Contest Strategies for Casual Competitors

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And Strictly a Casual Competitor

Goals

- Provide basic information about each event
- Offer some simple contest strategies for new and ‘casual’ competitors
- Identify some of the commercial kits which might be usable for each event

Having Fun at a Rocket Contest

- Reliability – keep it simple
- Get in both qualified flights
- Pick the simplest events plus one ‘challenge’
- Prepare in advance
- PRACTICE!!
- You don’t need super-sophisticated models or tools to win at local and regional contests

C & T Division Events

- A Helicopter Duration
- B Boost Glider
- C Streamer Duration
- G Egg Loft Altitude (Altimeter)
- Open Spot Landing
- Drag Race

A & B Division Events

- A Helicopter Duration
- B Boost Glider
- C Streamer Duration
- D Egg Loft Altitude (Altimeter)
- Open Spot Landing
- Set Duration (30 Seconds)

Some General Hints

- DO NOT open any payload area or extract egg or altimeter except in presence of contest judge
- Use tracking powder (powdered tempra paint) to help find models at apogee so you don't lose them
- Try to build two models when you can (you have to return at least one model to get in a qualified score)

A Helicopter Duration

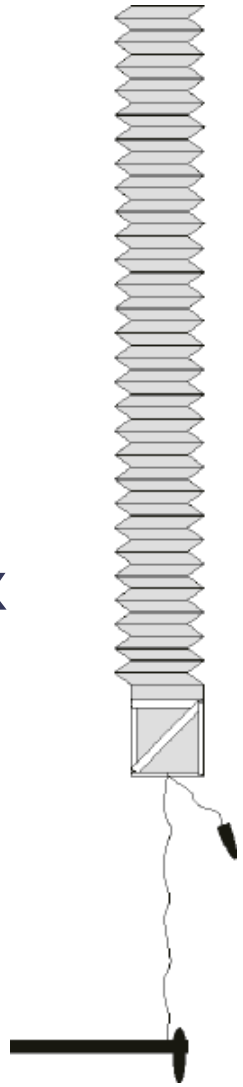
- Single ‘A’ motor (A3-2T is most common)
- Rotating (gyroscopic) recovery
- Everything has to stay together
- Kits:
  - Apogee Components Heli Roc (A3-2T)
  - FlisKits Rose-a-Roc (A8-3) (Hub Hobby??)
  - Qualified Competition Rockets (QCR) High Rotor I, High Rotor II, Ultimate I

B Boost Glider

- 'B' motor (B4-2 is most common)
- Motor can stay with glider or be ejected
- Sum of duration of two flights
- Some Commercial BG Kits:
  - Edmonds IVeeRBG, Deltie B
  - Apogee / Sky Condor
  - SEMROC Swift (get it at Hub Hobby)
  - Sunward Aerospace Boost Glider

C Streamer Duration

- Single ‘C’ motor (C6-7 will be most common)
- Streamer Recovery
- Everything stays together
- Sum of durations of two attempts
- ‘Classic’ streamer design has 10:1 ratio
- Typical streamer is accordion folded, 5 x 50 or 6 x 60 inches
- Streamer materials chosen for ‘flapping’ action
- The importance of tracking powder!



C Streamer Duration (cont'd)

- Typical model is 18, 20 or 24 mm diameter, 12 to 14 in long
- Kevlar shock line attached at descent CG
- Light plastic or hollow balsa nose cone
- 1/32 ply or 1/16 inch balsa or .020 glass fins
- No motor hook or motor block (wasted mass)
- 'Lariat Loop' to save kicked motor
- Easy to convert a simple 3FNC 18 mm kit

C Streamer Duration (cont'd)

- Available / potential kits:
  - ASP 18mm SD rocket
  - FlisKits Cougar 660
  - QCR Straight Up 1
- Example kits to modify:
  - SEMROC Javelin, Rawhide (Available at Hub Hobby)
  - Estes Wizard (Available at Hub Hobby)
  - PRATT Hobbies Super Six

Egg Loft Altitude (Altimeter)

- You can stage or cluster – but not recommended
- Altimeter and egg capsule MUST be returned in the rocket; remove in presence of judge
- Are only specific altimeters allowed?
- What will be best design? Egg-on-a-stick?
- Where to put altimeter?
- Only need minimum recovery to get egg & alt back undamaged, etc.
- Long delays – eject AFTER apogee

D Altimeter Egg Loft Alt

- Single Grade ‘A’ Large Hen’s egg
- Any combination of motors or stages totaling between 10.01 and 20.00 NS of total impulse
- Composite D10 or D21 will go MUCH higher than D12
- Don’t forget to airfoil the fins!
- Be careful where you place the altimeter!
- Egg-on-a-stick a good design

G Altimeter Egg Loft Alt

- Any combination of approved MR motors and/or stages yielding legal total impulse (up to 120NS and up to 125G of fuel)
- Not all G motors are the same. Avg. thrust, total impulse, thrust curve are all important!
- How are you going to find the payload section?
- Don't forget you are building a G powered rocket

Open Spot Landing

- Open to any legal model rocket with approved model rocket motor(s)
- Almost any model can be used
- Common strategy:
  - Use a ‘larger’ rocket with minimal power
  - Minimal recovery device (i.e., small streamer)
  - Choose a delay that goes off close to ground

Drag Race

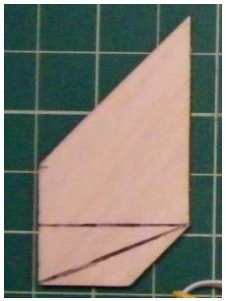
- Paired launches, single elimination event
- Three point rounds:
  - First motion
  - Lowest flight of the two
  - Last rocket to touch down
- Winner of each two-rocket round goes on to the next round
- Saucer rockets are common choices

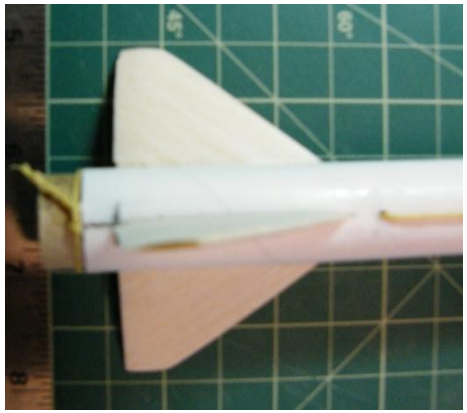
Converting the SEMROC Rawhide for C SD (1)

- These same steps apply to almost any 3FNC 18mm model
- The goals of the conversion are:
  - Lighten the model
  - Improve its efficiency (i.e., get more altitude)
  - Convert to contest streamer
  - Convert to contest shock line mount
- Entire conversion, including contest streamer, can be built in one evening
- Unless stated otherwise, medium CA is used for all construction

Converting the SEMROC Rawhide for C SD (2)

- The Fins:
  - (Opt) Cut down the fins to minimal size, trapezoidal
  - Round the leading edges and taper the trailing edge
  - (Opt) Taper the fin thickness from root to tip
  - Soak with thin CA and sand with 320 and 400 grit
  - Mount the fins 1/4in (6mm) from trailing edge of body tube



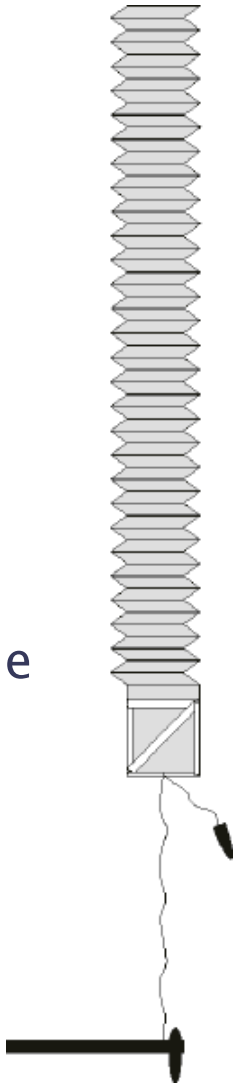


Converting the SEMROC Rawhide for C SD (3)

- The Shock Line and Mount
  - Find CG of completed model with expended motor casing and nose cone removed, as it would be in recovery
  - Make a small hole to through which shock line can be passed (see illustration)
  - Pass shock line through the hole and out the rear of the body tube. Make a loop with a slip knot at the end of the line coming out the bottom of the rocket.
  - Tie the other end of the shock line to the nose cone

Converting the SEMROC Rawhide for C SD (4)

- Contest Streamers
  - Accepted ‘optimum’ size is length to width ration of 10:1
  - Must be (by rules) at least 5:1
  - Common sizes for C SD are 5 x 50 and 6 x 60 inches
  - ‘Zebra’ fold (see illustration) for ¾ of the length; ½” folds
  - Take extra care to really set the creases (iron them or press under pressure)
  - Attach a short length (< 6”) of shock line to the middle or one corner of the unfolded end of the streamer
  - There may only be ONE attachment point to the streamer (no loops or yolks)
  - Vellum paper, mica film, half and one mil Mylar make good streamer materials



Altimeters for June Regional Use

- Don’t let lack of an altimeter stop you!
- You can purchase a new altimeter (multiples types available) locally from Hub Hobby
- Several altimeters will be available to borrow at the contest
  - Adept altitude only
  - PerfectFlite ALT15KWD
  - PerfectFlite ALT15KWD Rev 2
  - First come, first served, for use at contest

Links to Web Suppliers and Sites

- Aerospace Specialty Products
- Balsa Machining Services
- Apogee Components
- Qualified Competition Rockets
- Hub Hobby Center
- PerfectFlite Altimeters
- Adept Altimeters

The above are just some of my personal favorites. There are lots of great web companies from which to choose.

In Conclusion…

- You don't have to build super-specialized models to compete at the local/regional level
- Many events can be entered with models in your current sport 'fleet'
- A key to doing well is getting in both flights for events that allow two flights
- Above all….

Have Fun!!