



MAX-Q

HARA

Newsletter of the Huntsville Area Rocketry Association

Volume 11, Number 2, April 1997

Let's Do Launch! HARA Members Eager To Fly After Long Drought



Kyle Cornelius supervises as his father Kevin preps a LOC Magnum for its maiden flight on an I357!



HARA vice-president Kevin Cornelius' LOC EZ-I65 reaches for the sky on an H128W!

HARA members were treated to two opportunities to launch in early 1997 after a long hiatus in the flying schedule. The regularly scheduled February 22 SEP launch turned out to be the last at our "old" flying field in Athens, on a clear but gusty day for small field flying.

22 February '97

The "Farewell Launch" at the old Athens field took place on Saturday, February 22, and a few of us die-hard HARA members braved the chilly winds to bring in the new year of rocketry. Kyle Cornelius inaugurated the 1997 flying season with a nominal launch of an Estes Alpha (superbly crafted by longtime rocketeer Santa Claus) on an A8. Not to be outdone, Kyle's father Kevin sent up his AeroTech HV-Arcas on F motors, followed by a few flights of his LOC EZI-65 on G64's.

Dave Gannett showed up with his newly recovered 29mm reloadable motor, first flying it in his LOC Onyx, and finally

losing it yet again in a pond when his LOC Norad kicked it out of the mount and lawn darted. Ouch! Better luck next time, Dave.

Neal Redmond demonstrated the advantages of high-strength construction techniques as he apparently got a few "bonus" delays from AeroTech. Neal's carbon/Kevlar Estes Maxi-Force first ejected a fraction of a second before impact, taking a perfect (and deep) core sample of Athens, Alabama

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Vol. 11, No. 2 April 1997

Editor: Brian Day

Contributors: Vince Huegele, Kevin Cornelius, Neal Redmond, Mark Tygielski

MAX-Q is the official newsletter of the Huntsville Area Rocketry Association (HARA), NAR Section 403.

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Submissions may also be made in electronic form via email to:
bday@hiwaay.net.

HARA also maintains a Web page at:
<http://hiwaay.net/~bday/hara/hara.htm>

HARA Officers

President	Brian Day
Vice President	Kevin Cornelius
Treasurer	Mark Tygielski
Advisor	Vince Huegele

From the President's Pad

This issue of Max-Q marks the end of a legacy for HARA. Our past president and newsletter editor, Vince Huegele, has stepped down and I am suddenly aware of the size of the shoes that he's left to fill. Vince has been our devoted president for ten years, and according to HARA members who have been around longer than I have, he's been the glue which has held our club together at times. I know Vince will continue to be an active participant and contributor to HARA, but we will definitely miss his "official" leadership.

I've also just learned what a difficult and time consuming task it is to put together a quality newsletter like Vince has done with Max-Q over the years. I look forward to continuing Max-Q in the tradition that Vince has left, but I'll admit that I'm going to need a lot of help from HARA members with articles, ideas, plans, photos (*especially photos!*), criticism and of course the occasional bit of humor. Also, I'll use this opportunity to express an urgent plea for the use of a scanner to incorporate photos into Max-Q.

This year promises to be an exciting and challenging one for HARA. Despite the diligent efforts of SEP Program Administrator Greg Warren, we still haven't been able to find a "permanent" flying field. The field used for the February launch was wonderful, but as of this writing has already been planted with crops. If we can indeed find a suitable field, we may also have the opportunity to work more closely with other nearby rocketry organizations (such as Tripoli Birmingham and Middle Tennessee Tripoli), possibly hosting some larger launches than what we are accustomed to. Some of our members are even involved with Project HALO (High Altitude Lift Off), an amateur attempt to launch a hybrid rocket into space. We look forward to hearing about those efforts in future issues of Max-Q!

I'm also pleased to announce that I've finally figured out a way to make Max-Q available on-line on the HARA web page. I'm always receptive to ideas to improve our web page (not to mention HARA as a whole), so please feel free to drop me a line, either by email or "snail mail". (See the masthead at the left for our web page and email addresses).

As for me, I'm really looking forward to serving you as HARA president, and I'm especially looking forward to the 1997 flying season!

Fly high and fly safely!

Brian



"We can lick gravity, but sometimes the paperwork is overwhelming."

- Werner Von Braun

Launch Reports (continued from pg. 1)

After removing the earth and wiping the rocket with a towel, Neal then demonstrated that his rockets "don't need no stinking parachutes". And he was right. Just to show us that he really knew how to make a proper flight, he flew it yet again with a borrowed 'chute for a visually pleasing effect.

Brian Day watched his PML lo take a trip downrange and firmly implant itself in the ground. This is the second time this rocket has acted like a lawn dart on steroids, with no damage worse than scratched paint on the nose cone. Brian's pink crayon rocket made its second nominal flight, this time on a G80.

22 March '97

The March SEP launch was to have been our first from a newly-arranged field, also in Athens, but a last minute change in plans by the landowner forced SEP Program Administrator Greg Warren to locate an alternative field. Greg outdid himself in locating a 450 acre cotton field in Capshaw, AL, whose owner actually delayed planting the year's crop to accommodate our launch, and who also agreed to help us find a more permanent solution.

Gary and Michael Suits came out with an arsenal of Estes rockets, and also gave us a nice kite demonstration when the wind was too gusty for rockets. Joe Robertson got the spot landing award by dropping his scratch-built V2 about a foot from the pad (after an apogee of about 6 feet). Greg Warren brought out part of his rare collection to fly for a change, and HARA regulars Brian Day, Kevin Cornelius, Neal Redmond and Vince Huegele just couldn't resist the opportunity to fly some bigger stuff.

See more launch photos this page and on page 7.

I think it goes in here somewhere...



Kevin Cornelius gives the I357 in his LOC Magnum a final preflight check.

Have you paid your Dues for 1997?

Reminder: HARA membership dues are \$10.00 per year (\$5.00 for additional family members, up to \$20.00 maximum), and may be paid to any HARA officer.

COUNTDOWN '97

1997 HARA Launch Schedule

04/26	SEP Payload Launches and Open Sport Range
05/24	High Power and Open Range waiver to 10K AGL
06/28	High Power and Open Range waiver to 10K AGL
07/26	High Power and Open Range waiver to 10K AGL
08/23	High Power and Open Range waiver to 10K AGL
09/27	High Power and Open Range waiver to 10K AGL
10/25	High Power and Open Range waiver to 10K AGL

Painting the Sky Pink!



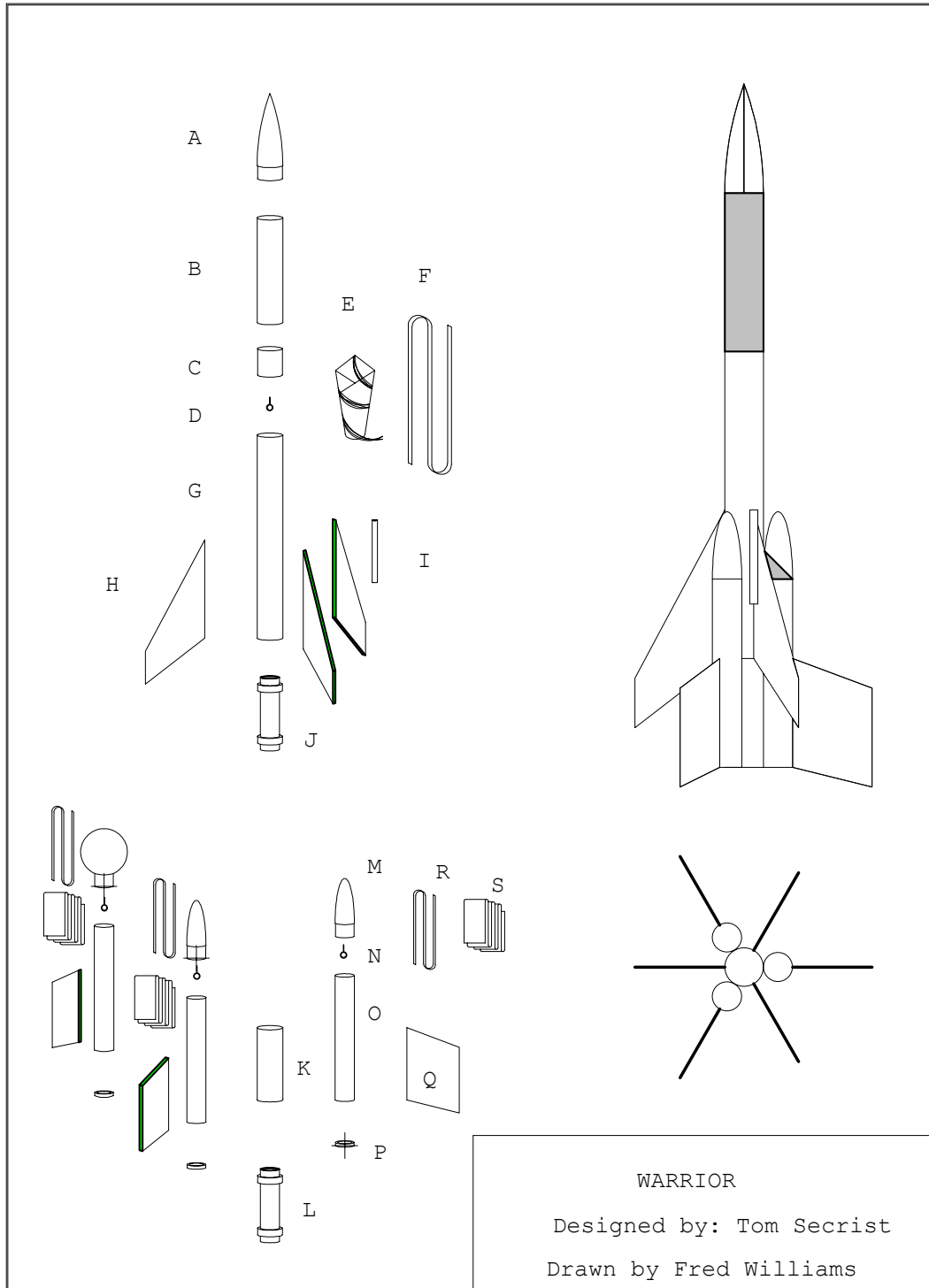
Brian Day's 4" pink crayon leaps skyward on an H97.

This issue's plan comes from the rec.models.rockets archive at the University of North Carolina. I've had my eye on this model rocket design for a long time, and I never seem to have time to build all of the neat ideas that I've seen over the years. For those of you who like clusters and stages, you can double your fun with this plan. Somebody, PLEASE BUILD THIS ROCKET!!! -- bd

Warrior: A Two-Stage Cluster Design

by Thomas P. Secrist

Some of you will remember a design called the Little Beth X-2 that showed up in an issue of *Model Rocket News* in the early 70's. The design consisted of a three-engine booster and single engine upper stage. The Warrior goes one step further by adding an engine to the booster.



Warrior: Upper Stage Assembly

Assemble the EM-2050 mount as per the instructions. Glue the engine mount into the main tube so that the ends of the engine and main tube are even. Cut three upper stage fins from 1/8" balsa. (Make certain that the balsa grain is parallel with the leading edge.) Mark and draw the fin lines on the main tube and glue the fins onto the lines. Make certain the back of the root is even with the end of the tube. Glue the launch lug at one of the fin/tube joints. Give all fin joints a good fillet. Glue the screw eye into the nose block, then glue the nose block halfway into the payload tube. Using a typical Estes type paper anchor, glue the shock cord about halfway down the main tube, then tie the free end to the screw eye. Assemble the 12" parachute and tie it to the screw eye. Put a finish on the upper stage as you would any model. The upper stage can be flow single-stage with a B4-4, B6-4 or C6-5.

Booster Assembly

Assemble the second EM-2050 mount but leave out the engine block. Glue the engine mount into the BT-50. The tube ends should be even. Lay the BT-50 assembly on a flat surface. Lay one of the BT-20 outboard tubes beside the BT-50 with two ends even, then glue the tubes together. Allow the assembly to dry. Make a copy of the tube alignment guide and place the copy with a wax paper cover on a flat surface. Place the assembly on the guide, then glue the remaining outboard tubes to the main body. Put heavy fillets in the tube joints, using white glue or epoxy. Once the glue has dried, mark the fin placements on the boosters, then draw the lines as straight as possible. Glue engine blocks into the outboard tubes so that the engines will extend about 1/4". Cut three booster fins from 1/8" balsa (Again, make certain that the balsa grain is parallel with the leading edge.) and glue each of them to the fin lines with the rear of the root even with the back of the tube.

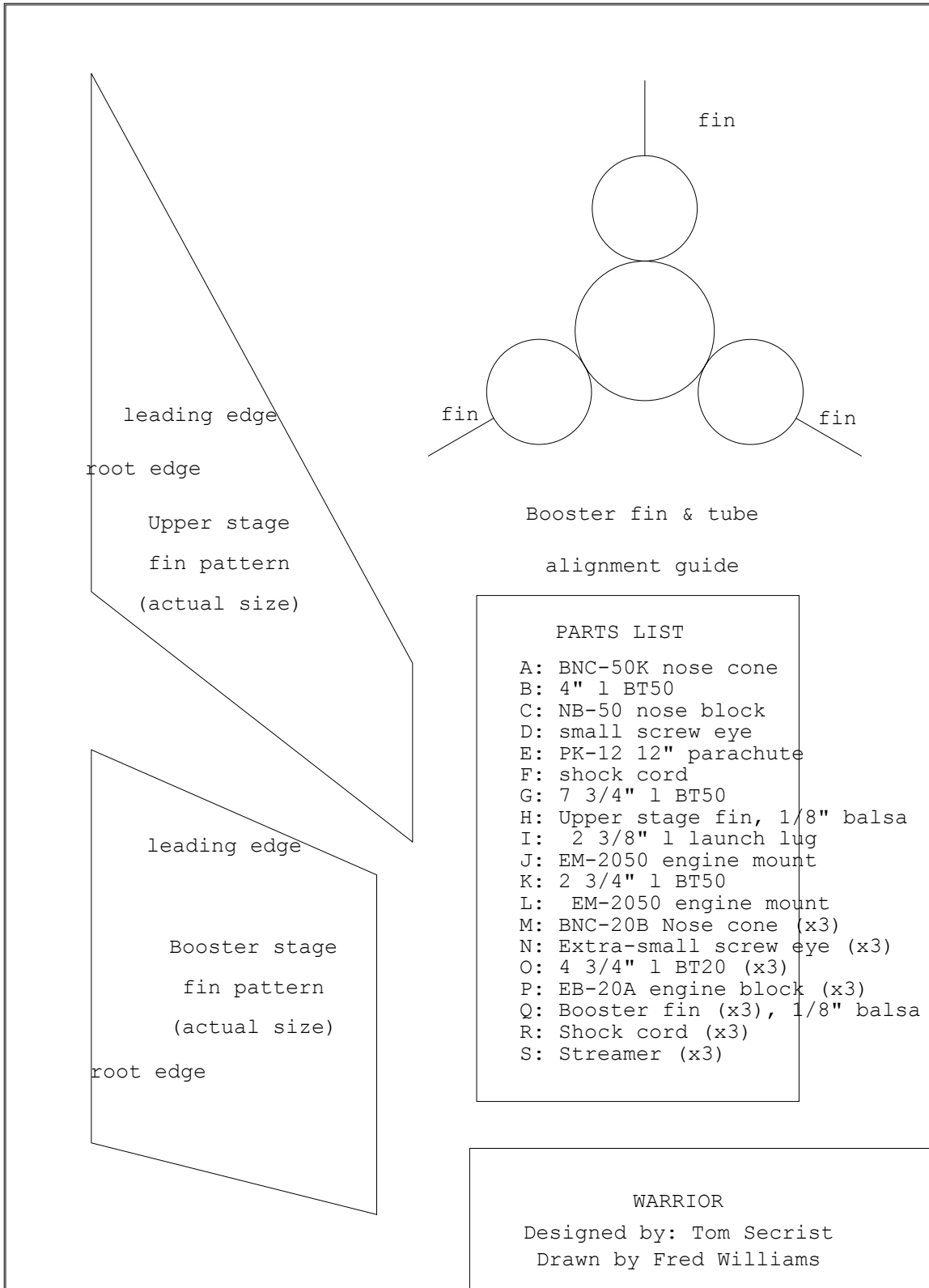
Flying

Experience with clustering is a must for the Warrior. Any upper stage engine can be used in the second stage. Lower stage combinations are limited as follows: the thrust duration of the central booster must be equal to or greater than the outboards. And of course, all the outboards must be identical. The following booster combinations are possible:

<i>Central</i>	<i>Outboard</i>
B6-0	12A6-2
B6-0	A8-3
B6-0	B6-2
C6-0	A8-3
C6-0	B4-2
C6-0	B6-2
C6-0	C6-3

Prep the upper stage and outboard recovery systems as you would any model. Place the central and upper stage engines together with the booster front against the upper stage engine nozzle, and tape the engines together with only one wrap of scotch tape. (Not masking, electrical or duct tape!) Friction fit the upper stage engine into the upper stage. Now, slide the lower stage on from the other engine end. Some friction fit may be necessary to hold in the booster. The outboard tubes serve as a *tower* for the upper stage, so no coupler is needed. Friction fit the outboards in place. Carefully select your igniters. Add 3" leads of 30 ga wire to make hookup easier. Insert the igniters in the engines, then connect four leads (one from each engine) to one clip. Connect the remaining four leads to the other clip. Use a strong 12 volt system.

Warrior: Fin and Positioning Templates



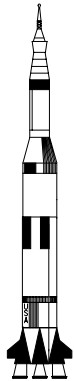
A Man and His Dawg



Neal Redmond walking his Fiber Dawg to the pad.

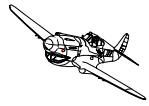


Greg Warren checks his scratch-built missile with an E30.








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The Dawg takes to the air on an I211.

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**Vince Huegele racks up his
AeroTech Mirage on a windy day at
the March SEP launch.**



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