From: "Tandy C. Walker" <tandyw@flash.net>
To: "Walker, Tandy C." <tandyw@flash.net>
Date: 7/15/2010 11:26:12 AM
Subject: 163a Sailplane's Final Weight

Comet Sailplane Project

Wednesday, August 26, 2009 @ 9:25 a.m.

The Sailplane weight minus the wing is 1910 grams. The wing weighs 402 grams and the five rubber bands to hold the wing on with weighs 17 grams. The total weight of (1910+402+17) = 2,329 grams, which is 82.15 ounces or 5.13 pounds.

The Sailplane's wing area is 890 sq.in., which is 6.18 sq.ft. Therefore, the Sailplane's minimum weight for SAM 's 10 oz/sq.ft. wing loading requirement is 61.81 ounces. The Sailplane is over its minimum weight by (82.15-61.81) = 20.34 ounces or 1.27 pounds. That is 33% over weight. The wing loading is (82.15/890/144) = 13.29 oz/sq.ft., which is exceeds the SAM minimum requirement of 10 oz/sq.ft. also by 33%.

The main weight contributors are (1) the heavy Series 20 McCoy 60 engine, composite mounts and metal fuel tank, (2) the integrated ignition unit with battery, (3) the addition of the two wheel wire landing gear, (4) the double covering with dope and epoxy finish, and (5) the Sailplane structure has a lot of wood in it.

However, the Sailplane has a huge 36" undercambered lifting stab with an area of 294 sq.in. ***(30% of the wing area)***. One might be convinced that the Sailplane's total lifting area is the sum of the wing and stab areas (890+294)/144 = 8.22 sq.ft., especially if the CG is located behind the center of pressure of wing. In this case, the stab is actually carrying an up load. If this were true, the Sailplane's area loading would be (82.15/8.22) = 10 oz/sq.ft.....Tandy

Updated Weight
Thursday, July 15, 2010 @ 11:10 a.m.

Fuselage with 12 X 4 APC	1893 Grams
Exhaust with two Springs	10 Grams
Wing	405 Grams
#137 (8) Rubber Bands	35 Grams
Final All Up Weight	2343 Grams = 82.65 ounces