk/f2d.htm>

#### Section 4.4.12: Attempts:

I have taken out Laird Jackson's proposal on the rules for relights' (no reflight if the shutoff has not been working properly).

If a model flies away and hits the safety fence or a tree outside the official flying field, but within the permitted activation time limit, this rule would deny the pilot a reflight. This doesn't seem fair.

If the time the model hits the ground almost coincides with the time where the shutoff system ought to have stopped the engine, it will be very difficult to decide if the pilot should have a reflight.

Did the shutoff system actually activate or not?

After all, the punishment for a malfunction in the shutoff system is stated in 4.4.15 y - disqualification if the shutoff is not stopping the engine within a specified time.

#### Section 4.4.15: Cancellation of the Flight:

In the event of a flyaway the pilot shall be disqualified if the shutoff device does not stop the engine within 5 seconds.

In this situation the time limit is set a little higher than during the demonstration.

The idea is to let the technical verification ensure that the shutoff system is capable of bringing the engine to a fast stop. In the event of a flyaway it should then only be necessary to observe if the shutoff system is working or not.

During a flyaway it will be very difficult to measure the exact reaction time for the shutoff system. The time keepers will typically be seeing the midair collision but hearing the engines stopping. The distances involved are far too big for a visible observation of the propeller movement, so the time keepers must rely on the sound of the engines.

In a situation where a model is flying away from the timekeepers the delay of the sound can be as much as 0.35 seconds!

(distance across the circle: 35 m, model flying 2 seconds at 42 m/s, speed of sound: 344 m/s)

By setting the time limit for the flyaway situation higher than the test situation, we can eliminate a lot of discussion on how the time measurement was done during the flyaway, but we will still be able to disqualify a pilot with a non-working shutoff.

#### Section 4.4.6: Controls – Technical Verifications

The use of a “moving bellcrank” to activate the shutoff system might lead to a clarification of the rules for checking the line length. Since the change in line length, with a moving bellcrank, can be kept inside the tolerances on the line length I have not suggested any changes to 4.4.6 c in this proposal.

Once again, I don't think we need a mandatory shutoff. But if we have to, let's find a set of rules that gives as few problems as possible.

Regards,  
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