



THE LEADING EDGE

VOL.4 NO.6
NOV./ DEC.81



- LABOR DAY UNDERWATER LAUNCH
- SHOOTING STAR SIX
- THIS OLD ROCKET
- TALOS PLANS

T minus ONE

MANUFACTURER'S NEWS LARRY LONDON

MONTHLY NIRA MEETING November 6

Glen Ellyn Civic Center 7:30 PM

Turn in for Estes Build-Up program.
Don't forget your model!

MONTHLY NIRA MEETING December 4

Glen Ellyn Civic Center 7:30 PM

Nomination for officers for 1982.
We may have a "Swap Shop", too.

Due to increased interest in RC among NIRA's members, I've prepared the following list of frequency users for reference. If you're getting ready to fly, check your fellow frequency users before you turn on your transmitter. You should have an RC license. They are FREE from the FCC. Applications are available from hobby shops selling RC gear or from Ace R/C. NIRA's club license number is KERN 3122, Expires 1-10-86. You can only operate legally on this license at club functions. Also, please inform me if you buy any new transmitters. Let's keep this list up to date and avoid frequency conflicts.

<u>Frequency</u>	<u>Color</u>	<u>Users</u>
26.995	brown	Bunny
27.045	red	Jedi George
27.095	orange	Jedi George
27.145	yellow	Bunny, Bullet Bob
72.08	white/ brown	Bunny, Jedi George, Tom Beach
72.16	"/blue	Tom Pastrick
72.32	"/purple	Mark Schmitt
75.64	"/green	Mark Schmitt
53.2	black/red	Bullet Bob
53.4	"/yellow	Bullet Bob

Bob Kaplow

They did it again. Estes and Centuri raised their prices, effective October 1. If you didn't get the new price list at the October meeting, you can write to both companies and request a copy.

Estes had run out of $\frac{1}{2}$ A engines and will not be producing any more. (NOTE: MAR S&T will be withdrawing Contest Certification of these motors in January, 1983. - Bunny) Also, $\frac{1}{2}$ A6-0's have been cancelled. The $\frac{1}{2}$ A6-2 and 4 will remain.

Estes will drop its Skill Level 2 Space Shuttle Orbiter. The "Sky Lite" foam used in the kit is difficult to produce and back-orders on this item are frequent. A replacement kit looks like the Centuri version. It uses plastic engine pods instead of cardboard. Other kits to bite the dust are the Appogee II, Starblazer X-20, and the Multi-Roc. These are still in stock if you want to get them, however.

Centuri's kit line will also be reduced. Gone will be the Twister, Bandito, Micron, Excalibur 2 and Taurus.

Competition Chutes sell 100% nylon and polyester parachutes. They are some of the best I've ever seen. Numerous colors, sizes and styles are available. For a catalog, send 50¢ to Competition Chutes, c/o J. Kuczek, 49354 Bay Lane, New Baltimore, Michigan, 48047.

Larry London

I just want to remind those members building models for Estes that you must return them, completed, at the November NIRA meeting.



MODEL OF THE MONTH WINNERS



SEPTEMBER

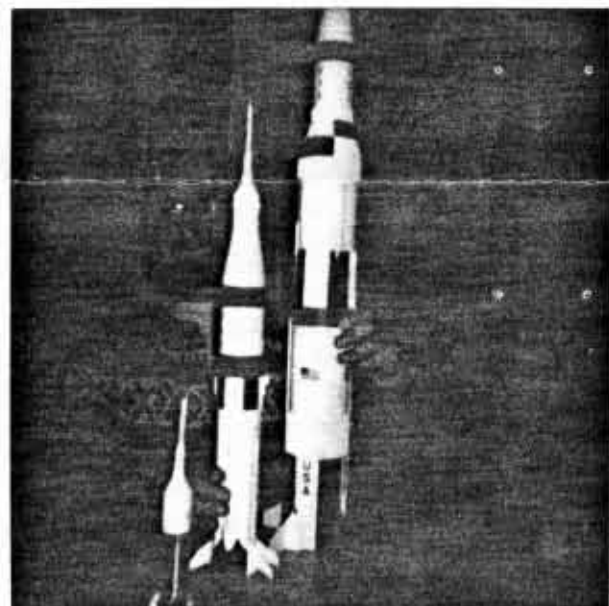
The Model of the Month winner for September is Scott Schmitt with his Estes Mini-Bomarc.

The Leading Edge is published bimonthly by and for the members of the Northern Illinois Rocket Association (NIRA), section 117 of the National Association of Rocketry and is dedicated to the idea that Model Rocketry is FUN!!

Articles, plans, newsletters and other items of interest should be sent to the editor: Ric Gaff
331 Third St.
Northfield, Ill 60093

All NIRA members are encouraged to give the editor their suggestions for articles and plans. Contributions are encouraged! We want to keep NIRA members informed about hobby, club and member activities, so we would like to hear from you.

Any material in the Leading Edge may be reprinted if credit is given.



OCTOBER

The Model of the Month winner for October is Tom Pastrick with his Cox Apollo Series.

CONTRIBUTORS

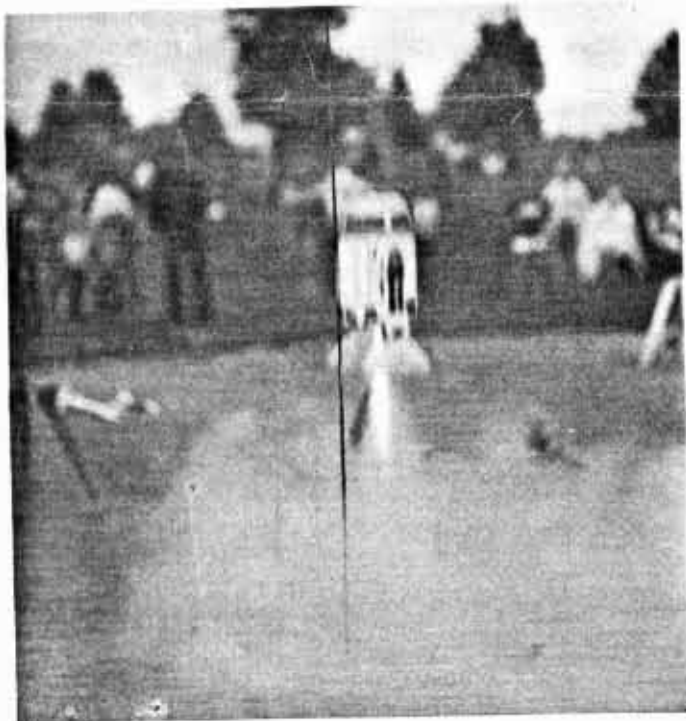
- WALT SCHALK JR
- PAT PETERSON
- MARK BUNDICK
- RIC GAFF
- LARRY LONDON

18TH ANNUAL LABOR DAY LAUNCH

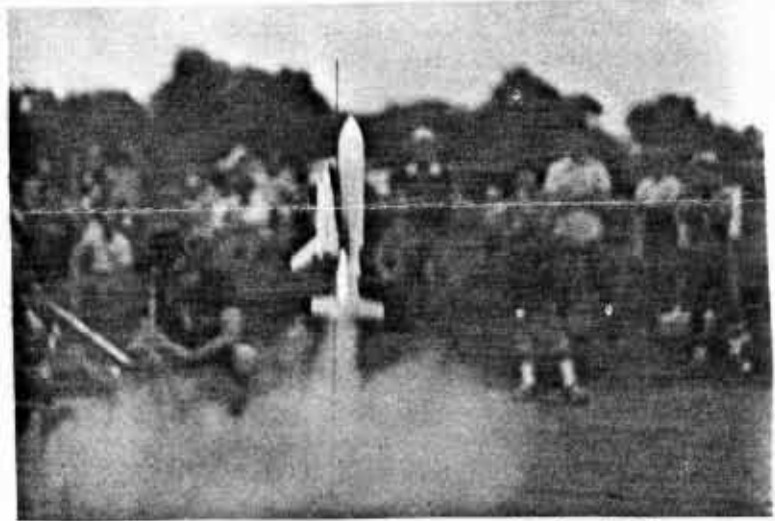
Standing in my driveway at 7 AM, Labor Day, the sky was clear and the wind was at zero. My first thought for the day was "What a beautiful day for our Labor Day Launch!"

After consuming a quick breakfast, I busied myself with a few outdoor chores, and also remembered a number of things I had to do to make my rockets fully ready. Unfortunately, as the morning progressed, the weather regressed. A few clouds started to appear in the sky, and the wind started to pick up. By 11:45, the van was packed, both rockets and family aboard. The sky however was completely clouded over, and a pretty stiff south-west wind was present.

Upon arriving at Newton Park in Glen Ellyn, I was greeted by Bunny. Bullet Bob followed not too far behind with a carload of extras that had to be carried to the launch area. Several trips later, we had all the equipment at the site.



R2-D2 is off on a Rebel mission, but he felt like he was still on Dagobah!



What NASA can do, we can, too! A Space Shuttle lifts off, all tiles intact.

I busied myself by helping with the set-up. I hoped by keeping busy to avoid thinking about the adverse weather. Launch stands had to be set up, wires had to be untangled and tables put out to hold everything. Erecting a tarp in the 30 MPH wind was fun, too. Calling on my Boy Scout expertise, and with the help of other Scouts, NIRA's tarp was finally set to a position that wouldn't blow down. All the while, I kept thinking things like "I've got some rockets with C's that I'd better replace with B's, and some B's that I'd better replace with A's."

Other NIRA members began to arrive. What was once a baseball diamond began to take on the appearance of Cape Kennedy. Rockets of all shapes and sizes began to appear. Some were kits, and some were original designs. Each one represented hours of labor and fun for their builders. They were painted and decorated in every color imaginable!

All systems were go. The P.A. worked, the launchers were checked out, and the countdown to a 2 PM launch time kept running. A small group of spectators had arrived, and more were arriving by the minute. We were ready with the Coke concession, too.

1:45, the sign-up for pads
. Cheri Ruben handled this task
aptly, issuing launch pad positions
members. "You're in the third round,
second pad."

Two o'clock finally arrived, and
Bunny, mike in hand, announced the start
of NIRA's 18th Annual Labor Day Launch.
Some of the first round launch attempts
were plagued with burnouts, but flying
was finally underway. We were on about
the third round when the sky could hold
back no longer, and it started to rain.
It drizzled at first, so the launching
continued. But after each round of
launches, the rain got harder and harder.
Some members started gathering their
gear and began to leave. Others took
refuge under the still-standing tarp,
keeping company with Judy Sender.
She manned the information booth and
club display.

Since the rain kept coming, and
fewer members wanted to risk their
rockets to the rain and wind, Bunny,
with launch assistants Braxton Miller
and Ric Gaff, decided to scrub the
launch. We closed things out with a
raffle for a starter kit.

Now came the fun task of tear-down.
Equipment was wet, gear was soaked,
spirits were dampened, but we got things
put back in their proper place anyway.
Rainsoaked, sitting in my van, looking
out over what was once again a simple
baseball diamond, I looked at my watch.
2:50. It had all come and gone in only
three hours. What about next year? Hey!
I'm a rocketeer! You bet I'll be back.
I wouldn't miss this launch for anything!

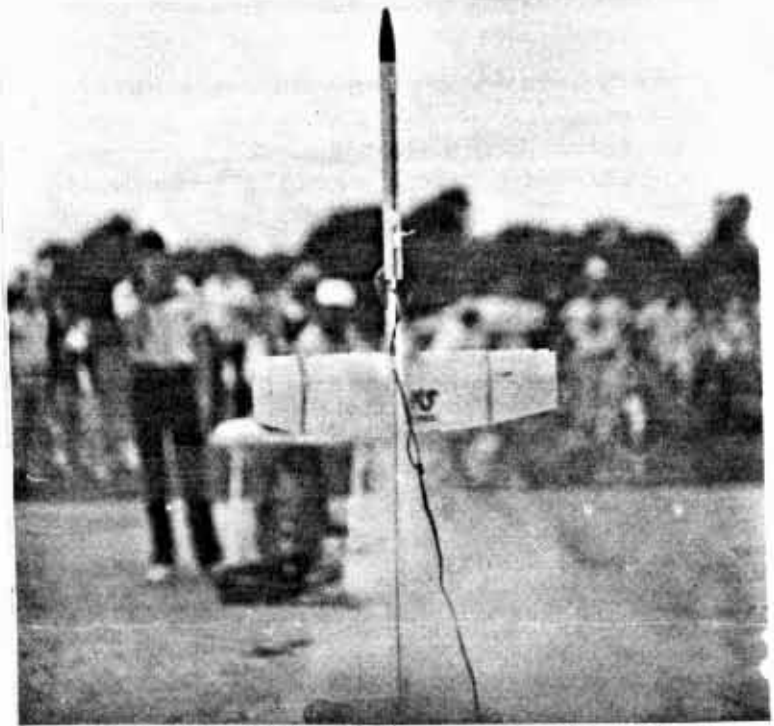


INNER SPACE
or, A Warning to Beginning Rocketeers

I shot a rocket in the air,
It fell to earth, I know not where.
Until next day, with rage profound,
The man it fall on came around.

In less time than it takes to tell,
He showed me where that rocket fell.
And now I do not greatly care,
to shoot more missiles into the air!

Tony Lentini



Mark Schmitt's D12 powered glider just
before disappearing in the rain.



Al Neimast and his portable shade at
Shooting Star 6.

SHOOTING

STAR

6

On Labor Day weekend, ten NIRA members posted at Shooting-Star 6 in Tomah, Wisconsin. It was the largest NIRA group ever for a regional. Except for occasional overcast skies, outstanding weather prevailed all weekend.

Saturday's early arrivals took advantage of calm winds. Dave Wolf hung a 1/2A PD model for over eight minutes. It landed in a tree only 150 yards downrange. John "Beakers" Beach had a similar flight which disappeared into a rocket-eating swamp. His second flight was returned, giving him first in C Division. Al Neinast (9:33) and Bullet Bob (4:22) trailed behind him. Aside from the good PD weather, there weren't any unusual models.

Tom Beach flew his cleaner bag flexwing to an 11:26 first in D HG. Tom had a back-up, just in case, a pulse RC Beakers! It boosted straight up, accompanied by brother John's "beak-mitter", a small electronic device emitting "beaker-like" noises. The glider worked well, but pranged on its third flight. (John's "beak-mitter" was inadvertently turned off.) John's T-shirt (see cover) also provided entertainment for contestants. Other notable D HG's were Al Neinast's swing-wing (4:46), George Sr.'s Big Beakers (2:50), Larry London's Pteradactyl (3:21), and Mark Schmitt's well-trimmed standard model (1:29). No classy prangs, darn it!

F Altitude was flown under Saturday afternoon's crystal clear skies. Larry London's single-stage model roared 420 meters for a B Division win and the best flight of the meet honors. Bob "All or nothing" Kaplow had his usual assortment of well finished models, but a goose-egg turned up in the results. Tom Pastrick won in C with a two-staged bird and 392 meters. Mark Schmitt completed the NIRA sweep by edging Dave Enos by 2 meters.



George "Darth" Riebesehl and his third place Maxi-Beaker. (r)

A HG provided some fine flights with swing-wings doing the best. Tom Pastrick and Chris King won B and C with this approach. Al Neinast and Jim Zingler also had good flights. Failures came in the form of shreads or spiral dives.

Contestants entertained themselves Saturday night by watching Ric Gaff's slides or prepping (building???) for Sunday's action. The classic Tomah auction was sadly absent.



Al Neinast's egg returns intact at 10 minutes plus! It was hardboiled from spending so much time in the thermal.

Sunday morning dawned with Tomah shrouded in fog. Flying was delayed for an hour. Thermals were less abundant than Saturday, but could still be found. Al Neinast's incredible 10:22 C Egg Duration flight hung forever, despite the weight of the egg and a spill hole in the chute. A car-equipped recovery crew didn't hurt, either. NIRA's BG team grabbed second (2:29). Tom Beach had an impressive 56" chute in a Holy Hand Grenade, but the model did no better than third. Big chutes work well in Egg Duration, if you get them to deploy.

Don Quixote's dominated $\frac{1}{4}$ A HD, with one exception. Bullet Bob's Rotaroc flew forty seconds, the best time of the meet. Bob's bird was well balanced, light, and assisted by a piston launch. Al Neinast (:33), Jim Zingler (:28) and Tom Beach (:25), all flying Don Quixotes, trailed Bullet. Another unusual model was Pat Peterson's. Instead of ejecting flexible blades flown inside the tube, the rotors were attached to a movable piston in a short length of body tube. A :33 total took B Division's first place. Dave Enos' Don Quixote won A Division.

Two streamer duration events, C and $\frac{1}{2}$ A, had some good flights, but many were sub-par. Tom Pastrick's 2:50 total in $\frac{1}{2}$ A was one of those that bucked the trend. Tom has previously won the event at Boatloads of MAR with the same model. The BG Team's mylar streamers (3:40) won the C powered event.

Slide-wings fared better in B HG. Al Neinast still "swung" into first with 4:04. The BG Team's "Seattle Special" slide safely into second. Pat Peterson and Kyle Knoff finished 1-2 in H Division; they also flew slide-wings.

NIRA, for the second year in a row, took the Section championship with exactly 2700 points. WWAR, however, had the honors as individuals; Dave Enos in A, Chris King in B, and Al Neinast in C. For some fine flying and good times, don't miss Shooting Star-7!



Tom Beach and his "Wacka-wacka" Beaker.



NIRA'S PRANG-SEEKING PHOTO PAGE



Kyle Knoff did quite well at his first contest.



Jedi George's new 2-channel R/C BG after a close encounter with Ric's car. (I thought "C" meant control! - Ed.)



Mark Schmitt repairs a model for one more flight.



The "B" of the HG Team prepares to blow away the competition.



THIS OLD ROCKET

You're at an auction and a beat-up but whole model comes up for bidding. The price is right, but you wonder if you can fix it up. If you buy it, do you know the best way to repair it? "This Old Rocket" will be a series of articles patterned after the PBS program "This Old House". We'll try to tell you what to look for and what to avoid in junked rockets. And we'll pass along some tips for you to try in your "rocket renovation". You'll learn of our trials and tribulations as we restore our own "This Old Rocket".

First, you need to ask yourself "What do I want to do with this model?" If your purpose is to get parts, decide what parts you can salvage. Body tubes and nose cones demand attention here. Unless severely damaged, nose cones can be easily reused. Tubes, if free of dents and crimps, can be reused, too.

Many clubs sponsor periodic displays or maintain permanent ones at a local hobby shop. Old models, retired from flying, can be excellent candidates for this job. A little refurbishing can work wonders. Remember your last cat? It took out your engine mount and fried the parachute, but the outside looked OK. Why not clean up the exterior blemishes and put it in the display booth?

If it's a flying beauty you seek, the pre-purchase examination must be a little more detailed. That cat, perfect for display, may never be able to roar aloft again. Check for any structural defects. You may end up having to reinforce tubes or even cut out and replace sections. That's not easy. Most models I've bought at auction were missing recovery systems. It's easy to replace, however. Are the fins missing or broken? Again, it's easy to replace them. You can trace a fin pattern from a remaining fin, or use a guess-timate. Watch out for any large or messy fillets. They are difficult to remove cleanly.

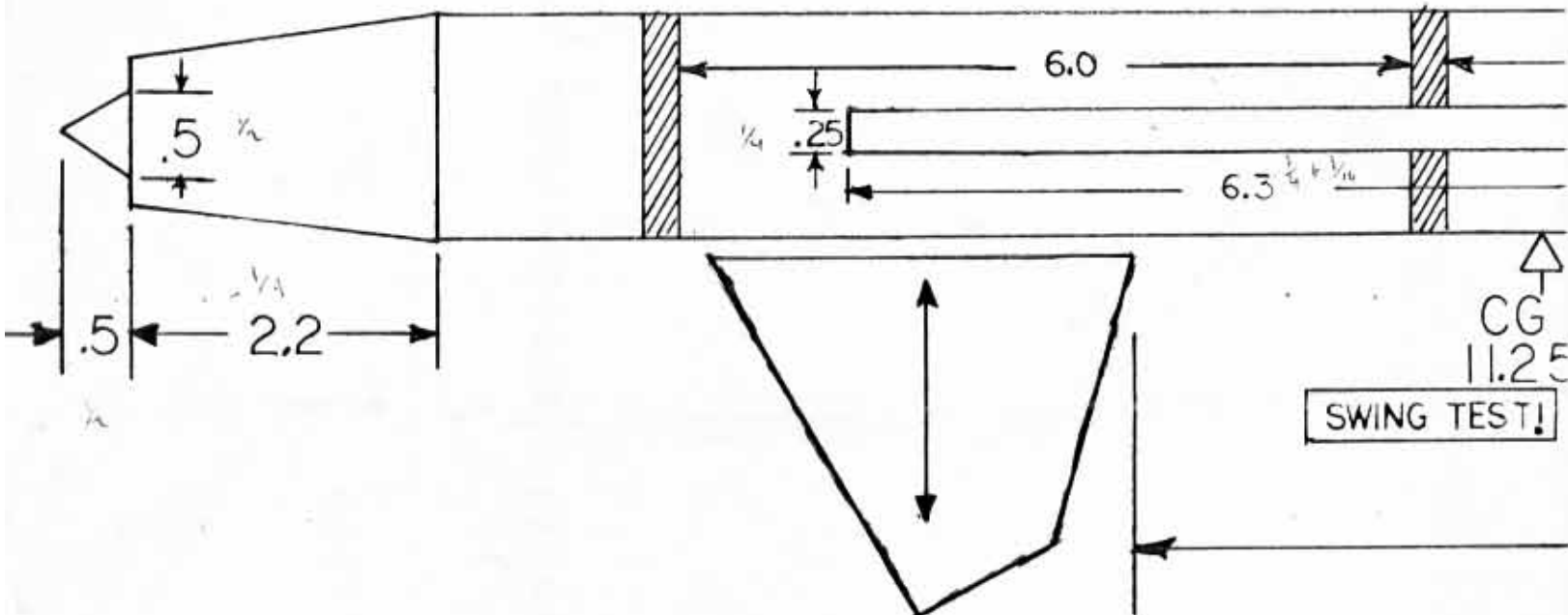
If the model has broken paper shrouds, you're in for a difficult replacement job. Using formulas from the Rocketeer, you'll have to draft up replacement patterns. Missing any plastic parts? You can sometimes order replacements from the manufacturer. If vacu-formed plastic was broken, forget it. It's impossible to repair. Solid plastic can be repaired with liquid plastic cement and/or putty. Replacements can also be carved out of balsa, spruce or basswood.

Paint jobs on older models are often "all shot". Painting is an easy-to-do job, and quickly spruces up a model. Repainting should be done almost without question in any rehab. Good surface preparation is a must to obtain good results.

Internal modifications should be considered very carefully in a restoration project. Want more power? Depending on the engine sizes, you may have to do nothing. The E20 for D12 swap is just such a trade. If your power upgrade is more complex, it'll help to have a diagram of the rocket's internal structure. Think long and hard before hacking out engine mounts and stuffer tubes. Well installed mounts are difficult to remove. You'll also want to run some stability calculations on the new model if your engine weight went up. In no case fly a rocket with an engine change without taking at least a string test.

The best bet for a rehab project is an old scale model or "big" kit with a worn out look to it. Smaller kits with broken fins are good for parts, but just aren't worth the time spent on renovation. What's our "This Old Rocket"? Missing 3 of 8 fins, with yellowed decals, sloppy paint lines and no recovery system, our Estes Saturn IB went for \$3 at an auction. Tune in next issue as we begin to rehab our way to a great Sport Scale model!

FINS FULLSIZE—DRAWING R



CONSTRUCTION

TALOS

The Talos is a long-range defensive missile. It entered service in 1958, was a continuing development program until 1977 and will remain in service until 1985. Few other missiles have such a long career. The Talos system became operational on the U.S.S. Galveston in 1958, and was eventually installed in six more ships. Four are still in active service. In addition to Navy use, the Talos was evaluated by the U.S. Army as a mobile area defense system, and by the Air Force as a SAC base defensive weapon. In 1968, a small number of Talos missiles were used in Vietnam. They reportedly hit two MIG's at extreme range.

Most Talos are "beam riders". They are guided to a target by following a radar beam to a target. They hit (and destroy!) whatever the beam is aimed at. While Talos appears to be a three staged missile, it is actually a two stager with tandem fired solid boosters. The boosters give the upper stage ramjet sufficient speed to operate. Talos is an altogether interesting device of death and destruction.

Now that we know all about the real Talos, let's build a model. A Talos Sport Scale bird is fairly easy to build, but will require a greater than normal attention to stability.

A standard 18" BT-60 isn't long enough for this scale. A 19" tube is required. Two choices are available: (a) forget about one lousy inch, or (b) build the engine mount as shown in the drawing. If you chose (a), I leave the stability problem to you. The nose cone is a PNC-60AH, cut 2.2" from its base. A flat plastic cover is glued over the opening after nose weight has been added. A small balsa cone is carved as shown and glued to the center of the cover.

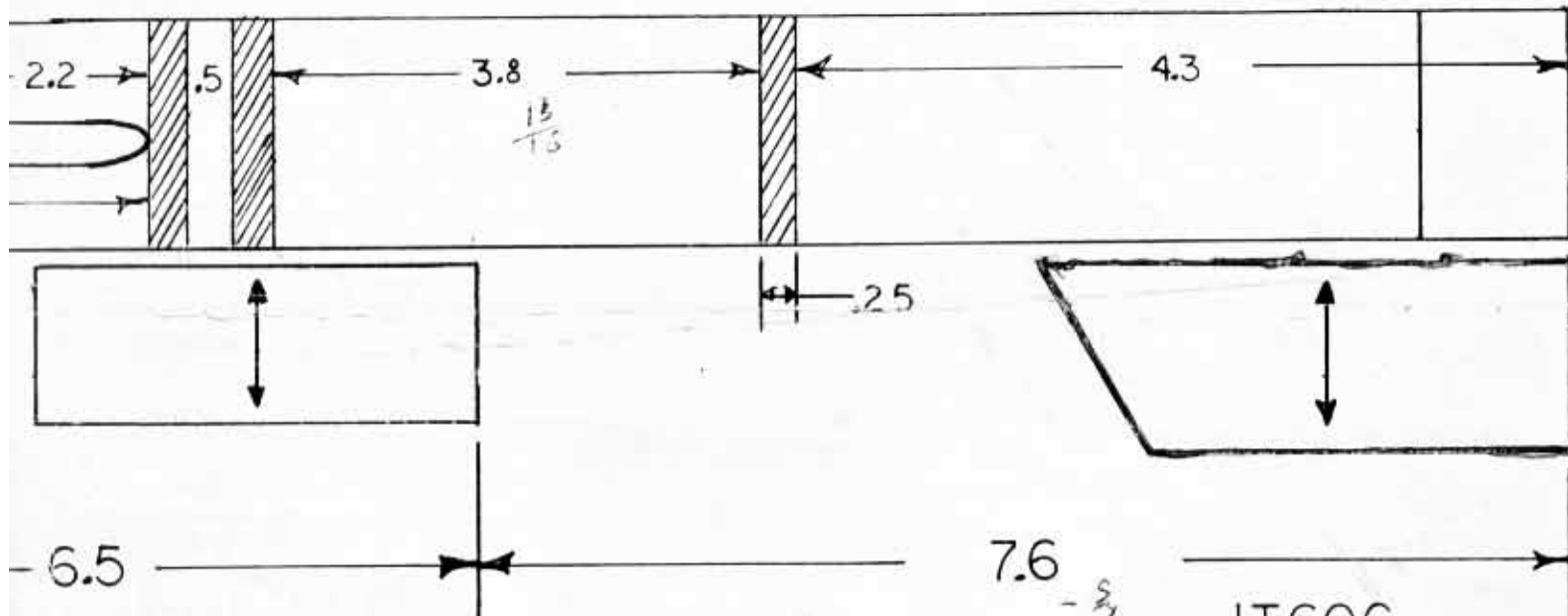
STABILITY

With three sets of four fins spaced evenly along the model, you're probably thinking stability is next to impossible. It is difficult, but not impossible. To achieve stable flights with your Talos, it must balance at the point shown on the drawing. Install a CG-3 (an unused one, turkey!), and pack sufficient lead and/or clay into the hollow nose cone until the model balances at the point indicated. Tape the cover on temporarily and string test the model. Add clay or lead or both until the model passes the string test.

PARTS LIST

two BT-60	one JT-60C	Clay/lead
one PNC-60AH	1/16" balsa	launch lug
one EH-2060	balsa block	18" chute

REDUCED 25%

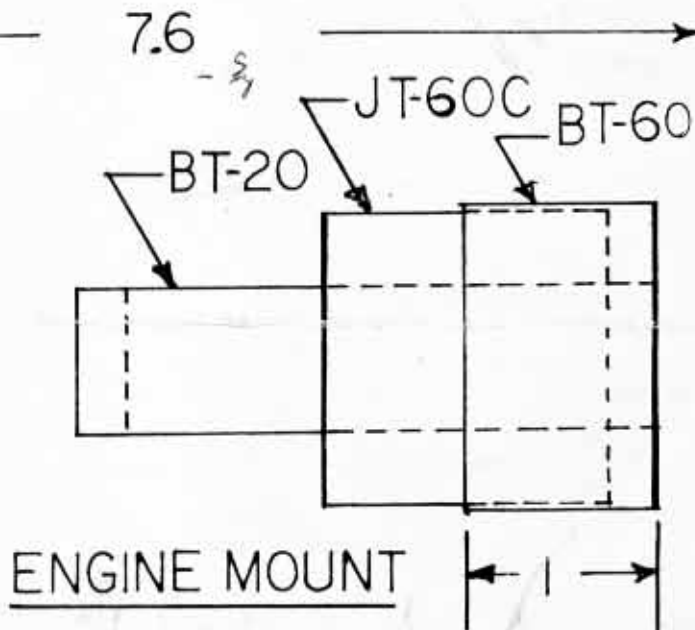


FINISH

Seal all the fins well before applying any paint. A light grey primer coat will be a good base. The model could potentially be painted any color and/or pattern you want. A large variety of paint schemes were used on the real Talos. The one shown in the photo is my favorite. The lower stage, all 12 fins, the "air-scoop" cone and the stripe between the upper fins (on all four sides) are gloss white. See the drawing for stripe details and location. The upper stage and ramjet are gloss red. All bands shown on the drawing are black.

When done, you should have one impressive-looking model of the Talos. Watch the surprise on the faces of friends who said "That'll never fly!" Happy flying!

Ric Gaff

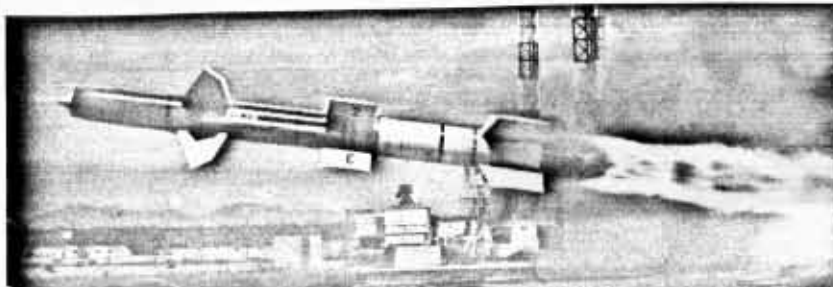


REFERENCES

- (1) Color photo - U.S. Army
- (2) Illustrated Encyclopedia of the World's Rockets and Missiles
- (3) Jane's Pocket Book of Missiles

DATA FROM:

- Reference #1 - Color data and main dimensions
 Reference #2,3 - Body diameter and general information



A Talos lifts off during an Army program at White Sands, July 19, 1973.
 U.S. ARMY PHOTO



HI!

I'M AL NEINAST'S
TRAINED THERMAL
AND I WANT TO
TELL YOU ABOUT
A GREAT HOBBY-
STORE

THE GLEN ELLYN
TOY & CARD SHOP

476 MAIN ST.

WELL, 10 MINS HAVE
PASSED.

HEADS UP!
BOMBS AWAY!
CATCH, AL!

(P)

POST TO CARE
301 THIRD ST
NORWICH, ILL. 62450

