

SL-1  
 IS WELL KNOWN ON LEFT SIDE OF SKYLAB-1  
 AFFORDS NO ROOM TO BE USED FOR SUPPORT  
 OF SKYLAB-1 OR OTHER PLATFORMS WILL  
 BE IN USE  
 PORTIONS OF THE SKYLAB-1 ON PLATFORM NO. 4A  
 WILL BE REMOVED TO ACCEPT LAUNCH DIAMETER OF  
 MT SL-1 VEHICLE  
 SECTION OF THE SKYLAB-1 HALL ON PLATFORM  
 NO. 4C WILL BE WIDENED IN ORDER TO ACCEPT THE  
 MODIFIED SERVICE ARM-9

**Some Mobile Launcher Specs**

7.  
 cylindrical tower: 200' tall (191' between  
 launch platforms) 25 feet (7.6 meters)  
 radius: 42 feet (12.8 meters)  
 section: 122 feet (37.1 meters)  
 overall height: 230 feet (70.1 meters)  
 26 meters  
 history:  
 launch platform: 150 feet (45.7 meters) by  
 15 feet (4.6 meters)  
 launch platform: 23 feet  
 4 meters square

Launch Platform: Dark Gray  
 Medical Tower: Industrial Red  
 Industrial Tower: Orange  
 Ring: Yellow

177'-0" LEVEL  
 191'-0" LEVEL  
 200'-0" LEVEL  
 210'-0" LEVEL  
 220'-0" LEVEL  
 230'-0" LEVEL  
 240'-0" LEVEL  
 250'-0" LEVEL  
 260'-0" LEVEL  
 270'-0" LEVEL  
 280'-0" LEVEL  
 290'-0" LEVEL  
 300'-0" LEVEL

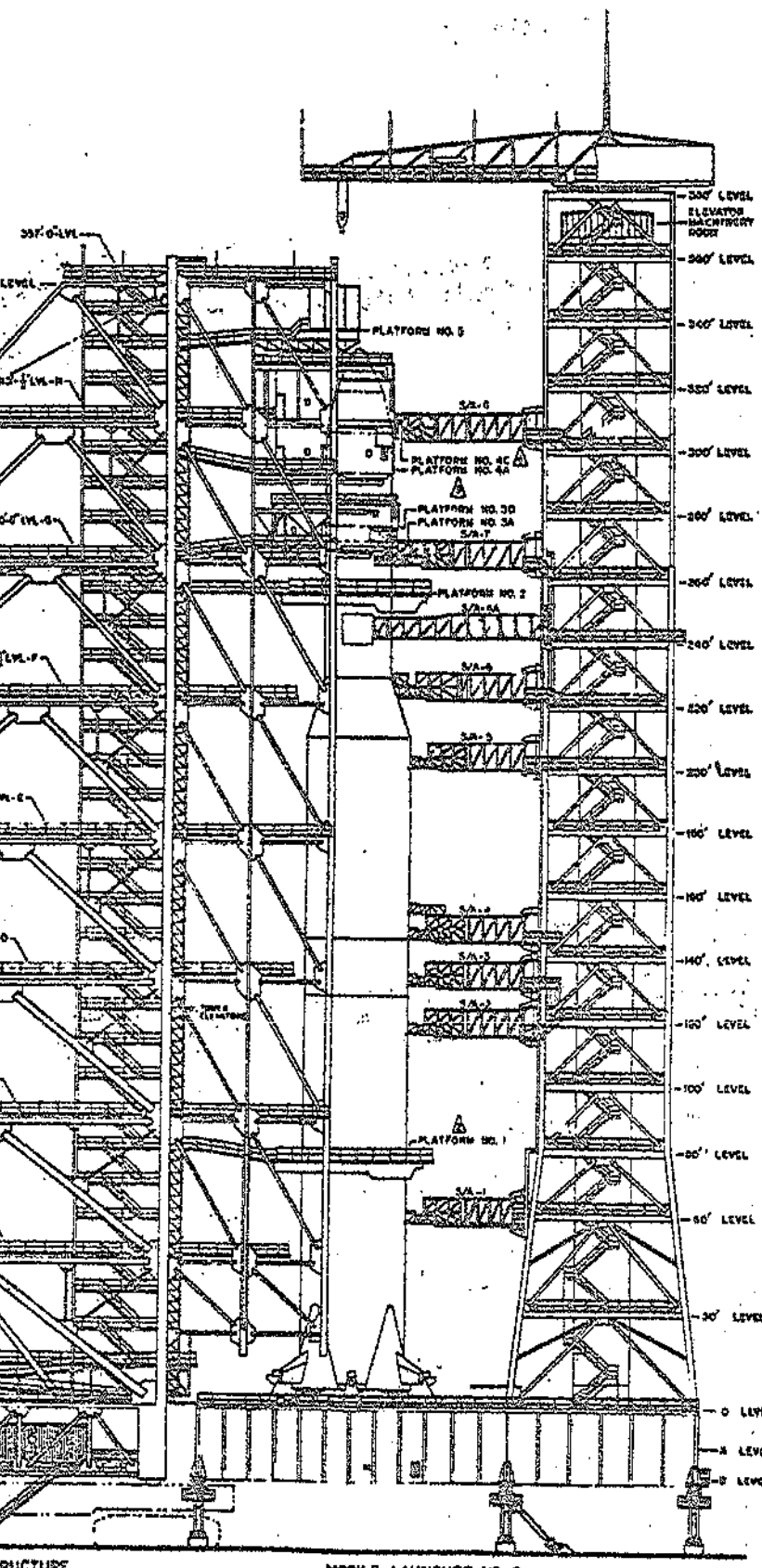
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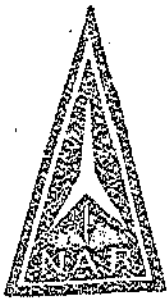


DESIGNED BY: [illegible]  
 DRAWN BY: [illegible]  
 DATE: 1973

MOBILE SERVICE STRUCTURE

SKYLAB-1

MOBILE LAUNCHER NO. 2



National Association of Rocketry

Post Office Box 178  
McLean, Virginia 22108

# a message to the members of the NAR

A new Board of Trustees has been elected, the new officers have taken their places. One of the first problems tackled by this new board, was that of the financial health of the Association. As I know you are aware, we in the Association are faced with the same rising costs affecting every group. It costs more for printing, to have a telephone, and even mail letters. Paper costs have skyrocketed as well as all services required by the Association. These rising costs have increased the cost of the Model Rocketeer magazine to you the members. To keep our association a sound, effective organization, we have been forced to increase our membership dues. The increase was kept to the smallest possible.

We must have an association with a sound financial base if we are to continue our support of both you, the member and the Model Rocketry Hobby. The NAR has a great future, many new programs are underway now. We need your continued support now and in the future if we are to have viable organization. Remember this is your association, and each member has the opportunity to make a contribution to our continued success.

*A. L. Lindgren*  
A. L. Lindgren  
President

Gentlemen,

Please accept this application for full membership in the National Association of Rocketry (NAR). If I am accepted in the NAR I pledge to observe and follow the NAR safety code. I am aware that a reported violation of the NAR safety code may lead to the revocation of my membership right. I also agree to abide by the by-laws and the standards and regulations of the NAR.

Signature \_\_\_\_\_

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THERE'S NOTHING AS REWARDING AS ROCKETRY

# IMPULSE

The Journal of the Model Rocketry and Aeromodeler's Club

1974

Volume 3 Number 2

## IMPULSE STAFF

Editor - Don Carlson  
Featured Reporter -  
Randy Picolet  
General Assistant -  
Jerry Speidel

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# EDITORIAL -

## Living With A Decision

The sight for NARAM-16 has been selected and those of us too far away to attend must weep like we did for NARAM-14. Manassas Virginia is much too far for many rocketeers to travel and in these times of gasoline shortages the trek will be no small task for those who do go.

The selection for NARAM-16's site will reincarnate many of the complaints aired about Seattle; its too far, it costs too much to fly or drive, and it takes too much time getting there. I sympathize with these complaints, as I did before NARAM-14, but let's examine the advantages as well as they disadvantages of the site.

First, it is located in a highly populated area of the nation; Washington is only 40 minutes away, New York and Philadelphia are only a few hours more. This should expose the NARAM (and the NAR) to a larger possible audience. Second, many NAR sections are located in the Virginia-Maryland proximity (and perhaps more important, the sections with the most power in the NAR are in the East - something that many Western sections believes influenced the decision) and are available to aid the NARAM organizers. Lastly, Howard Kuhn one of the finest men in the NAR and a man that has done more to advance the state of the art of competition than any other, will be the Contest Director, so a highly competent and efficient group of people will be running the meet.

As for disadvantages, the

first is the most obvious and the most painful; it is a hell of a long way from Midwestern and Western sections. (Pity South Seattle Rocket Society!). I'm sure that this fact alone will scare many NAR members away from NARAM 16. Secondly, gasoline prices are expected to be at their highest after the peak summer demand and NARAMs traditionally fall in August. (The possibility of gas-rationing also threatens as a problem.) Lastly, as one goes further away from home, so his living expenses increase. This is not to say that Manassas is any more expensive to live in than any other city, but every gas stop, hamburger joint, and motel along the way adds up.

Of course it is very early to be analyzing NARAM-16. As more information comes along, there will be more fodder for argument. The NAR's decision stands - no matter what - and we must live with it. If they decide to hold the next NARAM in the Hellas region of Mars, we must somehow pack up our rockets and go there. (No doubt there would be some that would make it to such a NARAM).

I just have one question.

What happened to the Houston site proposal that was so widely publicized at NARAM-15?



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# ALBERIO

by Don Carlson

The Alberio was inspired from the Mini-Payloader that appeared in the October '71 issue of Model Rocketry. Contest experience with the Mini-Payloader left much to be desired, but it did incorporate some very good ideas. With the Alberio, some of the initial problems are hoped to be solved and by using a throw-out-this, keep-that, modify-this approach, a pretty decent payloader emerged. If you have the Oct. '71 issue, it would be wise to refer to the pictures with the article, as construction of the Alberio is similar.

Below is a basic parts list.

- 2 NC77 Nose cones
- 1 RB77 Bodytube
- 1 RB50 Bodytube
- 1 NB30 Noseblock
- 1 Payload Weight
- 1 Sheet 0.02" Thick Plastic
- 1 10" or 12" Parachute
- Elastic Shock Cord
- Launch Lugs

Most everything is available from Competition Model Rockets.

To begin with, cut all tubes to size. (Payload tube-35mm, Booster tube-130 mm and Engine tube-60mm)

Glue a thrust ring into one end of the RB50 and set aside to dry. Take some scrap RB50 and insert the pointed end of the NC77 into the tube (Fig. 1). Trace around the tube lightly with a pen or pencil. Now take the scrap and center it carefully on the nose cone

adapter. Mark around this carefully. Using a very sharp X-acto, trim the circle out (stay inside the line). Check the fit and sand or trim to obtain the proper fit.

Place the nosecone over its adapter and wrap masking tape around the adapter to hold the two together. Insert the RB50 through the adapter and into the nose cone. Now place the assembly on a CMR body tube cutter and trim off the tip at the mark (use a very sharp razorblade). Sand or trim to obtain proper fit with the RB50.

Using 5-minute epoxy, slide the 2-3/8" engine tube into the tail cone until it is flush with the base. Smear a small amount around the inside lip of the tail cone and slip the adapter the engine tube and down onto the shoulder of the tail cone. Apply a fillet around the adapter-tube joint. Epoxy this unit to one end of the large RB77 tube.

Assemble the other NC77 nose cone as per the instructions. Omit the wire shock cord mount since it will not be needed. Wrap scotch tape around the nose cone adapter to insure a snug fit.

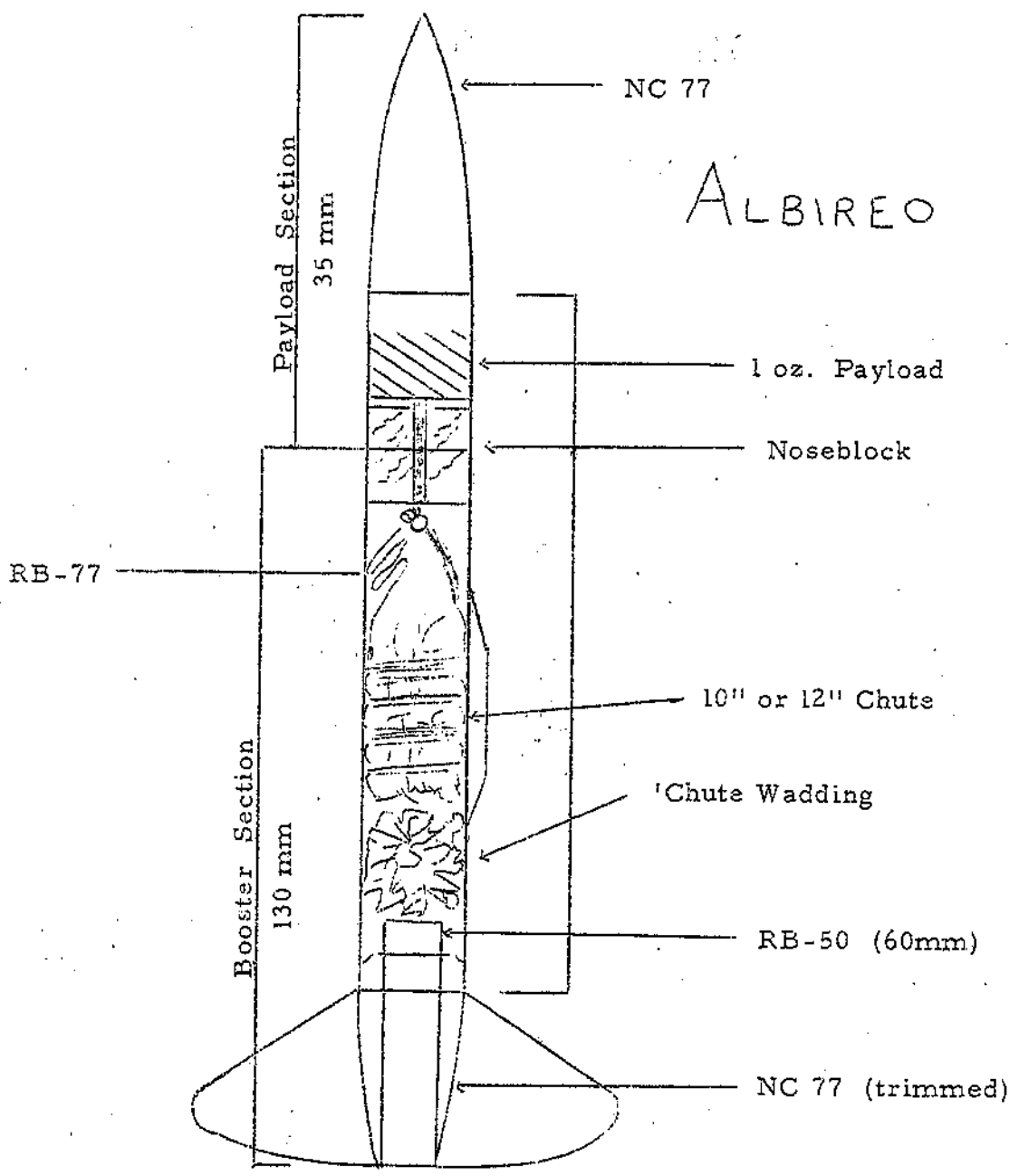
Drill a 1/8" hole in the center of the noseblock. Tie a knot in an 8" length of shock cord and pass it through the hole. Make a loop in the shock cord on the other side for the parachute attachment.

Glue the NB30 to the payload tube securely. Leave about 1/2 of the NB30 protruding.

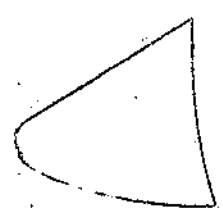
Using the fin template, cut three fins from 0.02" thick plastic sheets.

( Continued on page 19)

# ALBIREO



O2-73  
D. CARLSON



Full size fin pattern

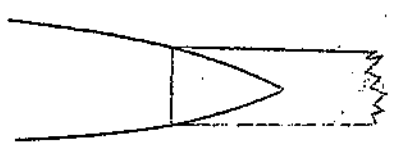
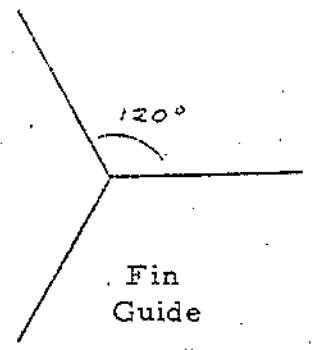


Fig. 1



# Plastic Model Conversion . . .

Converting the Revell Tranquility Base  
by David Leutzinger

"Countdown is running at T minus ten, nine, eight, ... three two, one, zero, LIFT OFF!"

"Oh man! It's headed for Mister Frey's car!!!"

C R A S H ! ! !

That, dear readers, was the first flight attempt of my B3-5m powered lunar module kit. Luckily, it missed Mr. Frey's car (by an inch or two) and sustained only minor damage. I've learned that the kit requires at least a C6-3. Converting the kit for mini-jets was very easy. The larger C6-3, however, is only a slight bit more challenging.

Beginning with the ascent structure halves, parts 64 and 65, cut away the flanges and enlarge the upper hatch opening until it will admit a BT-20 size tube (see diagram 1). This is an easy job if you have a Dremel Mototool, but an attachment for an electric drill can be improvised from a cotter pin and piece of sandpaper (see diagram 1a). It is also necessary to cut a hole on the bottom side as shown in diagram 1. The two halves may now be cemented together.

While that dries, proceed to the descent stage structure. (see diagram 2) Cut a hole in part 78 as shown, with a diameter larger than a BT-20. Now, enlarge the hole in part 79 and the small hole in part 81 until they admit a BT-20. Cut a BT-20 tube to 4.5 inches and glue the engine nozzle to it as shown in diagram 3. While that is drying, finish building according to the manufacturer's plans, and that means everything.

When the BT-20 tube and the nozzle have dried, glue in the engine block with the shock cord attached as shown in diagram 4. After it has dried, glue the finished tube into the lunar module with the top of the tube flush with the top of the ascent stage. The hatch cover is then attached to the shock cord.

The final steps are to cut out four clear plastic fins using the pattern guide, test fit, and trim them if needed. They are then glued into position between the descent stage side walls and landing gear struts. The addition of a launch lug completes the award winning kit.

(Ed. note. This article has no connection with the Revell conversion plans in Model Rocketry magazine. It is a original article.)

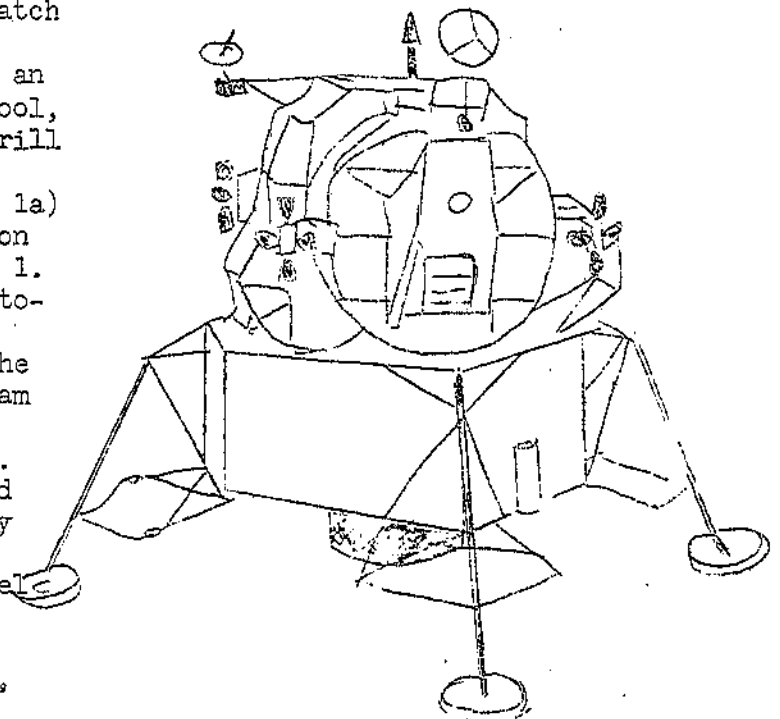




DIAGRAM 1

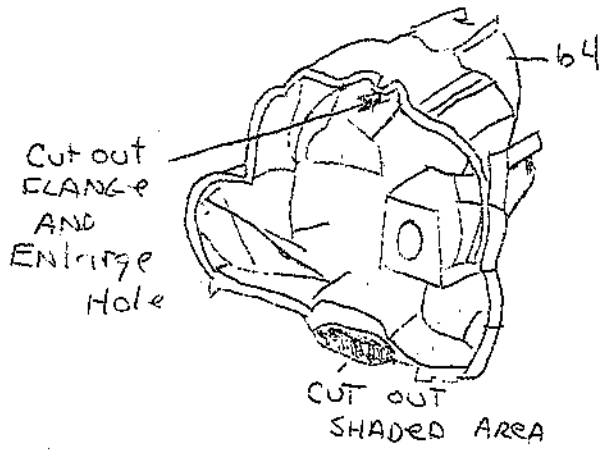


DIAGRAM 2

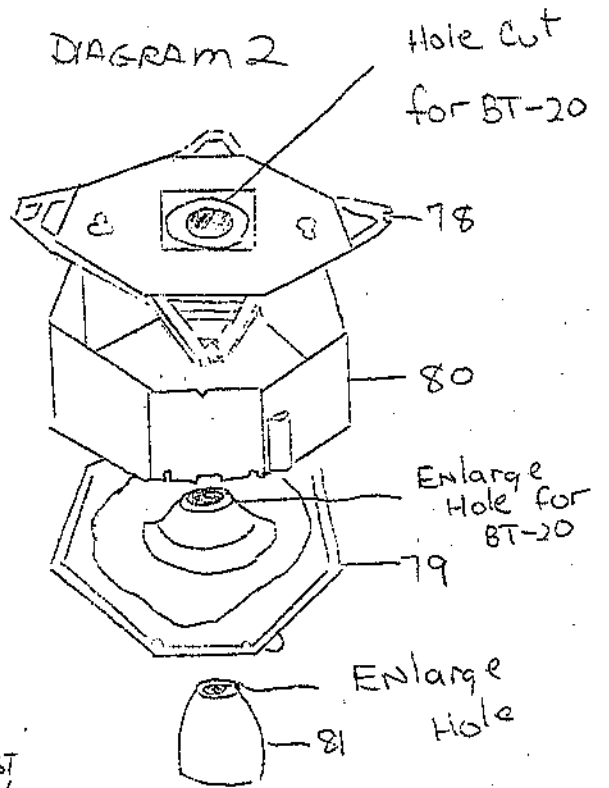


DIAGRAM 3

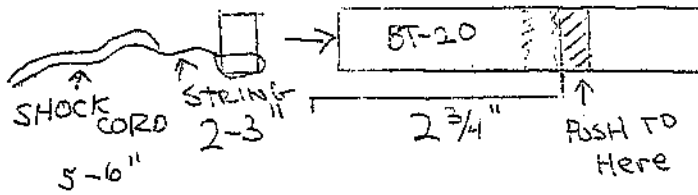
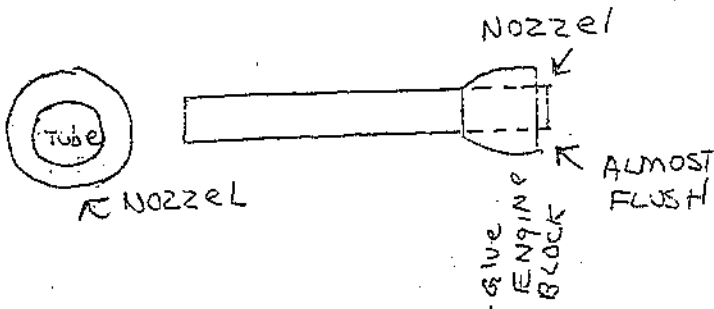
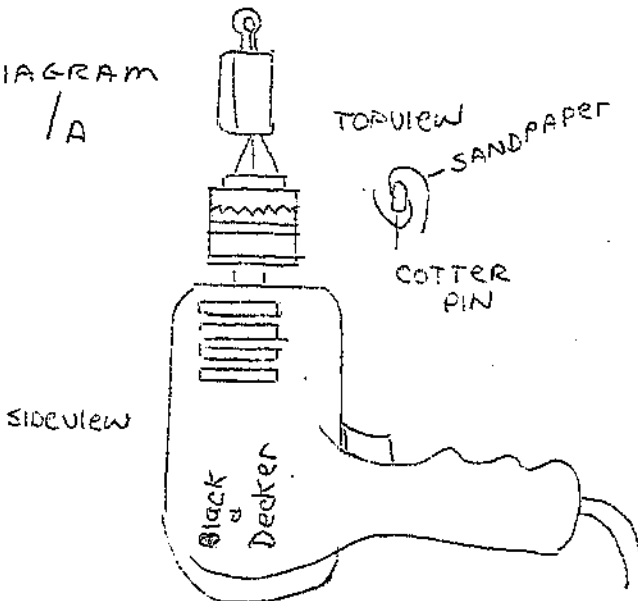
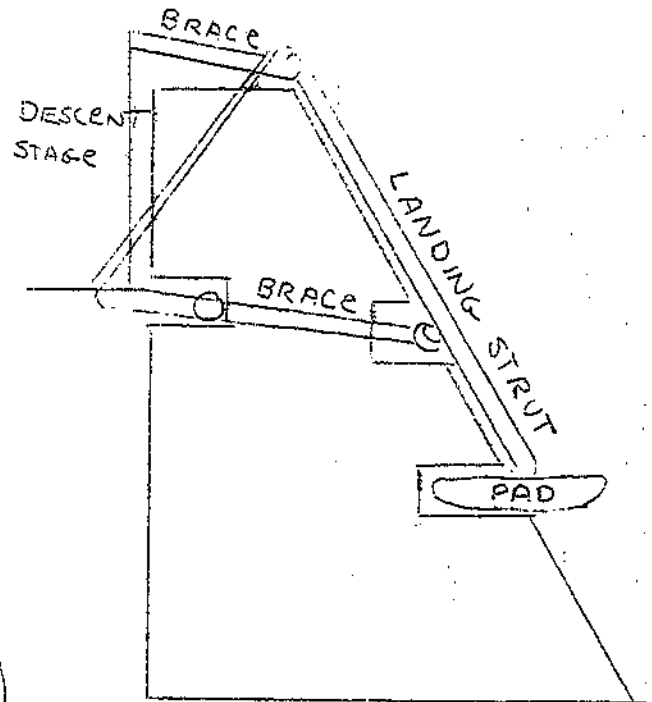


DIAGRAM 1/A



FIN Guide



## A Payload Capsule for NAR Competition Using a NAR Certified Payload Weight

From Vol. 1 No. 1 "Scared Stiff"

This payload capsule was designed with performance in mind. This can become difficult, especially considering the fact that a certified payload weight just will not fit in a BT-20 or series 7 body tube! As strange as it may sound, no commercially made tube will exactly hold a payload. This causes big problems in drag reduction. My answer to this difficulty is not to use a body tube. One of the unusual things about this capsule is that the only length of tube needed is half an inch of Centuri series 7.

The whole secret is in the use of a Centuri "Pass-Port" stage coupler as an enclosure to hold the payload. Since this coupler fits around a series 7 tube, and a payload is the same diameter as a series 7, the payload is snug - or slip-fit in the capsule. This reduces drag considerably. Now that you know the capsule's basic idea, construction can begin. If you have difficulty during construction, refer to the diagrams on the next page.

### CONSTRUCTION

Begin by getting a series 7 plastic nose cone (the kind with a removable base), a short section of series 7 tubing (half an inch is needed), one NAR certified payload weight, and one Centuri "Pass-Port" stage coupler. Cut a half inch length of the series 7 tube. Sand its ends smooth. Next, take the plastic cone (shape is up to you) and remove the base. Take some fine sandpaper and sand the outside edge at the bottom of the cone to remove excess plastic. Pick up the coupler and smear a bead of glue around the inside edge of one end. Take the half inch tube and insert it halfway ( $\frac{1}{2}$ " ) into the coupler. Wipe away all but a thin bead of glue inside the coupler. Place the payload

weight in the coupler, then immediately socket the nose cone in place. Check for a tight fit of the cone. Quickly remove both the nose cone and the payload weight. Allow the glue to dry completely before going on. After the glue has dried, place the payload in the capsule and socket the nose cone onto it. The final step is to glue the nose cone base into the half inch tube. Make sure to use a glue that will glue plastic to the paper tube. You will then have completed the payload capsule.

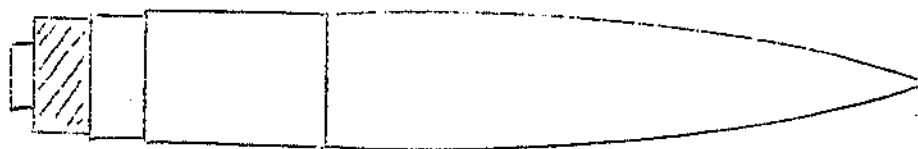
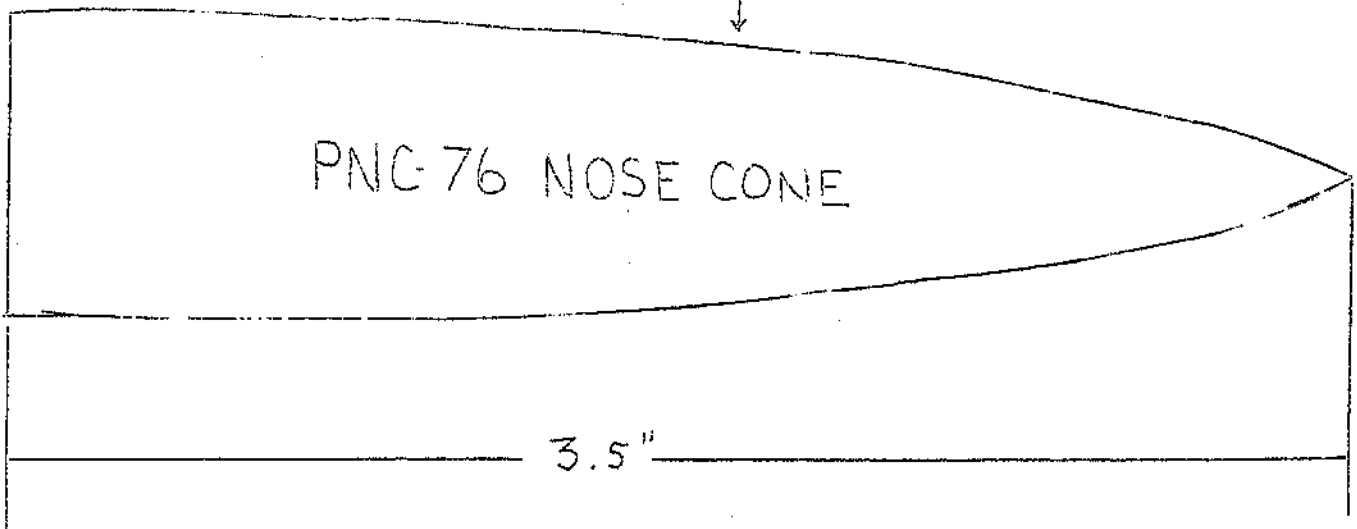
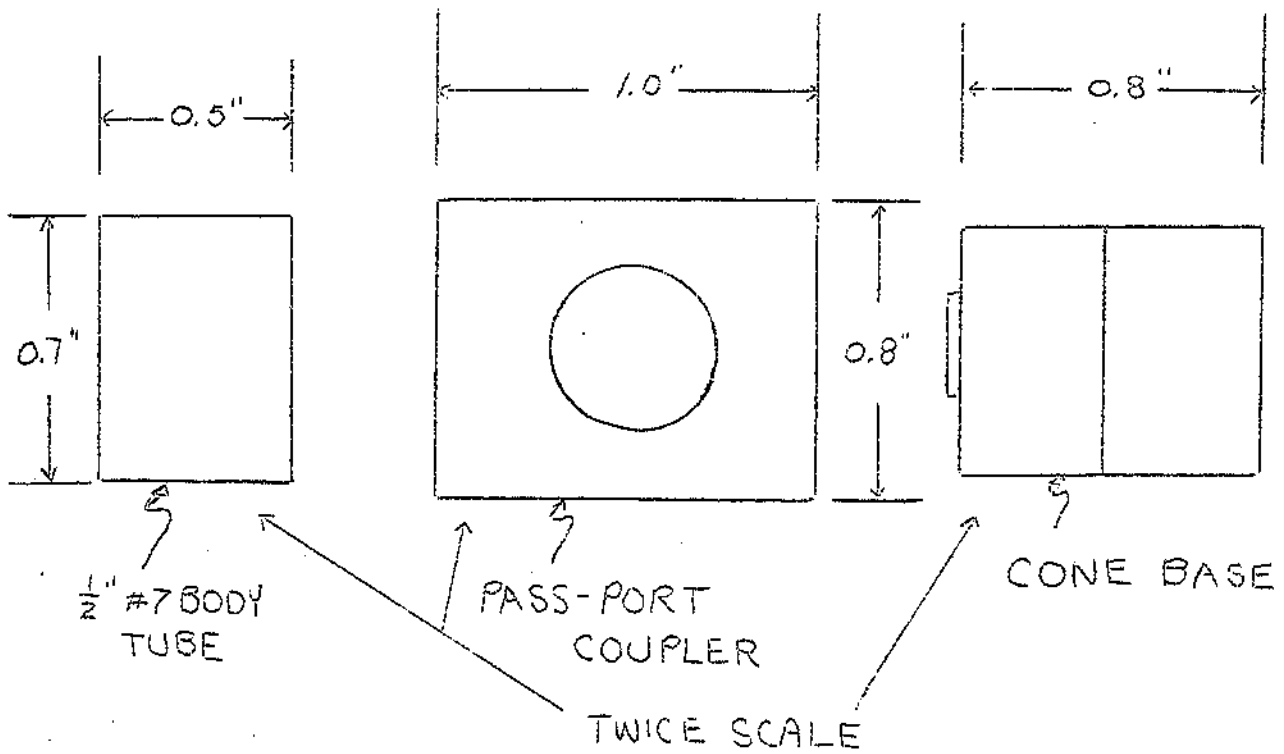
### NOTES & MINOR MODIFICATIONS

Any plastic series 7 nose cone may be used, but lowest drag will result from using the larger nose cones such as PNC-76. Other cones may be used if they make your rocket look better, or if you only have a short one on hand. I have yet to try balsa nose cones on this design, but they might work better than plastic. When flying the capsule without the payload, push the nose cone farther down into the coupler. This will reduce the drag caused by the ports in the coupler. If the cone doesn't fit tight enough, use a piece of electrical tape to tape the capsule shut.

Other minor changes: To reduce drag you can put a glue fillet around the base of the coupler, or even forget about the capsule itself and glue the coupler to the top of the rocket's body tube and have the rocket use a mid or rear-ejection system for recovery purposes.

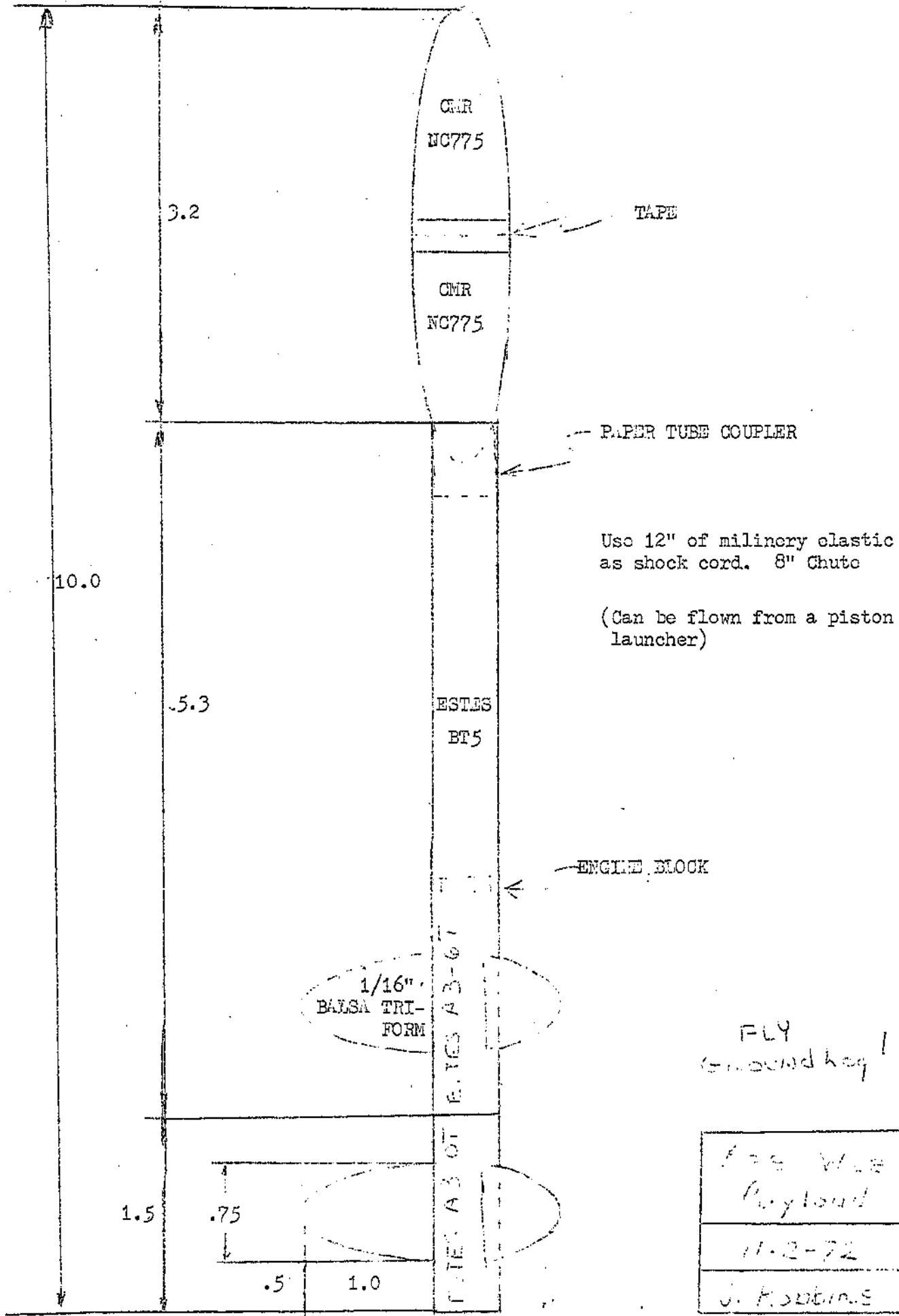
Any persons interested in contacting me about this capsule or if you'd just like to exchange ideas, you can contact me at this address:

Bob Blum NAR# 22246, Jr.  
1024 Duchesne Drive  
St. Charles, Missouri, 63301



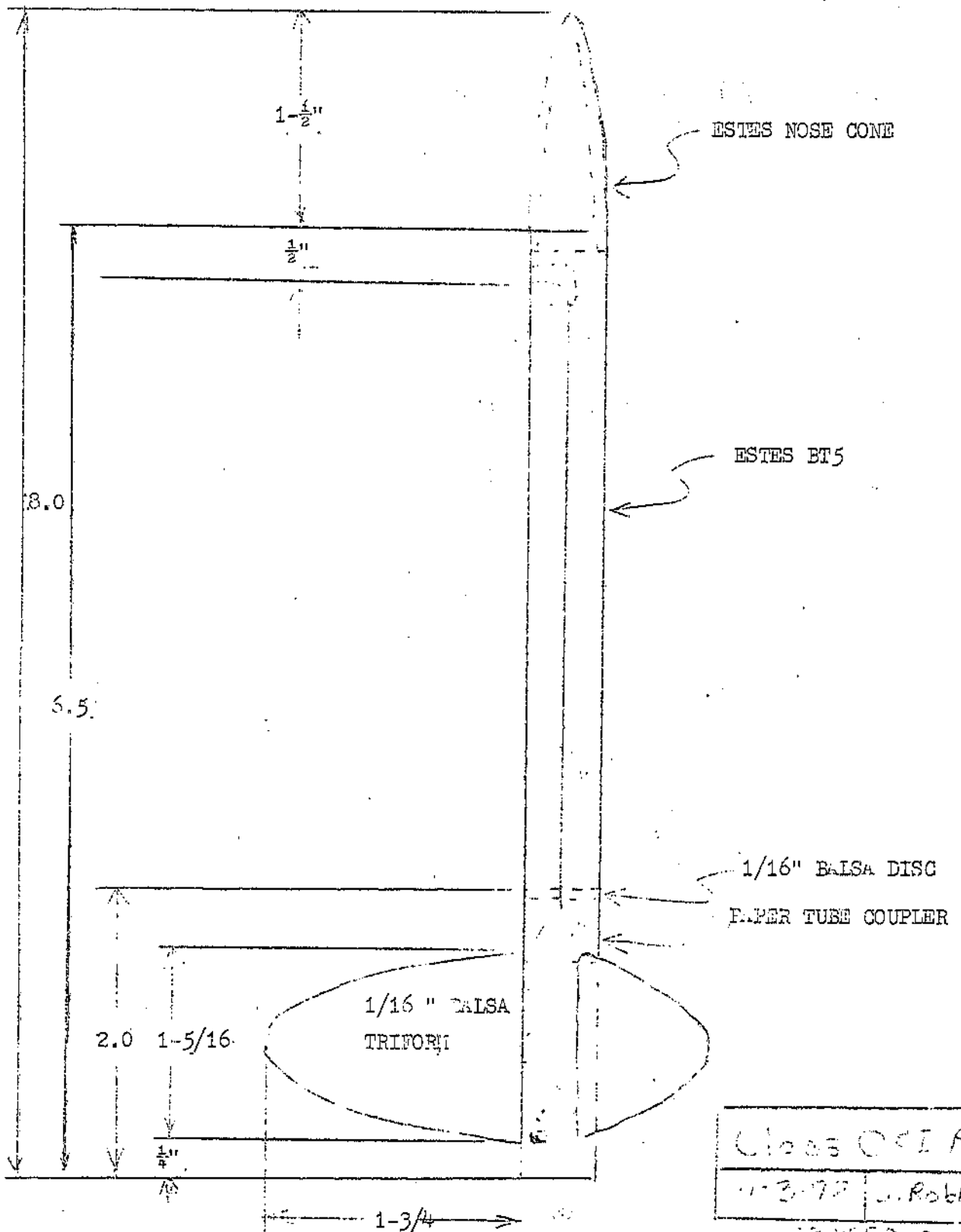
COMPLETED PAYLOAD  
CAPSULE  
(FULL SCALE)

ORIGINAL DRAWING  
BY S. BLUM  
REDRAWN 1-74 BY  
D. CARLSON



FLY (around key)
11-2-72
J. Robinson

IMPULSE magazine



Class CCI P/O	
11-3-77	J. Robbins
REVISED 2-1-75	

( Uses the same principle as the CMR "Break-Away" - Ed.)

A High Performance Competition Design For Robin Eggloft . . . . .

# ROBIN 2001

by David Leutzinger

## PARTS LIST (CMR)

- one NC920 -- nose cone (for boat tail)
- 3/8" RB90 -- body tube (for beefing-up centering rings)
- 3" RB74 -- body tube (engine mount)
- two CR74-90 -- centering rings (engine mount)
- one EB74 -- engine block
- 6" RB92 -- body tube
- one ENC92 -- plastic egg capsule
- one L5a -- "pop" launch lug kit
- 18" SC4 -- 1/4" wide shock cord
- 4"x 2" Fin Material -- 1/8" balsa stock or 0.02" thick plastic
- one Parachute -- any 12 to 18 inch parachute.

The CMR plastic egg capsules are the most popular and widely used capsules for use in NAR eggloft competition. This design capitalizes on the CMR ENC92 egg capsule and other CMR parts; plastic nose cones and inter-fitting body tubes, to produce a high performance egglofter.

## CONSTRUCTION

- 1) Begin construction of the boat tail/engine mount by cutting off two pieces of RB90, each 1/8" long, and glue one of the CR7490 centering rings in each. Set aside to dry.
- 2) Slip one of the beefed-up rings onto the RB74 tube. Push the NC920 over the ring and tube until the tube is flush against the inside of the cone

and the ring is halfway into the cone. (see diagram 1, notes A and B)

3) Carefully cut off the unwanted section of the cone (diagram 1, note C) with a sharp razor saw or CMR tube cutter so that the RB74 will slide smoothly through the hole.

4) Slip the RB74 through the hole 1/32 to 1/8" and re-adjust the centering ring (note B). Mark its position.

5) Take the other beefed-up ring and cut a 1/4" slot into it. (diagram 2). This ring is to be used to anchor the shock cord.

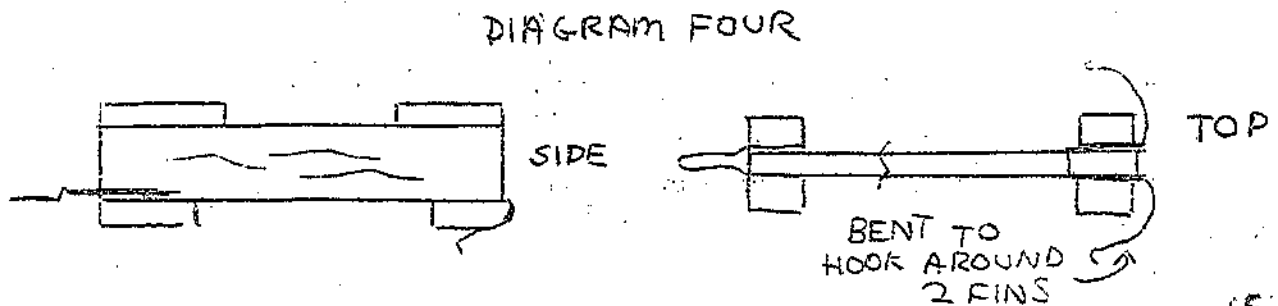
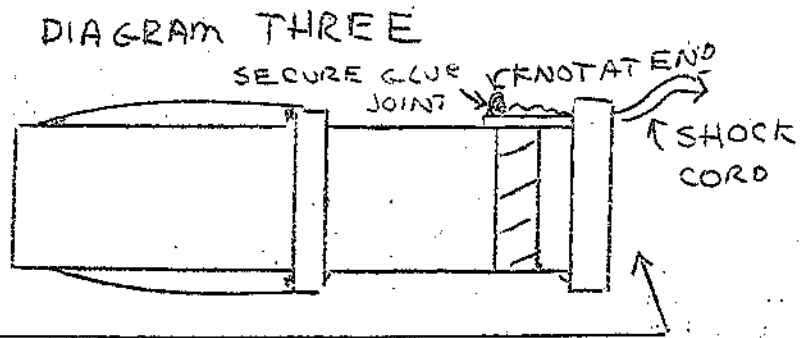
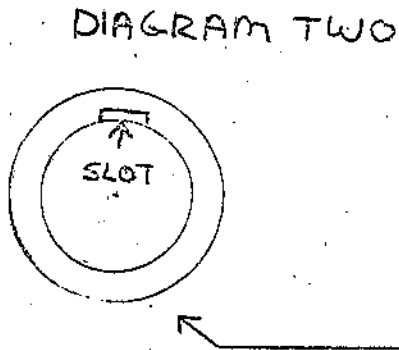
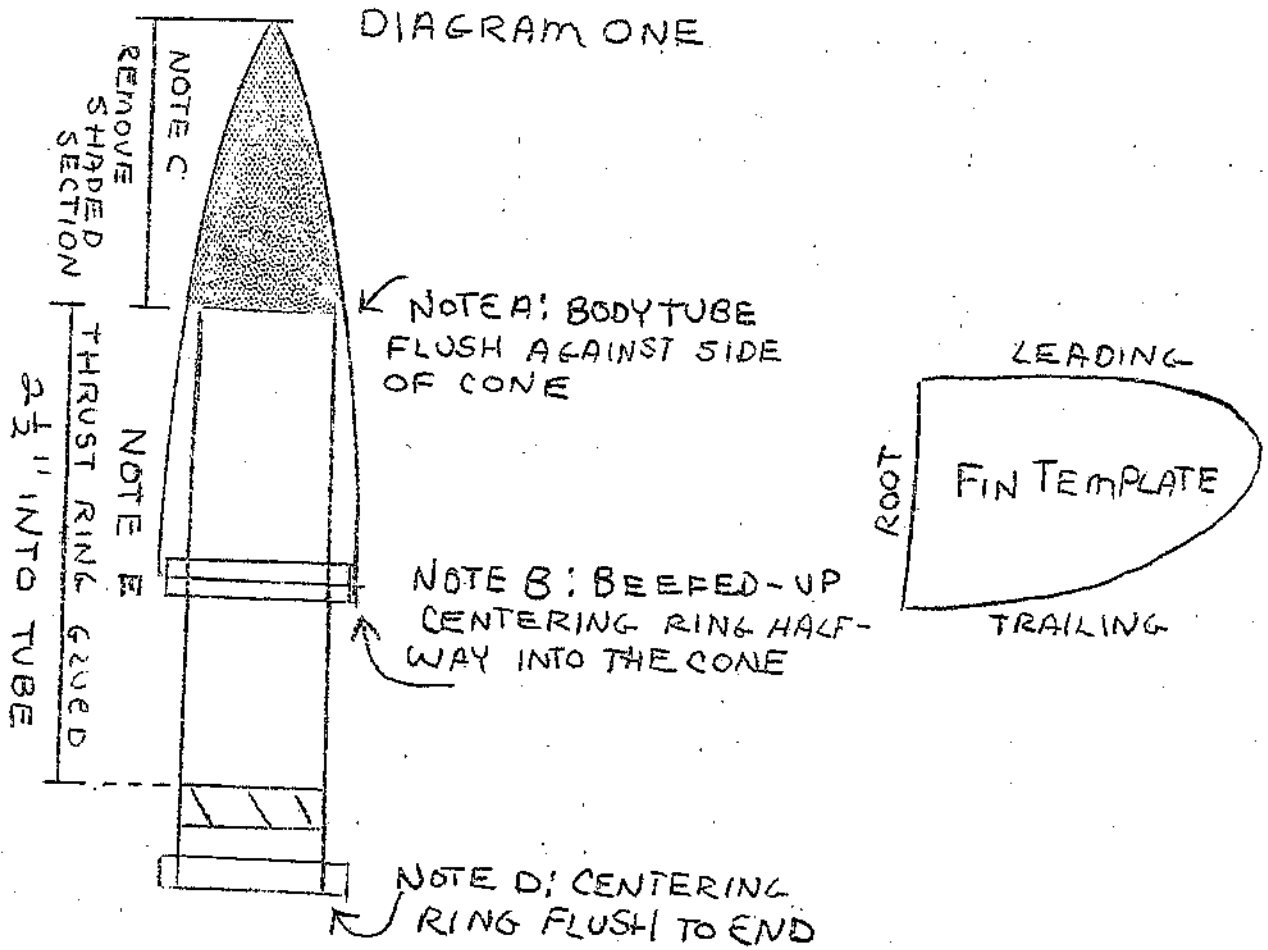
6) Glue both centering rings into place, along with the shock cord, as shown in diagram 3. Allow to dry.

7) Glue the modified nose cone into place. Allow to dry.

8) Glue the thrust ring 2 1/2" into the RB74 (diagram 2 and 3).

9) After the boat tail/engine mount assembly has dried, glue it to the RB92 body tube and set aside to dry.

10) Using the fin template, cut out three fins from 0.02" thick sheet plastic. Round the leading and trailing edges of the fins using 400 grit sandpaper. Mark the locations for the three fins on the plastic boat tail. Apply a thin layer of plastic cement to the root edge of one fin and hold it in place on the tail cone until the glue sets. Do the same with the other two fins. Brush



(Robin 2001 continued...)

a light coat of plastic cement (too much will dissolve the plastic) along the root edge of each fin to form a secure bond and let dry completely. Use epoxy glue to form the fillets at the root edge of each fin.

If you can't find any 0.02" thick sheet plastic, the next best thing is 1/8" balsa stock. Cut out three fins and sand to a basic air foil shape. Mark the locations for the fins on the boat tail. Using a needle heated in a flame, melt a few holes in the boat tail along the fin guide lines (this will make a stronger glue joint). Apply a layer of epoxy to the root edge on one fin and hold it in place on the tail cone until it sets. Do the same with the other two fins. Use epoxy glue to form the fillets.

- 11) Attach the shock cord to the egg capsule.
- 12) Assemble the parachute and attach it to the shock cord no less than 8" from the capsule.
- 13) Assemble the "pop" launch lug according to the instructions included with the kit except for the bottom wire holder. Instead of following their pattern, bend the bottom wire as in diagram 4 so that it will hook around two fins and center the lug between them.

### FLYING

Pack in wadding, a parachute, and plenty of tracking powder. Load the engine and egg, attach the "pop" launch lug, place on pad and lift off for the First Place trophy!

\*\*\*\*\*

Do you have an idea that we might be able to use in IMPULSE? Send it in! We welcome any constructive criticism or creative ideas.

### MORAC NEWS

by FUZZ

This will be the last time that I will be writing this article, readers. I bow down to Rob Cayse, the new President of MORAC, and now the new writer and editor of this column.

As you probably have gathered, MORAC's annual elections were held recently. Rob was elected to fill the office vacated at the end of Don Carlson's third term as President. Rob has the potential of being a great section president; he has the necessary leadership and modeling talents, and will be available for three more years. This is important, as many clubs fold after the founders graduate from high school and attend distant colleges.

Don Carlson was elected Vice-President and remained editor of "Impulse."

David Leutzinger was elected to hold the newly combined office of Secretary-Public Relations. This office, combining the duties of the previously separate Secretary and Public Relations Officer, was formed to simplify club transactions and expedite press releases.

One of the younger members, Steve Aubuchon, was elected Manager of the MORAC Club Store. This office is also new, and Steve is now responsible for the entire treasury (amounting to about \$135). Before, the club store was under the auspices of the President and the financial affairs was the concern of the Treasurer. By eliminating both, the burden of maintaining the store was removed from the President and the Treasurer (who failed to show at many of the meetings) was no longer necessary. Already an inventory list has been printed and should be distributed to the members soon.

Committee Chairmen for 1974 are: Operations; Paul Frey, Contest and Records; Don Carlson, and Finance and Funds; Steve Aubuchon. The Chairmen of the Activities, Newsletter and Library Committees as well as the Jeffcam Contest Board, remains unfilled.

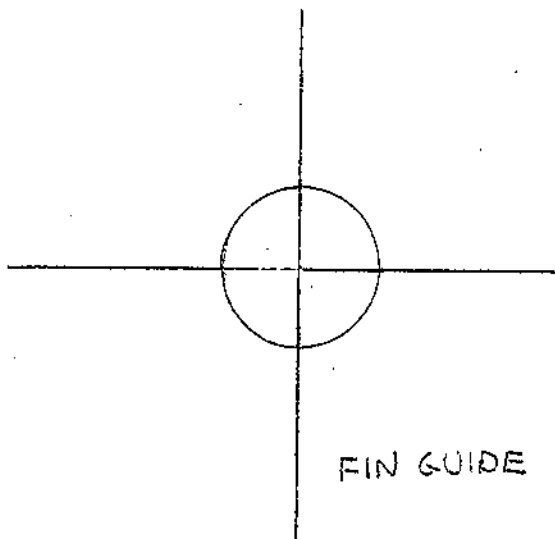
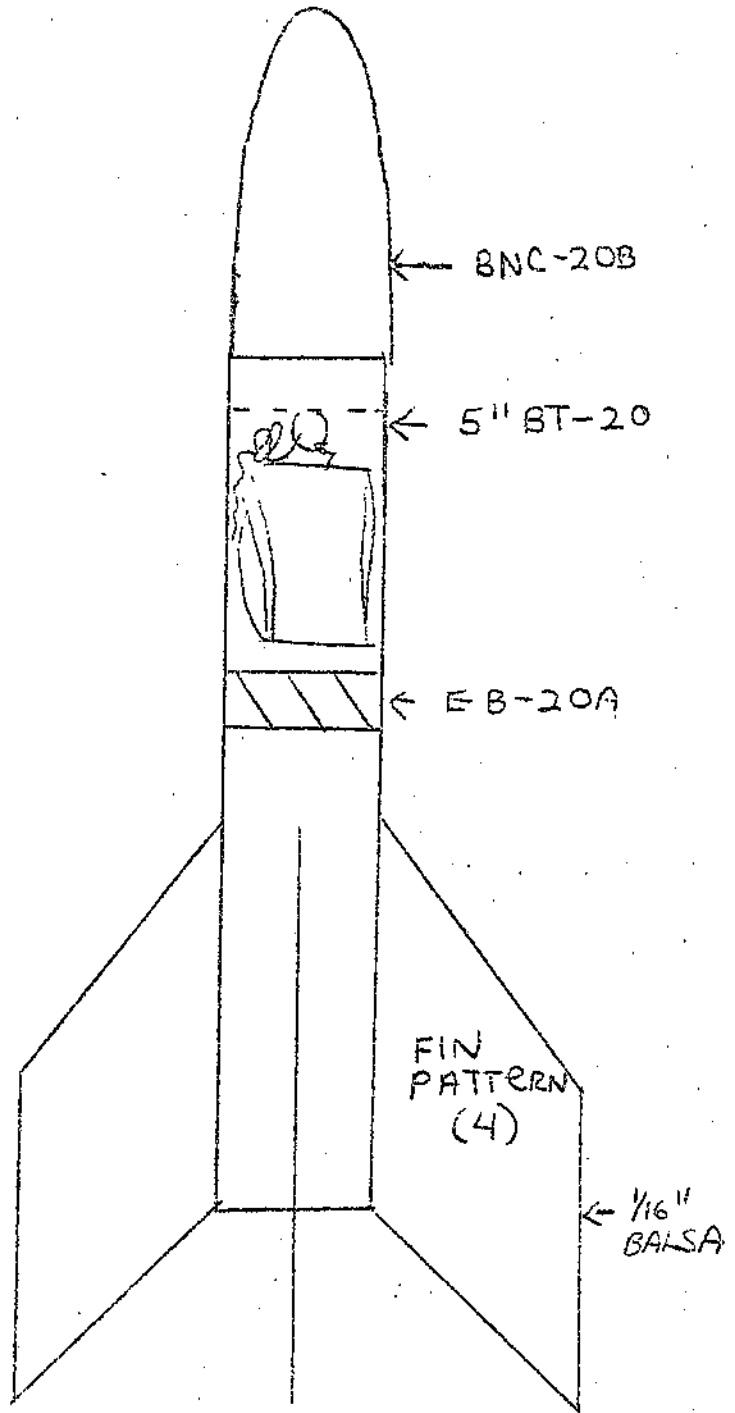
(Continued on page 19)



The... Little Behemoth!!!

For Open Spot Landing!

This design for Open Spot Landing utilizes the idea that spot landers need not be monstrous to be effective. Ease in construction and inherent strength makes this bird a natural for any rocketeer. A parachute may be used, but a streamer is suggested. Note: test fly this rocket at least three times to get down the feel of having it land where you want. This design is also a good sport model for beginners.



ALL PARTS FROM ESTES

"LITTLE BEHEMOTH"  
OPEN SPOT LANDER  
DESIGNED BY  
BRAD DIXON

## ABOUT FLIGHT SYSTEMS, INC.

by Larry H. Reese

Flight Systems, Inc. was formed in the early 1960's, primarily as producers of commercial rocket thrusters. Rockets and thrusters were produced for United States Government agencies and other commercial users worldwide. Dr. George Roos, a foremost rocket propellant expert in the United States and head of the F. S. I. commercial division, pioneered the development of many of the high velocity propellants available today.

Thrusters were developed and produced with power ranging from 84 newton seconds to 1600 newton seconds. They are used in many scientific research projects. Many commercial applications such as cloud seeding rockets, pollution probes, and storm tracking devices incorporate the use of reliable F. S. I. thrusters.

During the early 60's a need for a safe, reliable thruster suitable for use in a model rocket was seen. Flight Systems, Inc. decided to bring out a superior line of model rocket thrusters. Thrusters with power ratings from 2.5 newton seconds through 60 newton seconds were developed and marketed under the Flight Systems, Inc. name. The F. S. I. rocket kits and thrusters have proven themselves consistently superior in performance and reliability.

Due to the rapid growth of the commercial applications, much of the technical talent of people in the research and development section was channeled into government and commercial uses of F. S. I. products. Flight System's personnel such as Dr. George Roos, propellant expert, and Glen Ausburn, aeronautical engineer, had little time

for further development of the model rocket products. Little publicity and advertising were given to the model division. F. S. I. had little time for the model division and simply tried to maintain accounts and requests for their model line with little expansion.

In the spring of 1972, Reese Industries met with Dr. George Roos and made arrangements for a gradual take over of the model rocket division of Flight Systems, Inc. It was felt that by dividing the commercial and the model rocket divisions, efficiency would be far greater. By relieving the commercial division of the burden of marketing and rocket development, far more time could be devoted to the research and development phases of the model rocket products. The model rocket division was moved to Raytown, Missouri and the commercial division to Oklahoma in mid-1973.

The new facilities proved to be advantageous to both groups. Efficiency was advanced beyond that which was previously possible. A new 80 newton second thruster has been developed incorporating the latest development in high velocity propellants. The thruster designated the "Thunderbolt" by the model division, will be available soon. Many new rocket kits will also be out in the near future. The Black Brant II, a 42" scale model of the Canadian sounding rocket, will be among those new items available. Echo I, a superior flying two stage vehicle, and the Thor, a bird designed as a demonstration rocket are just a few of the new kits soon to be introduced. New professional quality launch systems are also forth-

(About Flight Systems , cont.)

coming.

Flight Systems Inc., the leader of the rocket industry , seeks to provide the model rocketeer with new products and technology previously unavailable. The research and development departments of F. S. I are unequalled in the industry. Look to Flight Systems Inc. (F. S. I.) for new products and scientific breakthroughs.

( A catalog of F. S. I.'s products may be obtained by sending 60¢ to: Flight Systems Inc., Dept I-4, 9300 East 68th Street, Raytown, Missouri, 64133 - ed.)

\*\*\*\*\*

(Alberio, contiued)

Round the leading and trailing edges of the fins using 400 grit sandpaper.

Using the fin placement guide mark the location of the three fins on the tail cone. The fins should be 120 degrees apart and the trailing edge should be 1/8" up from the base of the tail cone. Epoxy the fins with a thin film of 5-minute epoxy. When all three fins have cured, apply fillets to all fins. Attaching the shock cord and a launch lug completes the model.

I suggest painting the model jet black except for one fin and the nose cone. This leaves you a highly-visible model with places to put your NAR license number and name. I've found that the high gloss "Wet Paint" brand produces the finest finish. Well, good flying!

\*\*\*\*\*

(MORAC NEWS, cont.)

The "Impulse" staff had minor modifications. Randy Picolet signed on as Featured Reporter, Jerry Speidel is now known as General Assistant, and the position of Associate Editor still remains open.

In other club news, MORAC will officially attend WORM, which will be held in Oconomowoc, Wis., in May. Contest information will be distributed as soon as possible. There are plans for an area meet to be sponsored by MORAC this Spring, but they still remain in the fetal stage.

Well, Rob, it's all yours!! Good luck!!!

(I wish to thank Fuzz for his help in this and past issues with this article. Since I was both editor and President, the task of producing this article was offered to be done by my old friend, Fuzz, my favorite ghost writer. Fuzz, who wishes to remain anonymous (for reasons obscure to all) says that he'll return in future issues with a few surprises. What he has in mind, I do not know, but it should be typically insane. -ed.)

\*\*\*\*\*

JOIN MORAC!  
THE ONLY ROCKET  
CLUB IN METROPOLITAN  
FESTUS!

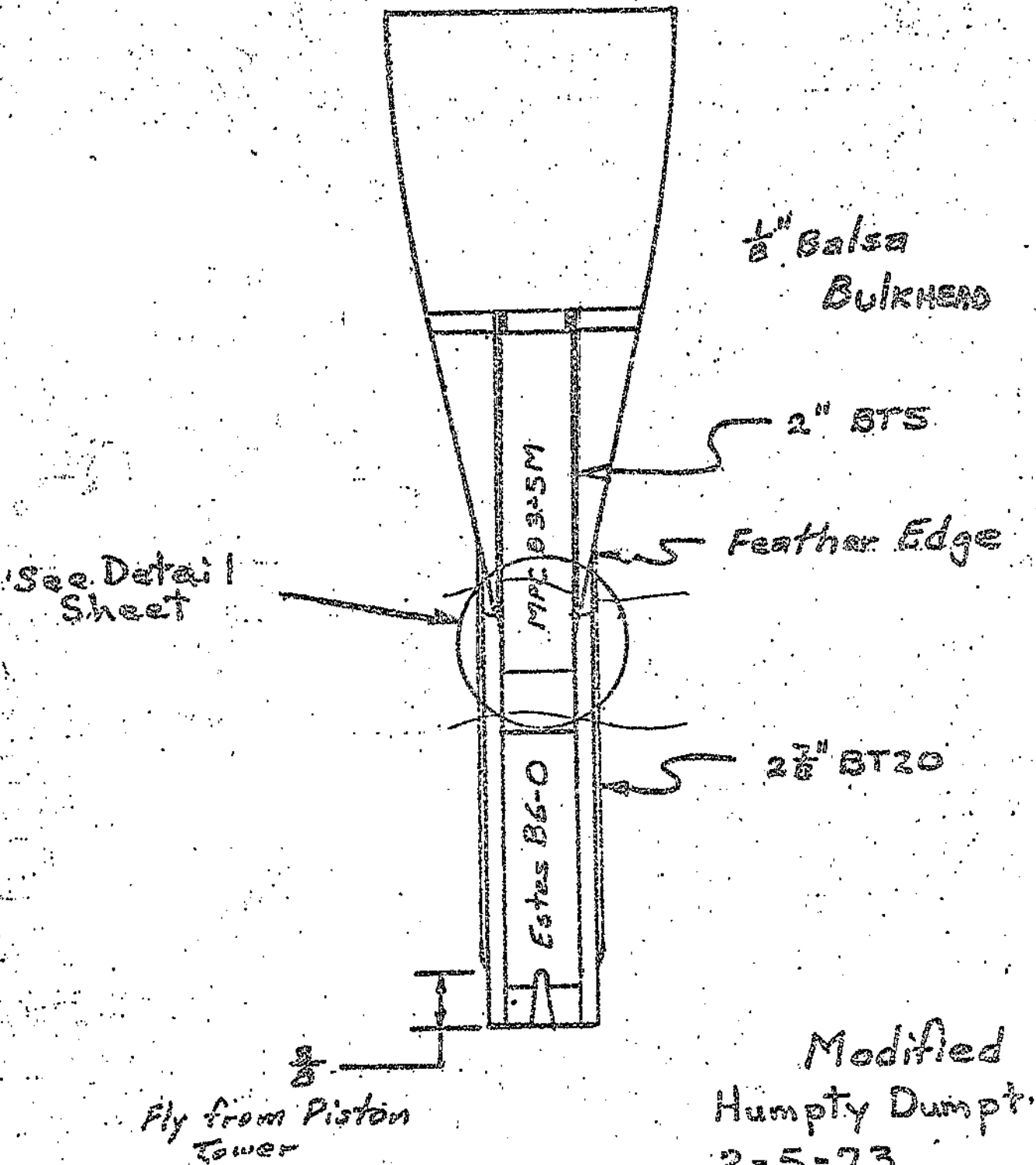
- CONTACT -

ROB CAYSE  
501 ROSELANE  
FESTUS, MISSOURI  
937-4451

OR WRITE THE  
IMPULSE OFFICES.

# HUMPTY DUMPTY MODIFICATIONS

BY JON ROBBINS



Modified  
Humpty Dumpty  
2-5-73

J. Robbins

H.D.  
Aft  
SHROUD

BT 5

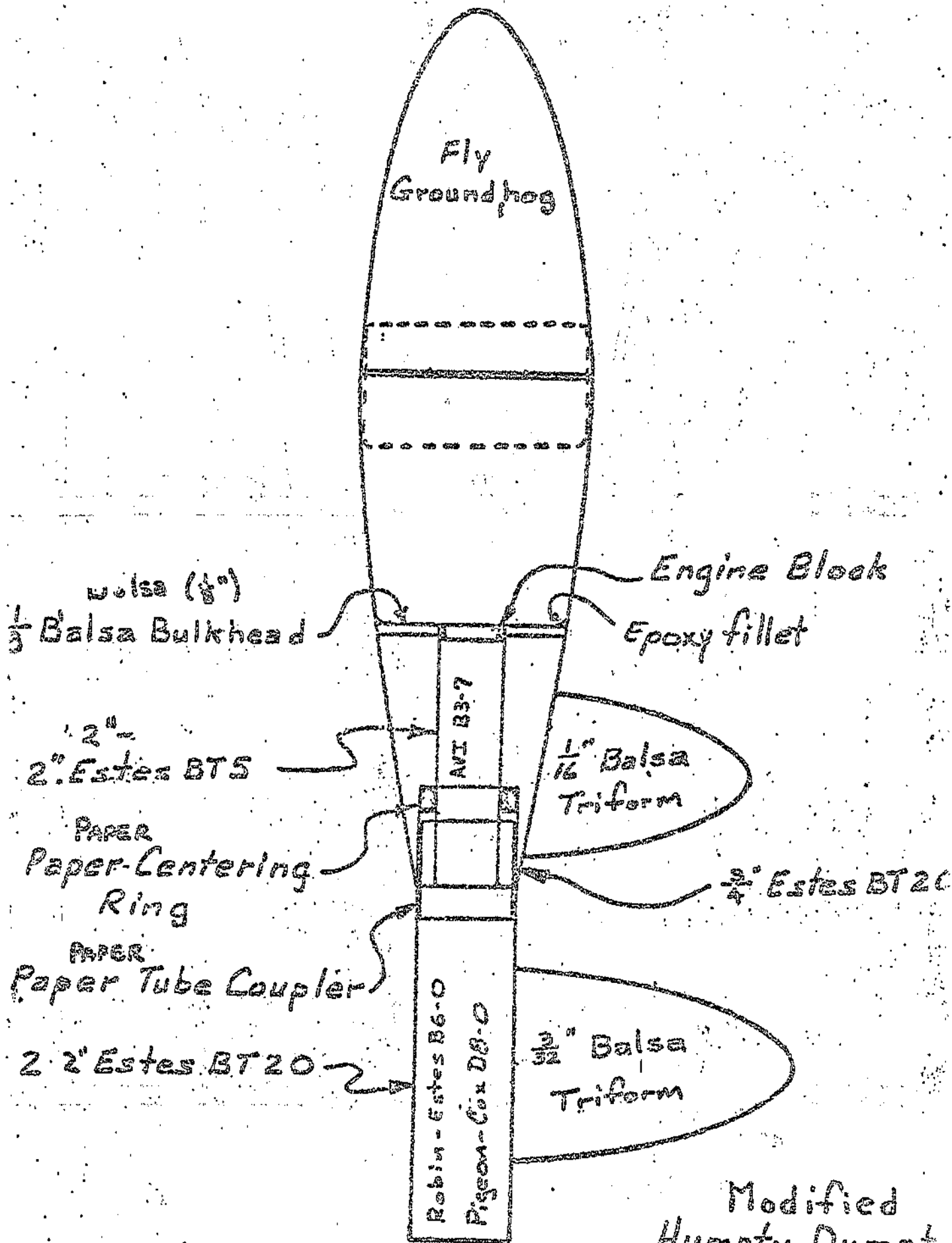
AVI B 3-5M

BT 20

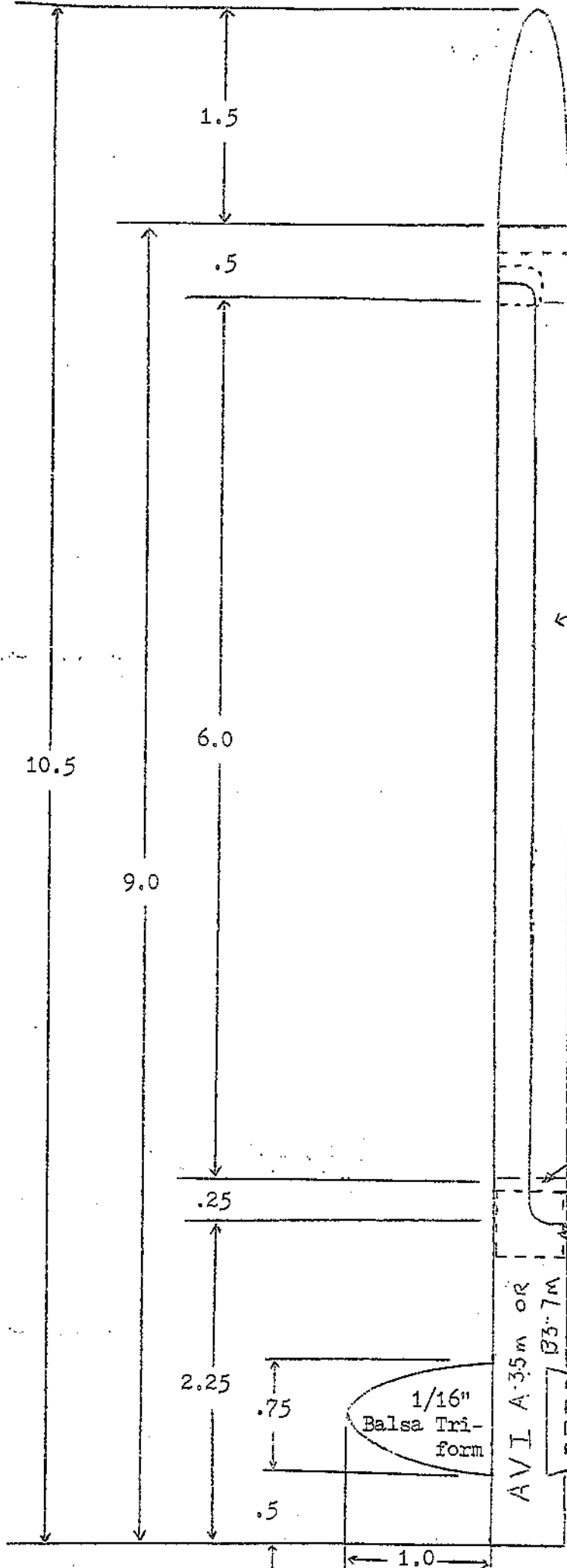
Estee 36-0

Fly  
Groundhog

STAGE DETAIL  
MODIFIED  
MUMPTY MUMPTY  
2-5-73 J. ROSSINS



Modified  
 Humpty Dumpty  
 11-27-72  
 Fly Groundhog



ESTES NOSE CONE

STREAMER -  
13' of 6" wide tissue  
wrapping paper

ESTES BT5

Use 18" of 20# test  
fishing line as shock  
cord.

1/16" Balsa Plug

PAPER TUBE COUPLER

CLASS I + II SD

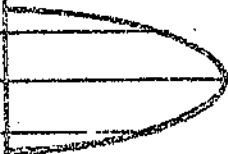
11-2-72

J. Robbins

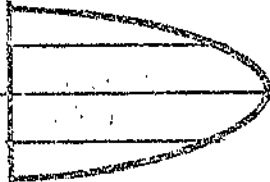
# FIN PLAN FORMS

- J. ROBBINS -

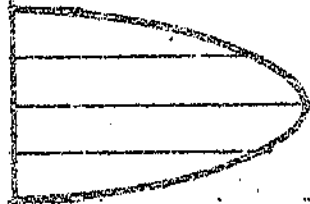
.95 X 1.125



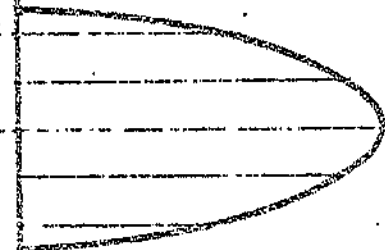
.875 X 1.312



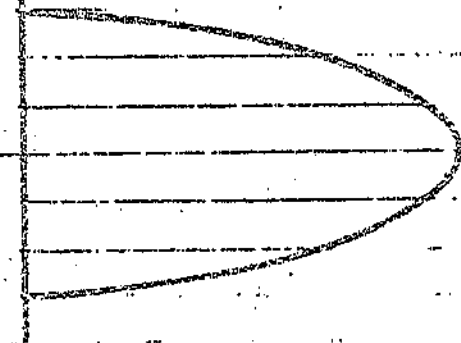
1 X 1.5



1.25 X 1.875



1.5 X 2.25

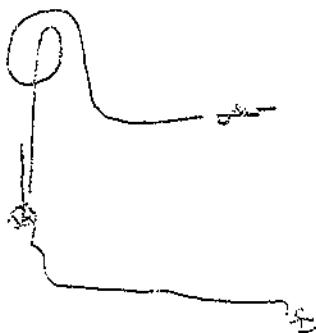


FIN PLAN FORMS  
11-28-73 J.R.



# FOR YOUR SERVICE -

ON THE FOLLOWING PAGES YOU WILL FIND FORMS, APPLICATIONS AND BULLETINS OF INTEREST TO BOTH NON-MEMBERS AND MEMBERS OF THE NAR. WE SUGGEST THAT YOU PHOTOCOPY THESE FORMS INSTEAD OF TEARING THEM OUT, SINCE MANY FORMS HAVE IMPORTANT INFORMATION ON THE REVERSE SIDE, AND YOU WILL HAVE A PERMANENT SET OF FORMS TO DRAW UPON. WE HOPE TO CONTINUE THIS SERVICE IN FUTURE ISSUES AND WE WILL KEEP YOU UP-TO-DATE ON ANY NEW FORMS THAT MAY COME INTO CIRCULATION.



This is an IMPULSE special project

1974

NATIONAL ASSOCIATION OF ROCKETRY

CONTEST BOARD  
428 Ben Oaks Drive, West  
Severna Park, Md., 21146

29 Aug. 72

TO: All Contest Coordinators and Contest Directors

The NAR Contest Board and Records Committee (NAR CONTEST BOARD) is divided into six (6) Regional Contest Boards along the same divisions now in use by the NAR Section Activities Committee. This is done to provide the sections with a faster turn-around time on sanction requests and provide closer contact with the contest board.

You apply for a sanction for your meet from the Regional Contest Board that covers the state in which your section resides. When you apply for a contest sanction from your Regional Contest Board you will receive back by first class mail a Point Award Sheet (and a sample Point Award Sheet) with the sanction number on it and a blank Application for Contest Sanction form. This is the only material that the Regional Contest Board will send you.

The other materials for your contest, such as Flight Cards, Entry Blanks, Scale Flight Cards, etc. may be purchased from the NAR National Contest Board. These items are available to the sections in advance of the meet sanction. It is hoped that by providing the needed materials in this manner, it will allow the sections to stock up on the needed forms so that you do not have to wait for the contest sanction to come back before you can send out the contest entry blanks, etc.

Enclosed are the names and addresses of the Regional Contest Board Chairmen and an order form for the contest material from the NAR Contest Board.

Keep Rocketing !

Mrs. Howard L. Galloway, Jr.

NAR Contest Board Chairman

NATIONAL ASSOCIATION OF ROCKETRY

CONTEST BOARD  
428 Ben Oaks Drive, West  
Severna Park, Md., 21146

ADDRESSES OF REGIONAL CONTEST BOARD CHAIRMEN

NORTHEAST CONTEST BOARD  
S.L. LINDGREN, CHAIRMAN  
15 HUNTER AVENUE  
FANWOOD, NEW JERSEY 07023

SERVING: MAINE, NEW HAMPSHIRE, VERMONT  
MASSACHUSETTS, NEW YORK, CONNECTICUT,  
PENNSYLVANIA, NEW JERSEY.

\*\*\*\*\*

MIDWEST CONTEST BOARD  
SCOTT DIXON, CHAIRMAN  
BOX 274  
RANTOUL, ILLINOIS 61866

SERVING: OHIO, INDIANA, ILLINOIS, MIS-  
SOURI, KANSAS, IOWA, WISCONSIN, MICHIGAN  
MINNESOTA, NEBRASKA, NORTH DAKOTA, SOUTH  
DAKOTA.

\*\*\*\*\*

MOUNTAIN CONTEST BOARD  
LLOYD G. ARMSTRONG, CHAIRMAN  
1628 E. 6th STREET  
PUEBLO, COLORADO 81001

SERVING COLORADO, UTAH, NEVADA, WYOMING  
IDAHO, MONTANA.

\*\*\*\*\*

SOUTHLAND CONTEST BOARD  
JUDITH A. BARROWMAN, CHAIRWOMAN  
6809 97th PLACE  
SEABROOK, MARYLAND 20801

SERVING: MARYLAND, DELAWARE, WEST VIRGINIA  
VIRGINIA, NORTH CAROLINA, SOUTH CAROLINA  
KENTUCKY, GEORGIA, TENNESSEE, ALABAMA,  
MISSISSIPPI, ARKANSAS, LOUISIANA, FLORIDA,  
WASHINGTON D.C., PUERTO RICO, VIRGIN  
ISLANDS.

\*\*\*\*\*

SOUTHWEST CONTEST BOARD  
BERNARD S. RUSSELL, CHAIRMAN  
14155 LABRADOR  
HOUSTON, TEXAS 77047

SERVING: TEXAS, OKLAHOMA, ARIZONA, NEW  
MEXICO.

\*\*\*\*\*

PACIFIC CONTEST BOARD  
BRUCE WILLIAMS, CHAIRMAN  
1500 BOWARD STREET  
FULLERTON, CALIFORNIA 92631

SERVING: CALIFORNIA, WASHINGTON, OREGON,  
ALASKA, HAWAII.

\*\*\*\*\*

PLEASE SEND ALL CONTEST SANCTIONS AND CONTEST RESULTS TO THE REGIONAL CONTEST BOARD  
THAT SERVES YOUR STATE.

ORDER BLANK FOR CONTEST MATERIALS

NAR CONTEST BOARD  
 Dottie Galloway, Chairman  
 428 Ben Oaks Drive, West  
 Severna Park, Maryland 21146

<u>ITEM</u>	<u>MINIMUM QUANTITY</u>	<u>COST</u>	<u>QUANTITY ORDERED</u>	<u>TOTAL COST</u>
CONTEST ENTRY BLANK (CB-1-70)	per 25	40¢	_____	_____
OFFICIAL FLIGHT CARD (CB-2-70)	per 25	50¢	_____	_____
A DIVISION (YELLOW) _____	C DIVISION (GREEN) _____			
B DIVISION (WHITE) _____	D DIVISION (RED) _____			
SCALE JUDGING CARD (CB-12-72)	per 25	50¢	_____	_____
A DIVISION (YELLOW) _____	C DIVISION (GREEN) _____			
B DIVISION (WHITE) _____	D DIVISION (RED) _____			
SCALE JUDGING SHEET (CB-8-72) (guide for use with cards above)	each	15¢	_____	_____
DRAG RACE FORM (CB-7-72)	each	2¢	_____	_____
ALTITUDE DATA REDUCTION SHEET	each	2¢	_____	_____
TEAM APPLICATION (CB-5-70)	each	free	_____	_____
R & D JUDGING SHEETS (CB-9-73) (information not available)				
PROCEDURES FOR USING CONTEST MATERIAL (CB-10-72)		**		
ORDER FORM FOR CONTEST MATERIAL (CB-6-72)		**		
LIST OF REGIONAL CONTEST BOARD CHAIRMEN (CB-14-72)		**		

\*\* A copy of these forms will be sent with each order.

Please fill out this form and sent it back with check or money order made out to the NAR CONTEST BOARD. A minimum order is \$5.00 or you must send \$1.00 UPS or postage charge. Return this form to the above address.

YOUR NAME AND ADDRESS:

NATIONAL ASSOCIATION OF ROCKETRY

CONTEST BOARD  
428 Ben Oaks Drive, West  
Severna Park, Maryland 21146  
(301) 987-4395

APPLICATION FOR NAR TEAM NUMBER

Please fill out this form with the name of each member of your team and return it to the NAR CONTEST BOARD. The fee is 50¢ per member per year and must be included with the application. Team membership must be renewed at the beginning of each contest year ( 1 Jul.). If there are more than four members, use additional forms.

(1) NAME \_\_\_\_\_ NAR # \_\_\_\_\_ AGE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
SECTION NAME \_\_\_\_\_ PHONE # ( ) \_\_\_\_\_

(2) NAME \_\_\_\_\_ NAR # \_\_\_\_\_ AGE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
SECTION NAME \_\_\_\_\_ PHONE # ( ) \_\_\_\_\_

(3) NAME \_\_\_\_\_ NAR # \_\_\_\_\_ AGE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
SECTION NAME \_\_\_\_\_ PHONE # ( ) \_\_\_\_\_

(4) NAME \_\_\_\_\_ NAR # \_\_\_\_\_ AGE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
SECTION NAME \_\_\_\_\_ PHONE # ( ) \_\_\_\_\_

---

OFFICIAL USE ONLY

DATE RECIEVED \_\_\_\_\_ TEAM NUMBER ASSIGNED \_\_\_\_\_

MALFUNCTIONING ENGINE STATISTICAL SURVEY

Return to: STANDARDS AND TESTING COMMITTEE
c/o Charles Russell, MESS Chairman
3480 Cemetery Road
Millard, Ohio 45026

ENGINE DATA

Manufacturer \_\_\_\_\_ NAR Engine Type \_\_\_\_\_
Date of Manufacture \_\_\_\_\_ Manufacturer's Engine Code \_\_\_\_\_
Date Flown \_\_\_\_\_
Location (Site or Meet) \_\_\_\_\_

TYPE OF MALFUNCTION

Nozzle Blow-out \_\_\_\_\_ Blow Through \_\_\_\_\_ Detonation (Split Casing) \_\_\_\_\_
Other Type Failure \_\_\_\_\_
Delay Malfunction. Delay was: Too short \_\_\_\_\_ Too long \_\_\_\_\_
No delay \_\_\_\_\_
No Ejection Charge (end cap retained) \_\_\_\_\_

COMMENTS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

REPORTED BY

Name \_\_\_\_\_ NAR No. \_\_\_\_\_
Address \_\_\_\_\_
Signature \_\_\_\_\_ Date Filed \_\_\_\_\_

INSTRUCTIONS FOR FILING A MESS REPORT. File a report whenever an engine malfunction occurs. Examine the engine casing to determine the type of malfunction, the date of manufacture, and the manufacturer's engine code (numbers and letter stamped on the case giving additional information on the engine production process). Complete the form accurately and mail to the above address.

\*\*\*\*\*

DO NOT WRITE IN THIS SPACE. FOR OFFICE USE ONLY.

Date Received \_\_\_\_\_ Date Filed \_\_\_\_\_ File No. \_\_\_\_\_

Engine Certification. Safety: Yes \_\_\_\_\_ No \_\_\_\_\_ Rem. \_\_\_\_\_
Contest: Yes \_\_\_\_\_ No \_\_\_\_\_ Rem. \_\_\_\_\_

Comments \_\_\_\_\_  
\_\_\_\_\_

## An Exercise in Logic

Directions: The following is a classical test of your reasoning power. There is not "catch" in it and the answer has been worked out in less than ten minutes. Every fact is important and, to arrive at the solution, must be considered.

### FACTS:

- 1) There were 5 launch pads.
- 2) The black rocket had an egg capsule.
- 3) The orange rocket was breech-launched.
- 4) There was no delay on the rocket with the camera.
- 5) The green rocket came down in a lake.
- 6) The rocket that carried the camera was immediately to the right of the rocket with a transmitter as a payload.
- 7) The C-powered rocket was launched from a piston-tower.
- 8) The B-powered rocket carried a standard NAR payload weight.
- 9) The engine ejected on the middle rocket.
- 10) The red rocket was on the 1st pad.
- 11) The E-powered rocket was next to the rocket with a pop-launch lug.
- 12) The B-powered rocket was next to the rocket using a C-rail.
- 13) The F-100-powered rocket blew up.
- 14) The white rocket was powered by a D engine.
- 15) The red rocket was next to the rocket that lifted a parasite glider.

Each pad had one rocket of a different color, powered by different engines, launched or assisted by different devices, carried a different object, and had different recoveries.

- (1) Which rocket had a perfect flight?
- (2) Which rocket used standard 1/8" launch lugs?

(Take heart, the solution will be published  
in the next issue.)

