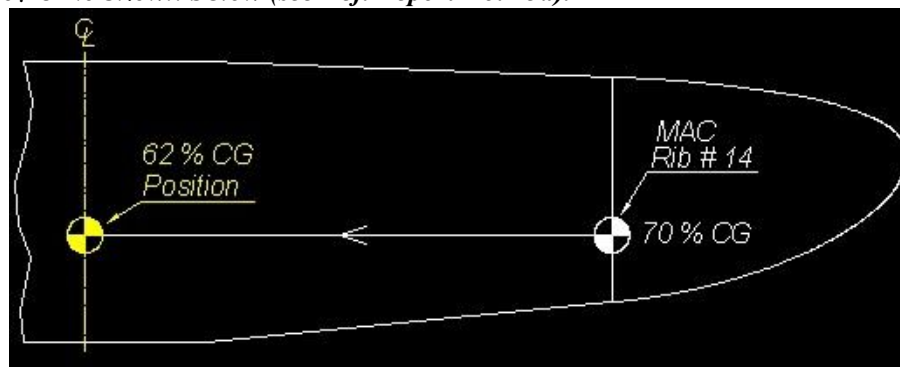


From: "Tandy C. Walker" <tandyw@flash.net>
 To: [Undisclosed-Recipient:](#)
 Date: 8/21/2009 4:59:00 PM
 Subject: 160 Sailplane Balance Point Correction

Comet Sailplane Project

I out started yesterday morning by doing a center of gravity (CG) evaluation on the Sailplane. The balance point came out at 8.8" aft of the wing's leading edge, which is $(100 \times 8.8/13.75) = 64\%$ CG. This compares with the design CG of 62% shown below (see *Ref. Report No. 43a*).

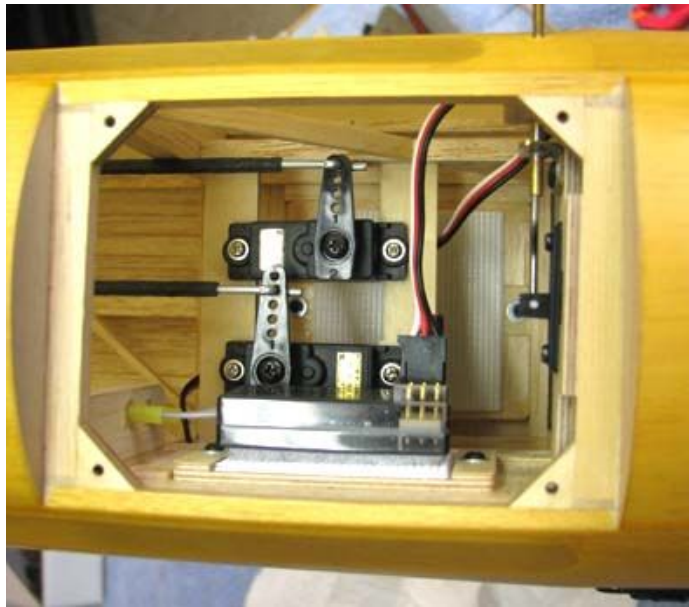


I am not sure just how critical this 2% difference is, but I simply can not take any chances during the first flight tests with a possibility of a marginally stable airframe.

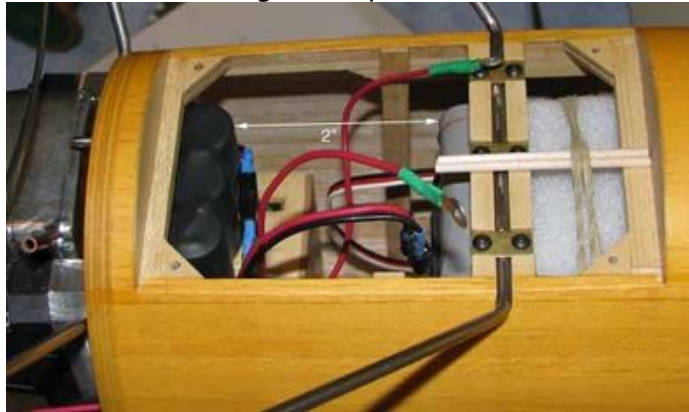
Without adding ballast weight, the radio's flight battery shown below is the heaviest single item that I have to work with to try and correct the CG.



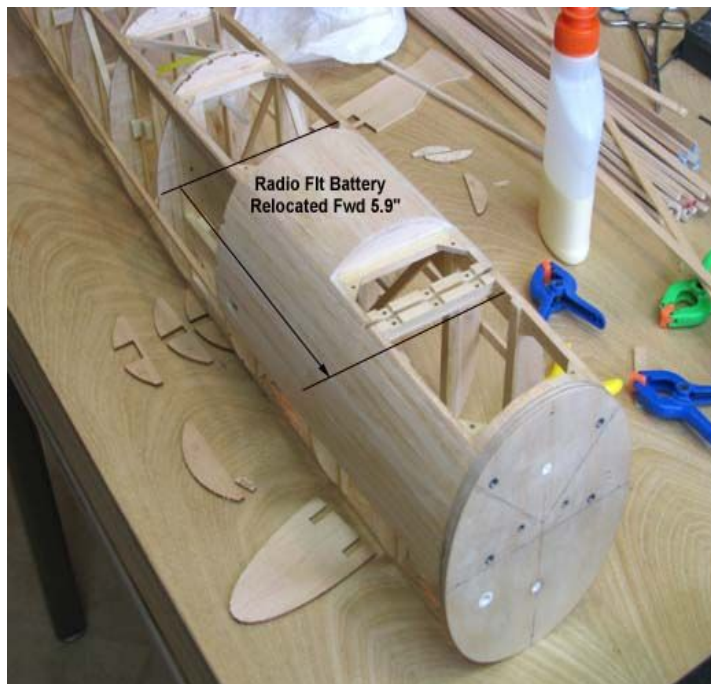
I removed the radio flight battery from under the servos, but kept the battery mount in tact as shown below. It is possible that after the initial flight test phase is over, I may want to put the battery back in this location.



The battery was temporarily moved forward to within 2" of the ignition unit as shown below. Hopefully this will not cause any radio interference from the ignition system with new FASST 2.4 GHz radio.



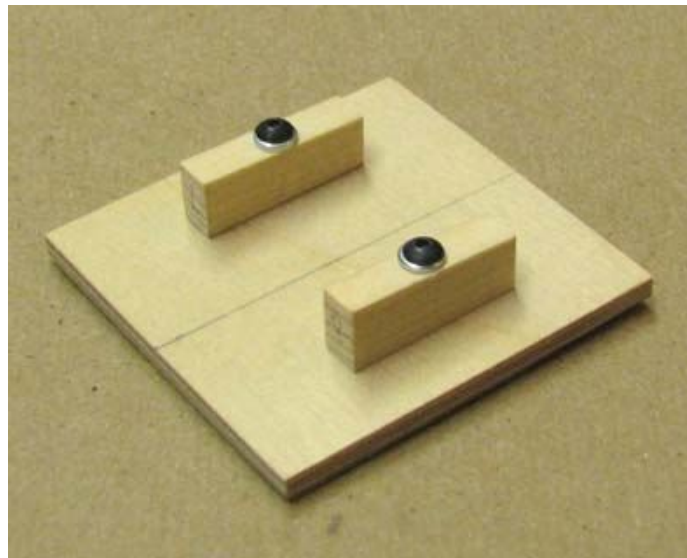
In the earlier construction picture below, you can see that the radio flight battery was moved forward a total of 5.9".



I reassembled the model and rechecked the balance point. It came out almost exactly on 8.5", which is the design CG of 62%. The good thing about this location is that there is a lot of spruce structure built into to fuselage in this area to support the rear landing gear strut as shown below.



At this point I disassembled the Sailplane again. The new battery mounting plate was made from 1/8" plywood. Two small spruce beams were cut to sized, drilled, and mounted to the plate using 2-56 blind nuts on the top of the plate as shown below.



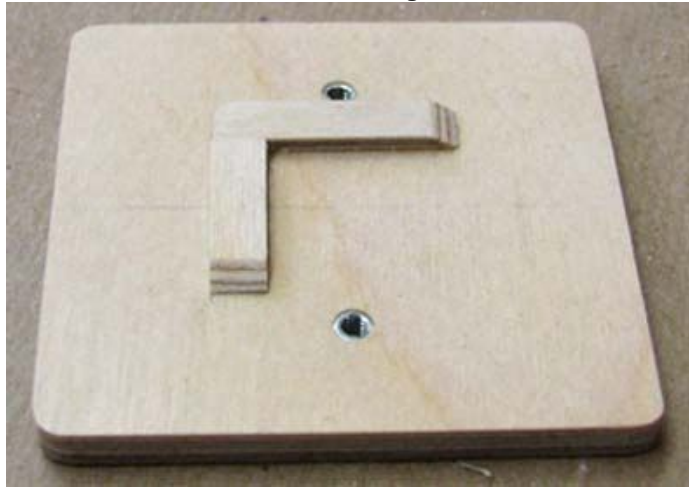
The two spruce beams were glued in place between the landing gear rear strut spruce mount and the spruce member at the back of the ignition hatch as shown below.



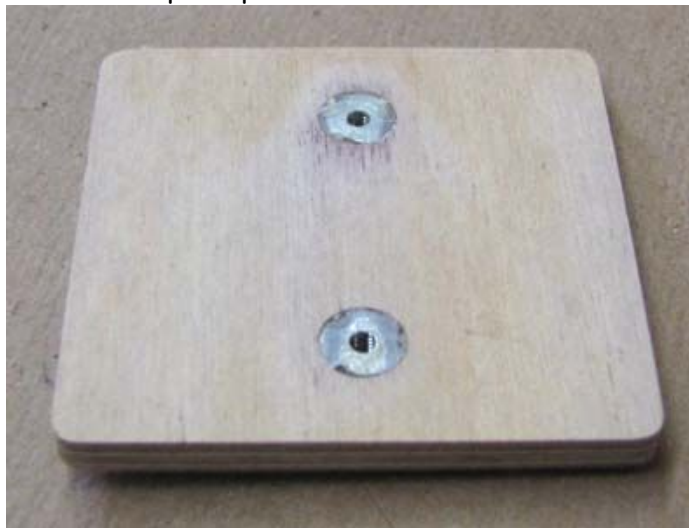
A trial fit of the battery mounting plate was made with the two spruce beams as shown below. Notice that the battery's plywood mounting plate is resting on the landing gear rear strut spruce mount and the spruce member at the back of the ignition hatch, which will resist any down "g" loads that occur during a hard landing and the two spruce beams are not subject to this load. Their purpose is to hold the battery on the floor of the fuselage and resist any axial g's.



Two pieces of 1/32" plywood strips were located and glued to the bottom of the plate as shown below. These strip automatically aligns the blind nut holes to the mounting holes in the two beams.



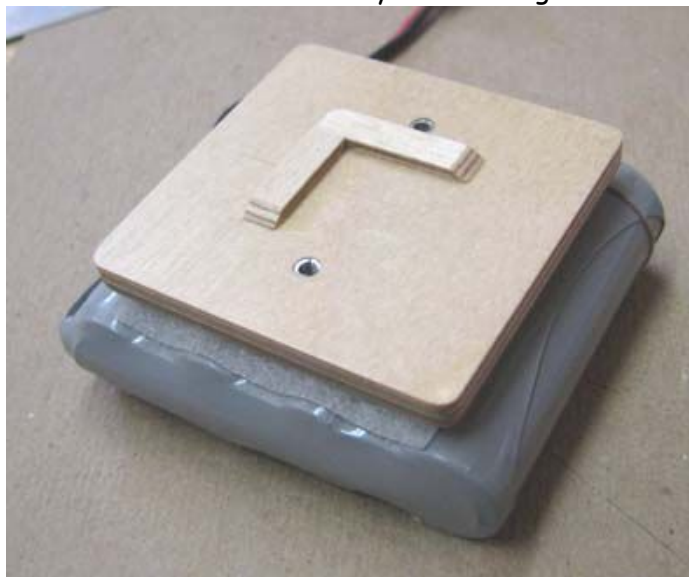
A piece of 1/32" plywood was cut and drilled to fit over the backs of the blind nuts on the top of the plate as shown below. This was glued on to the top of the plate to effectively countersink the backs of the blind nuts and given three coats of clear nitrate dope to provide a smooth surface to attach the Velcro hook sheet to.



This shows the Velcro hook sheet installed on top of the plate, which completes the new battery mount.



The radio flight battery was attached to the new battery mount using the Velcro interface as shown below.



The battery plug on the radio's switch harness was long enough to reach to the new location. The battery was plugged in and the final installation in the fuselage is shown below.



I took this final picture before I installed the ignition hatch cover.....Tandy

