Getting the Maximum from a Rubber Motor

ByRoger Willis

In preparation for an upcoming Science Olympiad competition (Feb 5th at Rancho Bernardo H.S.), I discovered some very helpful formulas for general model flying thanks to Cezar Banks.

One of them is how to quickly figure the maximum winds on a rubber motor. Of course my 3 middle schoolers were very suspect of math letting them know when a rubber motor
breaks ... so I had them test the formula on one of their Wright Stuff motors. As you know, the S.O. rules require a maximum of 2 grams for the weight of the motor prior to lube but including things like "0" rings. Since I got D in math in school and these three middle schoolers got A+, I let them do all the math.
The formula goes like this:

Length of motor divided by weight of motor in ounces =XI Now, take the square root of XI =X2
Multiply X2 by 6.35 = X3
Multiply X3 by the Length of the motor [in inches]= X4

If you are using Tan II, multiply X4 by 1.25 (or 1.35 if you're brave) and that will give you MAX WINDS for Tanll
If you are using Super Sport, multiply X4 by 1.14 for SS MAX. WINDS

So, the young folks from the Encinitas Middle School did the math. Their motor was 16.25 inches long and weighed a perfect 2 grams. That 2 grams converted to ounces is .070z. The rubber was Tan II. When they finished the formula, it showed a max wind of 1965 winds @ 1.25 and 2122 winds @ the 1.35 multiplier. They picked the middle 2091... The motor broke at 2090 !!!
They performed a similar experiment with Super Sport using the 1.14 multiplier at the end of the formula. It broke just 4 winds over the formula break wind number!!