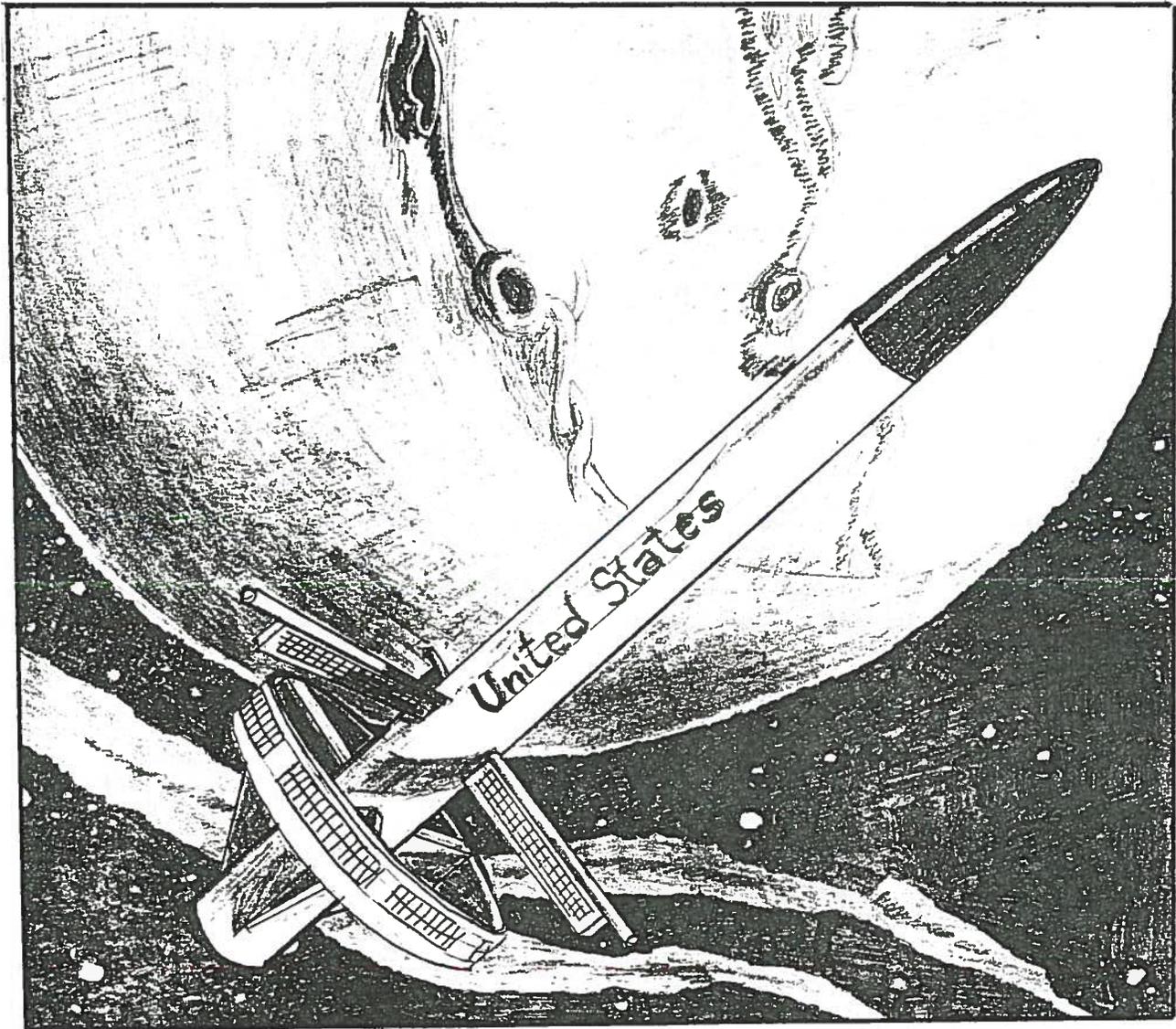


# LAUNCH BACK

The Journal of New Jersey's Oldest NAR Section



Celebrating Our Fifteenth Year

EVENTS FOR FUNTEST '97  
1997 FLYING SCHEDULE

**ISSUE 118**

March/April 1997

SECTION NEWS • KIT REVIEW • HIDDEN IGNITER

# The Launch Rack

The Official Publication of The  
*Garden State Spacemodeling Society*

MARCH/APRIL 1997

ISSUE 118

The **Launch Rack** is the official publication of the *Garden State Spacemodeling Society* (Section 439 of the National Association of Rocketry) and is published for the enlightenment and entertainment of its membership.

Others interested in receiving this publication may do so for the annual subscription rate of \$7.50 for 6 issues. Overseas subscriptions are \$17.50. Please send this money payable in USD to **Arnold Klein, 2 Oneida Avenue, Rockaway, NJ 07866.**

The Editor invites and encourages all to submit articles, photographs, plans, letters to the editor, etc., for future publication. In addition to articles, the Editor welcomes and encourages constructive feedback on each an every issue. Please send all material to:

Jack Sarhage  
875 River Road  
Piscataway, NJ 08854-5549

Non-copyrighted material published in **The Launch Rack** may be used by other publications provided proper credit is given to the original author and this newsletter.

## LAUNCH WINDOW:

Anyone wishing to attend any GSSS activity should call the GSSS hotline (908) 658-9417 the morning of, to verify the event is still on. If the event is cancelled, the recording will be updated at 9AM.

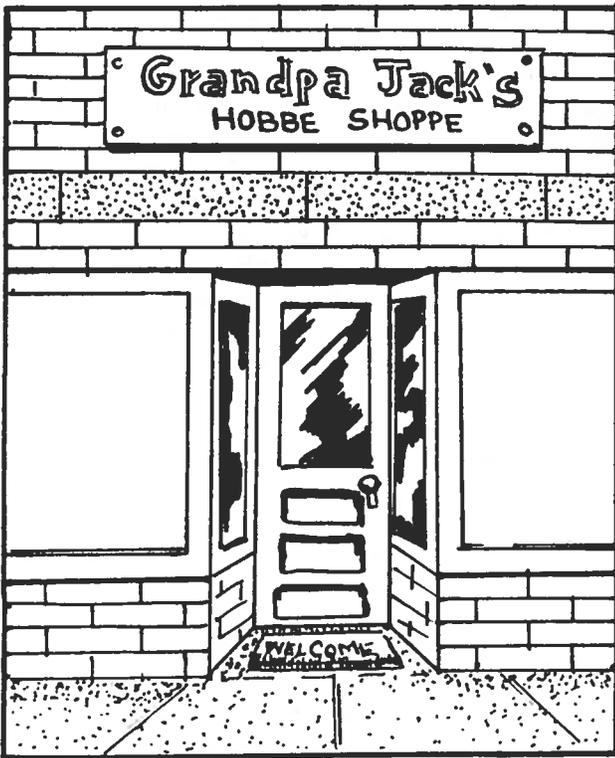
**A NOTE ON NORTH BRANCH PARK.** Please keep in mind that the park and weather conditions dictate what we allow to fly. Just because a rocket is under the one pound limit, do not assume it is an automatic launch. If the RSO does not feel the model can be safely flown or recovered within the park's boundaries, it will not be flown regardless of the weight or impulse. If some other activity shows up and starts using the adjoining fields, the RSO will reduce impulse for all flights. So, bring some small stuff just in case. **REMEMBER, WE SHARE THE PARK.** We do not pay a fee and most of us are not a resident of that county. Rocket flying fields in New Jersey are in short supply, and we are protective of the fields we have. If you're unhappy with this limitation, then we invite you to help us in gaining legal access to privately owned, large, open fields.

<u>March 22 and 23, 1997</u>	<u>Sat., April 26, 1997</u>	<u>Sat., May 31, 1997</u>
10:00 am - 3:00 pm	10:00am - 3:00 pm	10:00 am - 3:00 pm
Northeast Meets Southland	Sport Launch	Sport Launch
Open Meet	Funtest '97: A SD	Funtest '97: A Ping Pong Ball
Funtest '97: OSL		

ALL OF THE ABOVE LAUNCHES WILL BE HELD AT NORTH BRANCH PARK

**ON OUR COVER:** This pencil rendering is a preliminary sketch for an oil painting our Editor and Artist Jack Sarhage has in the planning stages. We see a Satellite Drone in orbit around what could be a moon or planet deep in space. See his column for a product review of this kit from Custom Rocket Company

NOTE: DEADLINE FOR NEXT ISSUE IS APRIL 26!!!!



(Special Note: The opinions expressed in this column are those of the Editor and not necessarily the Garden State Spacemodeling Society or its Board of Directors.)

GREETINGS all you body tube crunchers. It is nice to be able to get together once again. We hope that you will enjoy this issue.

**1997 Flying Schedule:** You will find posted in this issue the dates of the Monthly Sport Launches confirmed by North Branch Park. These are still subject to change, so it is always best to double check the Launch Window on page 2 or our Hotline at 908-658-9417.

While on the subject of launches this is a good time to go over the rules to be followed at all GSSS Sport Launches.

- 1 - All models/launches to be in compliance with the NAR Safety code (16oz/4oz).
- 2 - All models ready to launch must be presented to the RSO for safety check.
- 3 - When using the "alley system" permission to launch must be given by the RSO. A **loud** 5 second countdown must be used before launch.
- 4 - An **attempt must be made** to insure that all model are recovered within the boundaries of the park. Use and engine/recovery system compatible with wind conditions, etc. (This does not apply at contests.)

- 5 - High power (over 30-Newton seconds) flights, **when allowed by the RSO** will be ignited from a minimum distance of 30-feet. (Recovery required as in rule 4.)
- 6 - MOD-ROC flights will be allowed at the discretion of the RSO. (Recovery as in rule 4.)
- 7 - Entry to and exit from the launch area will be from one end only near the RSO's table.
- 8 - Static testing of engines is not allowed.
- 9 - Long thrusting engines should only be used in very calm wind conditions. **No more than 4.5 seconds of thrust time will be allowed. Recovery as in rule 4.**
- 10 - All prepping of model is to be done outside the launch area.
- 11 - Models using more than 30-Newton seconds of power must use at least a 3/16 or 1/4 inch launch rod. If smaller, model may not be allowed to fly. (RSO to decide.)
- 12 - Alcoholic beverages are not allowed at any GSSS model rocket launch.

**FUNTEST '97 EVENTS:** You will also find in this issue the events for this very popular activity. This is a good way to get a painless taste of competitive flying. So come on out. As you can see in March is the Open Spot Landing event. It is open to any model, any motor, and any recovery system. The idea is to learn what a particular model does under certain conditions in order to land it nearest a pre-determined spot. I am sure we can expect Tom Whymark at this event as he once again attempts to foil Bob Z.

Then in April is the A streamer duration (A SD) event. Just about any small model using a streamer will be competitive, or you could build one of the competition kits on the market. Some kit models to consider are the Yankee, Wizard, Viking, Zinger or the Reliant to name a few.

**NORTHEAST MEETS SOUTHLAND:** This is an NAR sanctioned contest to be held on March 22 and 23. Contestants earn points that go toward a National award at next year's NARAM. Events are 1/2A Helicopter Duration (1/2AHD), A Superroc Duration (ASRD), Open Spot Landing (OSL), and Sport Scale. It is hoped that you will enter, but if not come out to help man the stop watches, etc. Unlike the Funtest Events you must be an NAR member to compete in this contest. **SO COME ON OUT AND BE A PART OF THE ACTION AND FUN.**

**NAR BOARD OF TRUSTEES AND**

**ASSOCIATION MEETING:** Did you know that  
(Continued on the next page.....)

these meetings took place? They did at NARAM-38 during August 2-5, 1996. Do you know what went on at those meetings? Do you know what decisions were made that affect you as a member of the NAR? Although I have received issues of Sport Rocketry and The Model Rocketeer neither one had any coverage of these important events. How do you find out? Well, they are supposed to be available 60 days after the meeting(s). They are available through NARTS. So, I figured that by October 5 they would be ready. Knowing how volunteers never have time to do all that is expected I waited until November 19, 1996 to send my check (that's right you must pay for a copy). On February 20, 1997 they arrived in the mail. My question, why must the burden be placed upon the member to find out what the trustees are doing? It is almost like them "good ole boys clubs". I have always felt that the minutes should be printed in the association "journal" or, at least send a copy (FREE) to each of the Section Advisors as an effort to let the members, the bill payers, know what is going on. How about it NAR trustees? Maybe it is time for another national association. In the meantime, any GSSS member that would like a copy should send me a SSAE. What went on at those meetings can be a topic in another issue.

**INDEPENDENT ASSOCIATION OF ROCKETRY:** Well it seems that there is another national organization in the works. Our old friend Manuel Mejia, Jr. and his club in Florida are trying to organize one. There are no dues to join. Write Manuel at P. O. Box 4092, Tampa, FL 33677 or Slc. Dennis Bishop, 85-373 Plantation Road #5, Waianae, HI 96792 for more information. They say competition is good for the soul.

#### A KIT REVIEW

Custom Rocket Company  
*"Satellite Drone" Product 10022*

After 45 years of building models, first and still model airplanes, ships upon occasion, and for the last 25 plus years rockets, I have reached the conclusion that it's the construction I enjoy more than the flying. There's something about opening a new kit, or gathering the materials and the pleasant hours sitting in your comfortable chair, favorite drink nearby, pouring over the plans and imagining it taking shape in your hands. Like me, you have more kits and even more plans in your "to-be-built" file than

you can complete in a lifetime. And, it doesn't matter that each new catalog, each full size plan in your special publication only adds to that never to be reached goal.

You know, it is a funny thing, when it comes to airplanes those of the Golden Age grab my fancy, with ships it is those with sails especially from the Revolutionary War period, BUT with rockets I can't pass up those futuristic designs....from what was to what could be. Having said that it was no surprise that I ordered the "Satellite Drone" right after the Custom Rocket Company catalog arrived.

Product 10022 is a Skill Level 3 kit. What that means is if you have never built a model or only a couple Alpha types this rocket is not the place to begin.

The four pages of instructions are easy to follow, so you shouldn't have any problems. I did run into one "hitch" that I'll tell you of later. Later, because while the instructions begin at the rear (where I had the problem) I want to start at the front.

A plastic, no painting necessary nose cone comes with this kit. No end plate to be glued as on some models. A screw eye is inserted into a hole along the rim leaving the whole end open to ease the addition of nose weight; though none is needed or supplied.

The main body tube is 1.325-inch (BT-55) in diameter and 12-inches in length is of superior quality. It is thick with an outer wrapper making a virtually seamless tube requiring no painting and the finish readily accepts the decals provided.

The motor mount is standard for 18mm engines. I like the engine hook with its unique bend at the end preventing kicked engines.

Now that we've reached the business end I can explain the "hitch". It had to do with the ring/fin assembly. You cut out three fins, from good balsa I might add, and mount them 120° apart; normal for a three fin rocket. Then you slide the fin ring over them and making it even with the fin's leading edge. Upon giving it a trial fit there was a 1/16 inch gap all around. I took some 3/32 x 3/32 balsa and glued a length to the outer edge of each fin. Then, I sanded each in turn until I achieved a no gap joint between the fins and ring. Also you are reminded to seal the fins before gluing the ring in place making the job easier.

Finally, glue the three upper fins above the  
(Continued on page 6...)

## SKY WATCH

Contributing Editor: *Bob Zabriskie*

### March and April

**Mercury and Venus:** Are in the Sun's glare as the month starts. However, by the beginning of April Mercury will be about as high as it gets in the West at dusk.

**Mars:** It is a very bright orange-yellow in the Eastern sky in the beginning of March. It is well placed for observing in the constellation Leo for the next couple of months. It is closest to Earth the night of March 17.

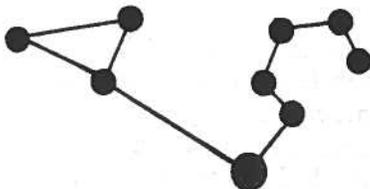
**Jupiter:** As dawn breaks, Jupiter is the bright "star" in the Southeast. By the end of April Jupiter will "rise" around midnight.

**Saturn:** Too low in the Western sky in March. By the end of April you might be able to spot Saturn very low in the East before morning twilight.

**The Moon:** Will totally eclipse the Sun on March 8th for people in parts of Asia. Our turn comes on March 23-24 when The Moon will move into Earth's shadow and we will see a partial eclipse of The Moon. It will start at 10pm on the 23rd and end at 1:22am on the 24th. Even though no total, 92% on The Moon will be eclipsed.

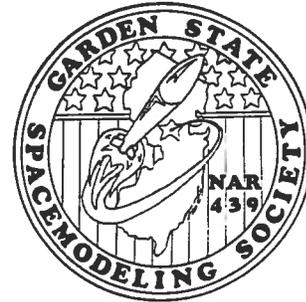
**Comet "Hale-Bopp":** The comet should be well placed for observing low in the Northwest sky after sunset by mid-March. From the end of March to mid-April, if it is going to do its thing, will be the best time to observe it in the early evening. From mid-April to the 22nd The Moon will interfere.

### The constellation "LEO" (The Lion):



## SECTION NEWS

**NEW MEMBERS:** It is always a pleasure to Welcome! new members to the club. This time we would like to greet, **Gary Cole** from Morris Township, from Hoboken **Robert Nee**, and **Scott Johnson** in Plainsboro.



### Club Patches

We have a new shipment of patches in. If you would like one they cost \$5.00 to members and \$7.00 to non-members. These will be available at all club launches.

We also working on the possibility of transfers to be used on T-shirts of a 15th Anniversary Design by Dr. Bob! Kreutz. More information next time.

Sorry, we do not have a Treasurer's Report this issued.

REMEMBER, the most wanted activities the members voted for were:

- Sport Launches
- NAR Competitions
- Newsletter
- Permanent launch site
- Monthly meetings

grab your "elected" Board of Directors and make these happen. It's all up to YOU.

1997 is also an election year. Now is a good time to begin thinking about who you would like to govern the club. HOW ABOUT YOU!!!

## Celebrating Our Fifteenth Year

(Continued from Page 4.....)

Grandpa Jack's column continued.....

the ring fin assembly locating one fin between each of the lower fins. A 2½ inch length of 1/8 inch dowel is glued to the top of each upper fin.

The rocket uses a launch lug, but no where in the instructions did I find where it should be located. The best I could determine was looking at the break away drawing on page one.

The usual practice is followed for shock chord mounts and parachute assembly.

Why not get a copy of their catalog of "kits ranging in sizes from mini to D including futuristic, sport, multi-stage, and scale like models" by sending a SSAE to Custom Rocket Company, P. O. Box 2086, Augusta, ME 04338-2086.

**SPEAKING OF CATALOGS:** Two arrived in mail this past week. Estes contains its expanded line including model airplane kits; rubber powered, electric powered, gas motor powered, hand, and catapult launched. Rocket wise there really isn't much new, especially for those of us that have been in the hobby for awhile. AAA Model Aviation Fuels catalog of large scale rockets also arrived on the same day. Four new kits, Lasersonic 1350™, Lasersonic 1650™ both in the "Magnum" class, a Quadra "D"™ and Quadra "G"™ using 4-24mm and 4-29mm respectively motor tubes. AAA line is a good place to start when ready for rockets with larger powered motors. Their catalog is available for \$3.00 to AAA Model Aviation Fuels, 122 Sumner Avenue, Clarks Summit, PA 18411-2224.

**MEMBERS SURVEY:** As promised in the last issue these are the five most voted on for "goals and activities GSSS should consider for 1997".

- Sport Launches - 8
- NAR competitions - 7
- Newsletter - 7
- Permanent launch site - 7
- Monthly meetings - 6

Under the "type of articles you would like to see" in the newsletter these are the top five

- Launch coverage - 10
- How-to (design) - 8
- Product reviews - 8
- How-to (construction) - 7
- Technical articles - 7

While the GSSS activities are up to the Board of

Directors what appears in this newsletter is up to YOU. I am doing the best I can. To cover the five areas YOU would like to see is going to take your cooperation. You could start with a product (kit) review as you build your model. You usually come up with an idea of how you could improve it or a problem you had. Write it up. It does not have to lengthy (like me) or fancy (not like me). We used to have a motto in this publication, "If you see it in print, it is because it fit."

AGAIN, THIS IS YOUR PUBLICATION. IT WILL ONLY CONTAIN IN IT WHAT YOU PROVIDE. Otherwise you will have to put up with my stuff.

**WE HID SOMETHING:** In each issue we hide a drawing of an igniter. When you locate it, send a card with the page number and your name and address. Those with the correct answer will be place in a pot and a winner drawn. In issue 117 it was right in the old hobby shop window on page 3. Steve Pantuck was the winner of the Quest "Nike-K" rocket kit. This time we have a neat prize for you. It is a 22" x 34" full color poster of 155 rockets all drawn at 1/300 scale from Saturn Press, "Rockets of the World". Oh! by the way, you do not have to be a GSSS member to participate, subscribers and newsletter exchanger are welcome, too.

*"Keep 'em flying."*

*Jack*

### FUNTEST '97 EVENTS

**MARCH - Spot Landing**

Any model, any motor, any recovery system  
Objective - Land closest to a pre-determined spot.

**APRIL - A Streamer Duration**

Any model - must use any A motor. Must use a streamer for recovery.  
(I will have streamer material at field....Bob Z.)  
Objective - Model is timed from launch to landing. Longest duration wins.

**MAY - A - Ping Pong Ball Duration**

Any model with a diameter large enough to hold a ping pong ball - must use a A motor.  
Objective - Model is timed from launch until ping pong ball lands.

**JUNE - A - Parachute Duration**

Any model. Must use an A motor, any size parachute.  
Objective - Model is timed from launch to landing.

**JULY - C - Egg Loft Duration**

Any egg loft model. Must use a C motor, any size parachute.  
Objective - Model is timed from launch to landing  
~~(Not to be used in the broken.)~~

**AUGUST - B - Helicopter Duration**

Any helicopter model (model cannot separate into any unconnected pieces). Must use B motor.  
Objective - Model is timed from launch to landing.

**SEPTEMBER - 1/2 A Mosquito Duration**

You must fly an Estes Mosquito with a 1/2 A motor.  
Objective - Model will be timed from launch to when it is returned.

SCORING: 1<sup>st</sup> - 100 points, 2<sup>nd</sup> - 95 points, 3<sup>rd</sup> - 90 points, etc.

**NOTE:** Only one (1) flight in each event and models cannot eject spent motors

# WINGS and ROTORS

## VIII - "Building By Formula"

(You Haven't Cried, "Uncle!" So Here I Am Again. Jack Sarhage)

**aspect ratio  $n$**  (1907): a ratio of one dimension to another: as **a**: the ratio of span to mean chord of an airfoil.

*Merriam-Webster's Collegiate® Dictionary*

What does this have to do with designing our glider? Well, for one thing it is a way of comparing apples and oranges. It is also one of two pieces of data needed to begin designing our A Boost-glider. The other piece of information is the wing area. Where do we get this? Why from those experts.

Dr. Gerald Gregorek in his paper, *Basic Design Rules for Boost and Rocket Gliders* (available from NARTS) says in general, "for A powered boost-glider (B/G) 20 to 40 square inches" is the recommended wing area.

Since a hand-launched glider is the nearest relative of our B/G we find, in Frank Zaic's, *Model Glider Design*, the aspect ratio of 4 to 6.

Let's use the maximum recommended wing area, 40 square inches. For our first attempt at design for an aspect ratio let's stay in the middle and go with 5. Now with this information and the formula below we can find our first dimension of our wing, the span.

$$\text{Span} = \sqrt{\text{area} \times \text{aspect ratio}}$$

$$\sqrt{40 \text{ sq. in} \times 5} = \sqrt{200} = \text{approx. } 14 \text{ inches}$$

Next, we need to find the average chord of our wing. To do that we can use either of the two formulas below:

$$\text{Average Chord} = \frac{\text{span}}{\text{aspect ratio}} = \frac{14}{5} = 2.8$$

$$\text{Average Chord} = \frac{\text{area}}{\text{span}} = \frac{40}{14} = 2.8$$

Let's round it off to 3 inches as our average chord.

So, now we have a wing with a span of 14 inches and an average chord of 3 inches, in other words a rectangle. That's not a very exciting shape is it? What do you say we at least make it tapered.

Our tapered shape will be equal to the sum of

the average chord of the center and tip, divided by 2. Or,  $3" + 3" = 6$ . This 6' can be divided in any way desired. Let's increase the center chord to  $3 \frac{5}{8}"$  and the wing tip chord to  $2 \frac{3}{8}"$ . The average chord is still 3". The formula being:

$$\text{Average chord} = \frac{\text{center chord} + \text{tip chord}}{2}$$

Let's get our Stabilizer and Fin measurements while we are at it. Remember? We found out last time that the area of the Stabilizer should be about 33% of the wing area. In this case that would be 13.2 square inches. Using the formula I came up with a stabilizer of 6" span by 2.25" average chord. Again I went to the tapered shape and chose a center chord of 2.75" and a tip chord of 1.75"

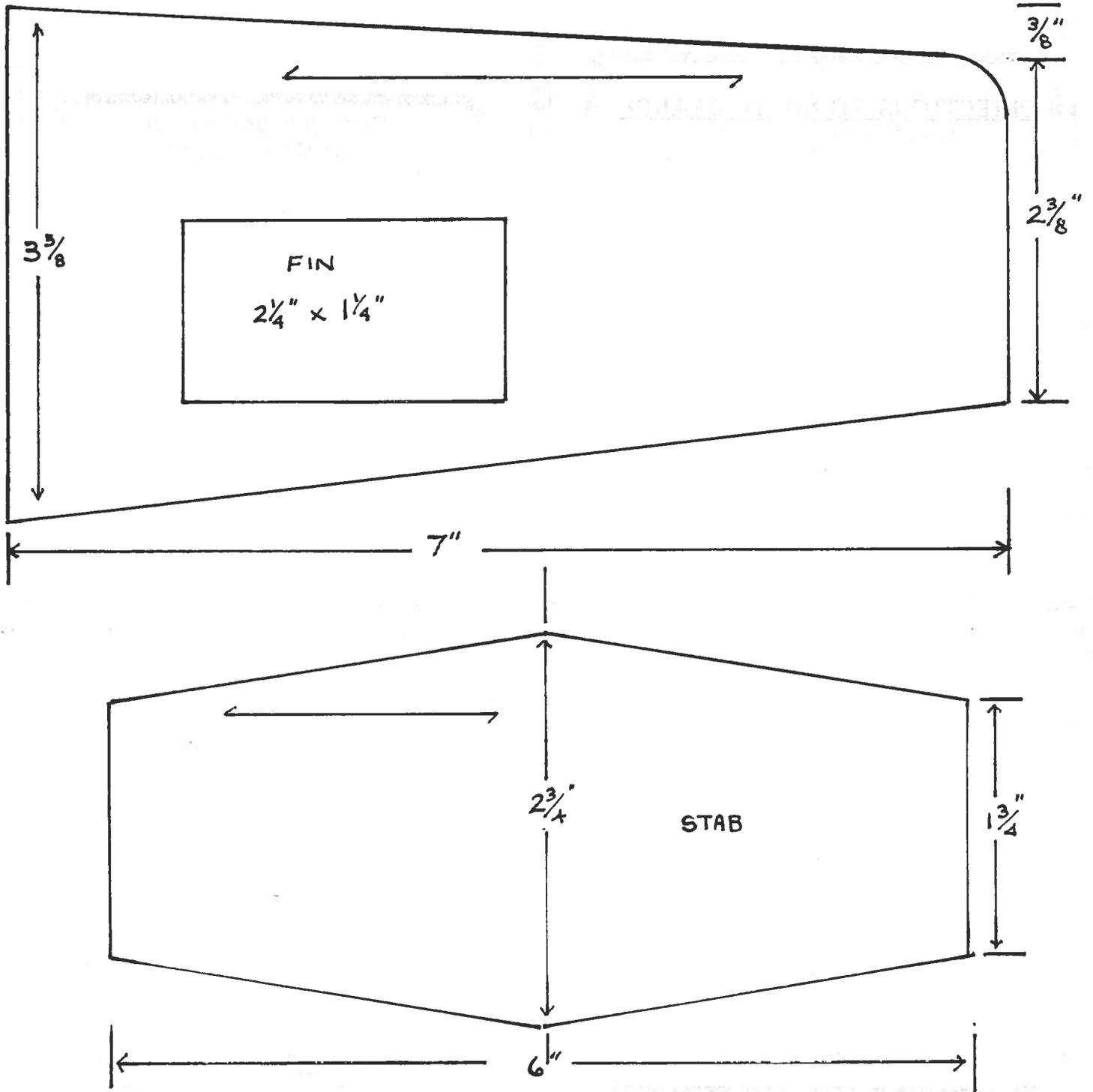
The fin is to be 7% of the wing's area or 2.8 square inches. I stayed with the rectangle shape this time, i.e., 2.25" X 1.25"

On the next page you will find full size drawings for our wing, stabilizer, and fin. And I think that is all we should absorb this time. Next, time we will look at the airfoil, or maybe we will look at the fuselage. Speaking of airfoils would you to see how you go about plotting one? We could see how to adapt the Clark Y to our glider's wing.

Hey, gang, I really appreciate you hanging in there like this.

Now, I know there are lots of folks out there that will tell you that you cannot design using formula. That is true as there are always trade offs. But, for us just learning this game of design it is a good place to start.

See you next time!!!!



Garden State Spacemodeling Society of New Jersey  
National Association of Rocketry Section 439

# 1997 FLYING SCHEDULE

## DIRECTIONS TO NORTH BRANCH PARK LAUNCH SITE

North Branch Park is very near the traffic circle junction of NJ Routes 22, 28, 202, and 206, near Somerville. Follow 202 South from the circle for 2 miles, past Ortho Pharmaceutical and Harris Corp, under railroad trestle marked "4H is Tops", to right turn onto Milltown Road. Make first left after firehouse and 4H Center on right; follow path to open field. Monthly launches from 10-3.

### FROM NORTH

NJ Turnpike South to Exit 10, 287 North to Exit 13,  
202/206 South to Circle

### FROM SOUTH

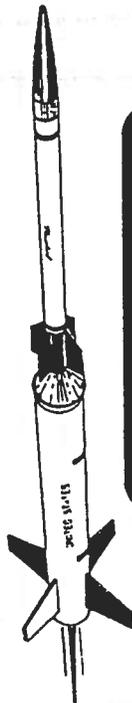
202 North to Milltown Rd.; or 206 North to Circle

### FROM EAST

287 North to Exit 13, 202/206 South to Circle

### FROM WEST

Rt. 78 or Rt. 80 East to 287 South to Exit 13,  
202/206 South to Circle



Come join us for a full  
year of sport flying.  
For all launch information and club  
information contact the GSSS

Hotline : 908-658-9417

or send mail to

Bob Zabriskie

RD#2

3 Peachtree Rd Basking  
Ridge NJ 07920

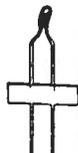
## MONTHLY SPORT LAUNCH

Launch Times 10:00-3:00

Sat 25 Jan	Northbranch Park
Sat 22 Feb	Northbranch Park
22-23 Mar	Northbranch Park
Sat 26 April	Northbranch Park
Sat 31 May	Northbranch Park
Sat 28 June	Northbranch Park
Sat 26 July	Northbranch Park
Sat 23 Aug	Northbranch Park
Sat 27 Sept	Northbranch Park
Sat 25 Oct	Northbranch Park
Sat 22 Nov	Northbranch Park
Sat 20 Dec	Northbranch Park

1 LBS MAX LIFTOFF WEIGHT  
MAXIMUM ENGINE THRUST  
80 NEWTON SECONDS  
"When park conditions permit"

Call to confirm all dates and  
locations. NAR/AMA insurance is  
highly recommended at all  
launches.



**DIRECTIONS TO NORTH BRANCH  
PARK LAUNCH SITE**

North Branch Park is very near the traffic circle  
junction of NJ Routes 22, 28, 202, and 206, near  
Somerville. Follow 202 South from the circle for  
2 miles, past Ortho Pharmaceutical and Harris Corp.  
under railroad trestle marked "4H is Tops", to right  
turn onto Milltown Road. Make first left after  
firehouse and 4H Center on right; follow  
path to open field. Monthly launches from 10-4.

**FROM NORTH**  
NJ Turnpike South to Exit 10, 287 North to Exit 13,  
202/206 South to Circle

**FROM SOUTH**  
202 North to Milltown Rd.; or 206 North to Circle

**FROM EAST**  
287 North to Exit 13, 202/206 South to Circle

**FROM WEST**  
Rt. 78 or Rt. 80 East to 287 South to Exit 13,  
202/206 South to Circle

**GSSS MEMBERSHIP APPLICATION**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zip \_\_\_\_\_

Phone Number \_\_\_\_\_

NAR number \_\_\_\_\_

GSSS number \_\_\_\_\_

Membership Category (Check One)

( ) Junior (Under 16) .....\$5.00

( ) Leader (16 through 20) .....\$7.00

( ) Senior (21 or over) .....\$10.00

( ) Family Plan (Deduct \$2.00 for each additional

family member, only one Launch Rack will be

sent.)

I pledge to abide by the NAR/HIA Safety Code and

GSSS Constitution and Bylaws in all my

non-professional rocketry activity.

Send this application along with check for dues payable

to: Arnold Klein,  
2 Onida ave Rockaway N.J. 07866

Signed \_\_\_\_\_ Date \_\_\_\_\_

**GARDEN STATE SPACEMODELING  
SOCIETY -- NAR SECTION #439**

Robert Zabriskie  
3 Peachtree Road  
Basking Ridge, NJ 07920



**OUR  
15th  
YEAR!**

TO:

ROBERT NEE  
222 WILLOW AVE #2A  
HOBOKEN, NJ 07030

**THE LAUNCH RACK**

NEWSLETTER OF NEW JERSEY'S SPACEMODELING SOCIETY

