

# THE LEADING EDGE



Newsletter of the Northern Illinois Rocketry Association, NAR Section #117  
Volume 12, Number 3 & 4 - May/August 1989

## Jay Apt Makes STS-37 Shuttle Crew

by Bunny

Many NIRA members will be happy to find out Jay Apt, a former NAR Trustee and long time NAR member was recently named to the STS-37 crew. The mission will be flown by Discovery. Jay was in Tokyo when he got the call, at 2:15 AM, and had a bit of trouble getting back to sleep. Here's a few notes from my Compuserve conversation with Jay after the official announcement.

"It's a great crew: I really like the commander (Steve Nagel), and I'm good friends with the pilot (an MIT grad - turned Marine), Ken Cameron and Linda Godwin. Jerry Ross and I have worked together on space station work. Our primary mission will be the deployment of the Gamma Ray Observatory, or GRO. GRO is one of four great observatories spanning various wavelengths planned for deployment during the 1990's."

"Regarding launch date, the planned date is April 5, 1990, but there may be some slippage depending on other launches. Currently, our landing site is Edwards, so you'll have to run out to California after the launch if you want to see us land. It's nice knowing you and other NAR members will be at Kennedy to see us off."

I'm sure the NAR will find some way to celebrate this historic event in the proper style. Maybe NIRA can schedule a long distance field trip to see the launch. Congratulations to the NAR's first astronaut!

## Danville DARE HPR Launch

by Bob Kaplow

Mike Jungclas and I drove down to Danville for Danville-DARE, a much better organized launch than Central Blast 1. (CB-1 did not have the FAA waiver that they claimed to have. - Bunny)

In contrast, Dennis Wacker from DARE ran a safe, proper launch. A few folks from SNEAR came all the way from Massachusetts, and Tripoli president Ed Tindell drove up from Texas.

It was hard to follow what was happening due to the lack of a PA system. The launch ran slow, even worse than a NARAM on altitude day, with a constant backlog at checkin. I guess that is the price you pay for doing things in a legal manner.

### Manufacturers' Notes

Ron Shultz of Lots of Crafts (LOC) was back after nearly losing most of his left hand in a manufacturing accident last fall and displayed several new kits. Ron also had a new model (not a kit - yet) Bruiser, of the 7.5" tube, about 10' tall, with a 2' long, 2 lb. nose cone. It flew perfectly on four big motors. Unfortunately, the bad news is LOC prices have gone up dramatically, around 25% across the board. They still have the best quality of any rocket kit I've ever seen, high power or not. Every wood part is perfectly machined to fit, and the body tubes are perfectly slotted to hold the fin tabs.

(continued on page 5)

# T Minus 1 - NIRA Events

## MONTHLY MEETINGS

August 4, 1989  
September 1, 1989  
October 6, 1989

All meetings start at 7:30 PM, and include refreshments, entertainment and the brief business portion of the meeting. Don't forget a model for "Model of the Month" voting. We need volunteer speakers to entertain the troops after the business meeting, so call Lawrence Bercini at 561-8098 if you have a topic to present, or if you have ideas about interesting topics others can speak on.

## 1989 LAUNCH DATES

All launches start at 2:00 PM at Ackerman Park, intersection of St. Charles and Swift Roads in Glen Ellyn. BYOL (bring your own launcher). NAR Insurance required or else RSO must launch your model.

August 20, 1989 - Plastic Container Conversion: A tribute to Bullet Bob's passion for flying food containers. Now the rest of the gang gets a chance to join in Kaplow's favorite sport rocketry pastime.

September 17, 1989 - A Engine Heavy Roc Duration: Winner gets the maximum duration divided by weight. Sorta like Design Efficiency for klunky rockets.

October 15, 1989 - Separation: New rule for 1989 is that, to count, parts separated must be structural. Barb Bundick will have trouble defending her title with that rule in place. November 19, 1989 - Oddroc Model per last year's rules.

## OTHER INTERESTING ITEMS

August 27, 1989 - IL Plastic Kit Show, DuPage County Fair Grounds. 9AM to 3PM; \$2 admission. Contact George Pekarik at 312-969-1847.

September 4, 1989 - 26th Annual Labor Day Demonstration Launch, Newton Park, Glen Ellyn. Make sure you're there by 1 PM to help set up and prep models. Call Lawrence Bercini (561-8098) if you have questions.

November 3-5, 1989 - RCHTA Show, O'Hare Expo Center. NIRA may man the NAR display as we did last year. We need good models and volunteers to assist in answering questions and passing out flyers. You get to see the show free if you help out (hint!).

## THE LEADING EDGE

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Rich McBroom

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Bunny Bundick - Editor  
Ric Gaff - Publisher  
Barb Bundick - Artist

# Heard on the Street

*Rumors and Such, with apologies to the Wall Street Journal*

**A Higher Calling** - President Bush nominated ex-astronaut Rear Admiral Richard Truly to the post of NASA Administrator. Truly, a veteran of both Apollo and Shuttle missions, will be the first astronaut to head the agency and the first military officer as well.

**Rm W/Vu For Rent** - The Soviet Union temporarily vacated the Mir space station; a move prompted by delays in preparing two new Mir modules. The space station capabilities limited research in life sciences and materials processing without the modules. Foreign Soviet space program observers have reported Mir's technical difficulties included high temperature problems, a pressure leak, a faulty power supply, and a water leak behind a panel posing electrical problems. A Russian spokesman also confirmed there would be no missions this year involving the Soviet Space Shuttle Buran.

**Phobos Flop** - The Soviet Union also revealed details of the Mars/Phobos probe loss. The spacecraft's radio transmitter was programmed to remain silent during a photography session, and expected to switch back on, but never did. Ground control was able to re-establish a link for about 13 minutes till the transmitter went silent for good. The loss follows the loss of the first Phobos probe due to computer operator error. The two probe mission reportedly cost the Soviets \$435 million.

**Damon News** - The Nomad-Damon merger was approved by shareholders and finalized on May 30. Nomad's investment banker, Drexel, issued all the junk bonds and preferred stock to finance the takeover at rates of between 15.25 and 16.25 percent. In the quarter prior to the merger, Damon omitted its quarterly \$.05 dividend, citing \$6.2 million of expenses fighting Nomad's \$24 per share tender offer. Drexel now moves on to

dispose of Estes and other Damon assets unrelated to the core medical lab business.

**Shuttle Named** - After a nationwide contest among junior high school students, NASA has named its new orbiter to replace Challenger. The contest entries were restricted to names of sailing ships used in exploration or research. "Pre-game" betting had the nod going to Resolute or Resolution, names submitted by over half the schools to make the "finals". However, NASA officials gave OV- 105 the name Endeavour, the ship of James Cook fame. Endeavour is schedule for its first flight in 1991.

**Double DARE** - Congratulations to "Bullet" Bob Kaplow and Rich McBroom, who qualified for their Class B licenses at the recent DARE HPR launch in Danville, IL. Both used the Ravennia Rocket Research H motor to meet Tripoli's qualification criteria to buy Class B rocket motors.

**Hobby Shop Report** - If you go west on North Avenue from Glen Ellyn, you'll find a new shopping center on the south side anchored by an Omni Superstore. The Hobby Box there carries a complete line of Estes kits and engines. Plastic model fans are also well represented with a good selection of kits. A recent visit to Staunton's revealed an expansion of their shop. Also present in the used magazine section were old Aviation Week copies. Bunny snarfed three magazines and got photos of two different Atlas-Centaurs, a Titan III-D, Soviet Proton and a Titan 34. Finally, check out Pilot Hardware in the 5400 block of Belmont, near Central Avenue in Chicago. They carry Estes kits and engines at substantial discounts.

# POINT / COUNTERPOINT: Editorial Comment

What is the 3-48 Rule? The NAR By-Laws amended Article III, section 12 reads: "Members are not restricted from engaging in non-professional rocket activities other than model rocketry, but shall not mix model rocketry and other rocket activities." In addition the Trustees adopted the following policy: "It is the policy of the National Association of Rocketry that all members: (1) shall not fly model rockets and other types of rockets on the same site unless there is a 48 hour separation in time, (2) shall not fly model rockets and other types of rockets at the same time unless there is a 3 mile separation in the sites."

## POINT:

What's Wrong With The 3/48 Rule  
by Bob Kaplow

In the February 1989 AmSpam, Chris Tavares asks for blind support of the "No Mixing" or "3/48 Rule". Unfortunately, Chris ignores the problems with this rule, which make it unworkable, impossible to properly enforce, and desperately in need of a change.

The first problem with 3-48 is the grey area created by the NAR, with help from the FAA. Models exceeding the old weight limits, but within the new safety code still need FAA clearance. FAA clearance is not obtained for most sport launches, and waivers can be difficult to get. Look at the NARAM-30 problems. Without the new safety code, we could fly these models at an organized high power launch, excepting the Catch-22 now is that these are legal model rockets.

A second issue concerns use of public space, where most NAR events are held. The NAR and its members have absolutely no control over a member of the general public who just happens to come by and fly a rocket that either exceeds or violates the NAR safety code. NIRA has had numerous instances of rocketeers refusing to join our launches at Ackerman Park, even with a warm invitation. On at least one occasion those individuals were using fuse rather than electrical ignition. Should their actions threaten our NAR memberships or our NAR insurance? How can we possibly police our flying field for 48 hours prior to a launch?

(continued on Page 6)

## COUNTERPOINT:

Protecting Your Right to Fly  
by Bunny

The 3-48 Rule deserves NAR member support because it effectively protects our collective right to fly model rockets safely.

I don't think it's unreasonable to ask NAR members to restrict their model rocket flying to model rocket events and NOT mix the two activities, regardless of whether the primary purpose of the launch is model rocket or HPR. Public safety officials have a nasty habit of condemning everything you're doing when they think there's a problem. Mixing only guarantees that the baby (model rockets) will be thrown out with the bath water (HPR) if there's an accident or citizen complaint.

Bob's grey area was unforeseen during the Board's 10 hour debate of the Barrowman Commission report. We also didn't expect the FAA to stall on acting. The FAA's procrastination created a "grey area", but that doesn't mean the 3-48 rule is invalid. The correct "grey area" solution is to get the FAA to remove it by publishing the NAR's proposed Notice of Proposed Rule Making (NPRM).

The Board fully recognized the inability of the NAR and its members to control non-member actions. Like most issues of liability, including NAR members' "liability" in jeopardizing their memberships, we apply the Reasonable Man Rule. Did NIRA members act reasonably in trying to get non-members to join our launch and abide by Safety Code rules?

(continued on Page 6)

Danville DARE  
(continued from Page 1)

Wayne Shaefer of Ravenna Rocket Research again tried to fly his cluster of 9 H motors (2880ns!). His pad had insufficient power to ignite the nine thermalite wicks. Only one motor fired, but the model never left the pad, and the tail fire went out quickly. He planned to try again with the remaining eight on Sunday. Many other flights used the "cheap dumb composite" motors from Ravenna. Their prices have been reduced from last year. A 200ns "H" was only \$9 (\$10 with a 10% discount on the field). They offer a 2 for 1 motor guarantee as well. Expect to see the D-G motors in 22mm and 29mm diameters NAR certified soon. These motors feature different grain geometries with a full family of time thrust curves.

The Rocketflite family from Indiana had refined their 38x200mm black powder motors since CB-1, and were selling them for \$6 each. This is just a tad more than the FSI F100 for about 2-3 times the performance. The family and lots of other folks flew these 1.5" beauties, all successfully. They also had two versions of an electric match type ignitor available, a large one for the BP motors, and a much smaller one for composite motors. We got several of these to try out.

The Vulcan Smokey Sams were most spectacular, as you could clearly see the smoke trail even after the model had vanished. The Aerotech White Lightning motors were also spectacular in the larger sizes. Both were popular choices at this launch, and lots of them were flown.

#### Personal Flights

One interesting model was built from PVC pipe, which flew great. The model was

damaged by an ejection failure, but came thru in better shape than any cardboard tube I've ever seen. (Not surprising. - Bunny) PVC might prove to be a useful high power building material. They are a bit heavy, so don't expect to see PVC in NAR competition.

I saw one staged model, one huge sport scale D-Region Tomahawk (even bigger than mine from NARAM-30) and a couple models with strap-ons. One of those was Titan-III-like, and flew great but tipped off pretty bad and sent its owner hiking quite a way to recover it. Another had a class "B" core motor, with 3 D12 strapons. The Ds didn't ignite, and the strapons came off at burnout, falling to the ground. They spiked themselves into the ground in a nice triangle; how else can you prang 3 times on one flight?

Personally, I flew my LOC-4 with an Aerotech G60-5 to a perfect flight. I flew only after someone lent me a large block of fiberglass insulation for wadding. This lasted thru 2 flights and is still usable! Next I flew an old SSRS Eagle that had sat in my basement for years because it was over a pound (500gm+ motor). I mistakenly used an old SSRS F67-8 (certification expired a year ago), and remembered why I stopped using them. Perfect boost. No ejection! The model then proceeded to spin/glide down, tail first, for a perfect, safe landing. Anyone want to buy some "collectors" motors?

Finally, I flew my LOC-4 again, for a Class B License confirmation flight. A 200ns Ravenna H89 was chosen as the cheapest power source available at the time. Wayne modified it for me, cutting the 11 second delay (the shortest he had in stock) down to about 7 seconds. (Instructions for doing this are included with each RRR motor). This worked perfectly, deploying right at apogee, entitling

POINT: (con't)

A final related problem concerns HPR modelers activities. At least half the models flown at Central Blast 1 were legal model rockets! Thus no NAR member could fly ANYTHING at that meet without violating NAR policy. I can attest that several NAR members were there and did fly models of various sizes. A quick way to prevent this is to insure that all models flown at HPR meets violate the NAR Safety Code or use uncertified motors. Are these the actions the NAR should be encouraging, even at a non-NAR event? And even Pat Miller, NAR President has assured us that he will not expel anyone for flying a B at LDRS. So now we have a worthless policy.

What can be done about these problems? Since the Board cannot regulate non-member activities, I don't think it's right to restrict the activities of NAR members when such restrictions are based on non-members actions. Any legitimate control should be over only NAR activities. We MUST require that there be no HPR flying at ANY NAR event, sanctioned or otherwise. What happens at an HPR launch, regardless of whether any NAR members are there or not, is no business of the NAR.

Chemistry provides us with a good example of a no mixing rule. Never mix water with acid. The proper procedure is to mix the acid with the water. So should it be in sport rocketry. Never mix high power rockets with NAR events. Mix model rockets with high power events instead. The 3-48 Rule should be replaced with a simple statement requiring that the NAR Safety Code must be followed at all model rocketry activities. Period.

COUNTERPOINT: (con't)

Do NAR members act reasonably in their HPR

activities, pointing out differences between model rockets and HPR models? Do they abide by local, state and federal regulations? Do they take reasonable safety precautions?

Model rocket activities as defined by the National Fire Protection Association's Rule 1122 (NFPA 1122) are protected by 48 state laws. The NAR is aggressively pursuing removal of unwarranted restrictions in the last two non- NFPA states. We effectively blocked potential restrictions in Wisconsin and are actively engaged in similar efforts in California.

The right to fly model rockets is not ironclad, and prudence dictates we be vigilant in educating and lobbying public safety officials. Our 3-48 rule insures that public safety officials have a clear, unambiguous definition of a safe hobby activity. Supporting and abiding by 3-48 protects your right to fly model rockets.

Chemistry also tells us never to mix sodium and water. It doesn't matter whether you try adding water to sodium or sodium to water. The result is the same, a messy situation at best and a dangerous accident at worst. Support the 3-48 rule, and don't mix model rocket and HPR activities under any conditions.

DARE (con't from Page 5)

me to a signature on the bottom of my Tripoli membership card, and leaving me with a pretty long chase (away from the prison) to recover my model.

Another NIRA member, Rich McBroom, was there, and made his confirmation flight also using a Ravenna H89, in an Estes Phoenix! The model had been beefed up considerably from the stock kit, with plywood over the

### DARE (con't)

the fins, spruce cap strips around them, a bigger and stronger motor mount, and a ballast compartment in the nose, filled with 3.5 ounces of lead. Worked great, much to my surprise.

I still haven't seen much other than the "three fins and a nosecone" type model at these launches. Clustering was quite popular, much more so than at an NAR launch. Still, someone needs to start doing some interesting things. I'm planning on an egglofter (the whole carton), and a big version of a Rotacrock. I'm also searching out a really BIG food container!

## NIRA'S BIRTHDAY CORNER

Phillip Travis - May 14  
J. C. Goade - May 16  
Linda Christea - May 22  
Roger Heidlauf - May 28  
Bunny Bundick - June 2  
Scott LaRoche - June 20  
Rich Jungclas - June 24  
Jim Hogue - July 9  
Darth Riebesehl - July 10  
Jedi George Riebesehl - July 13  
Charles Cain - July 17  
Lawrence Bercini - July 22  
Richard Frank - August 16  
Don L. Linder - August 17  
Andy Linder - August 29

## Help the Editor

by Bunny

Many folks wondered if we closed up our newsletter shop here at NIRA. Nope, we've just been behind by a bunch. I've been involved with a fairly complex system installation at work involving Chicago, New York, London and Tokyo, and life got pretty complicated for me. So, to avoid future occurrences like this, I'd like to see if anyone

would be interested in becoming Assistant Editor. I really need someone to do some legwork collecting articles and finding those interesting tidbits for "Heard on the Street".

If you think you might be interested, see me at a meeting or launch, or call 293-9343 so we can talk it over. Two heads have got to be better than one!

## The Invader A Cruise Missile

designed and built  
by Robert McBroom

These plans are probably the most complete we've ever published, so I won't try to run through the "stick Part A on to Part B" instructions. However, Bob's dad, Rich, made a couple of comments about this bird in a letter to Lawrence Bercini. Let's hear what Rich has to say.

"Since these plans were drawn, we have determined through test flights that this rocket is stable without noseweight, even though it takes well over an ounce of nose weight to pass a 'string test'. I've come to mis-trust the string test as I've found it results in rockets with excessive stability which are prone to weathercocking. I now prefer to test fly a boilerplate model to verify stability."

"Also, if the wings are airfoiled (not recommended), they must have a symmetrical airfoil. The wings should NOT generate lifting forces. We've planned on building a D engine variant for a long time, but haven't gotten around to it yet. I'm sure such a rocket would require noseweight."

Let us know when you get the D version flying. (Hint, hint!) Thanks for an interesting sport model, Rich and Robert!

# the INVADER..... a cruise missile

designed by Robert McBroom

N.A.R. No. 47110 JR

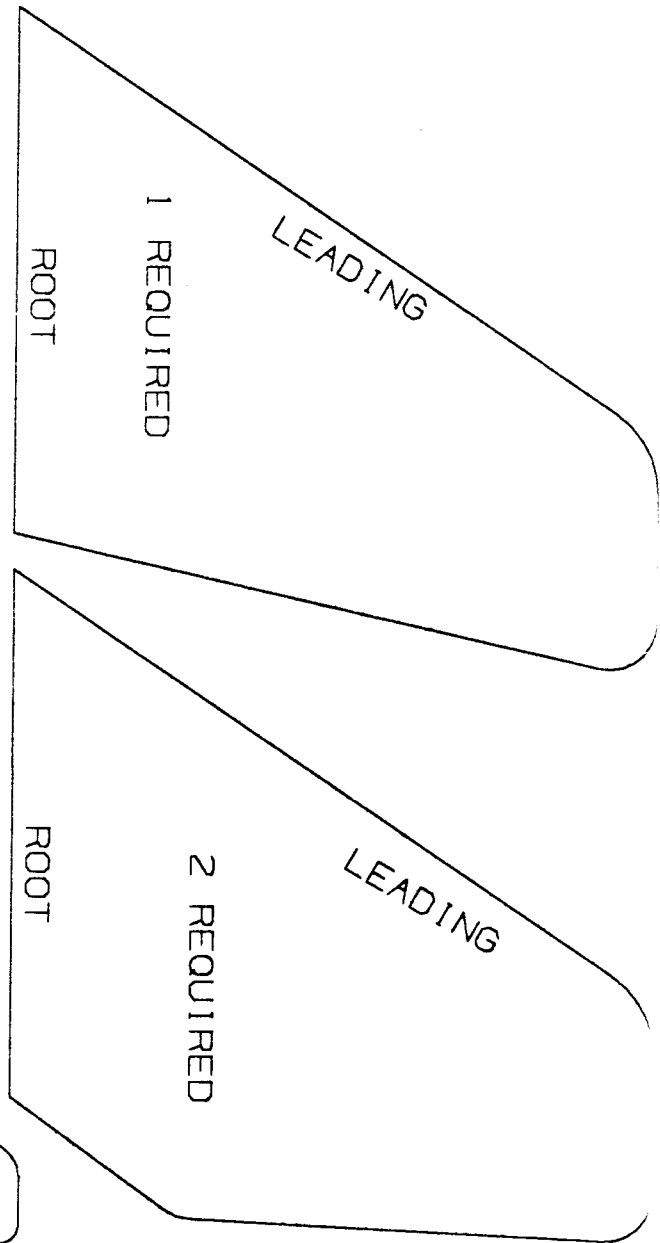
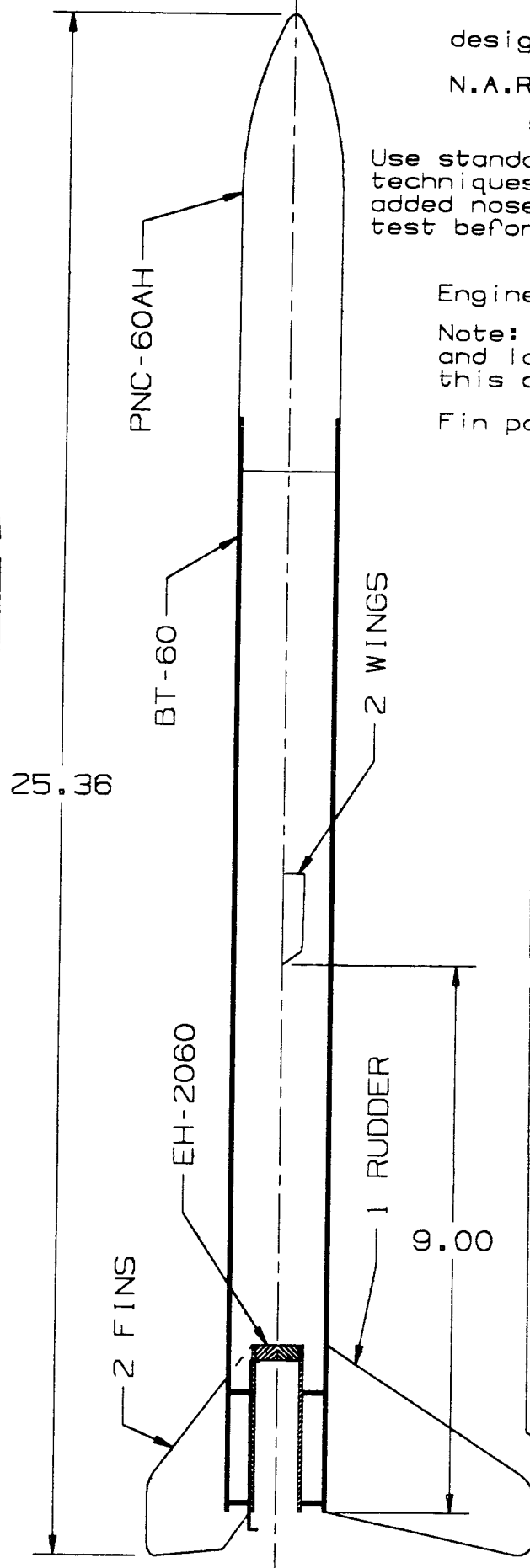
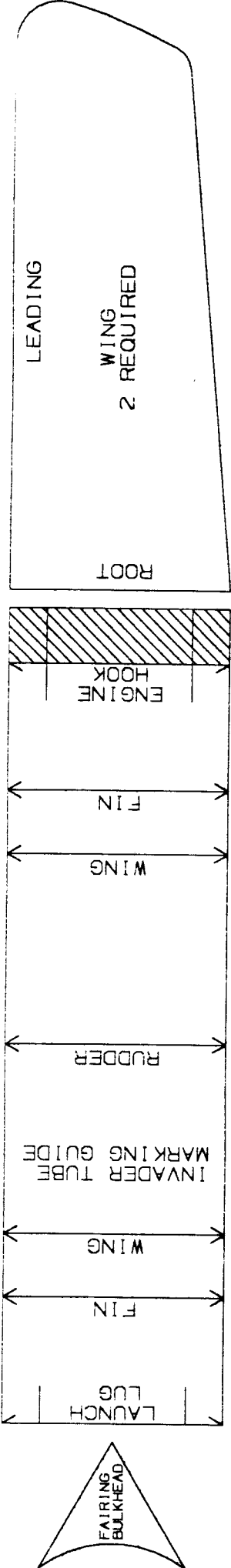
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Use standard model rocket construction techniques. This rocket WILL require added nose cone weight. Be sure to string test before attempting powered flight.

Engines: B4-2, B6-2, C5-3, C6-3

Note: Fairing, parachute, shock cord and launch lugs are omitted from this drawing for clarity.

Fin patterns are full size





Robert McBroom  
 71 Charity Lane  
 Bristol, IL 60512  
 Age 10  
 N.A.R. No. 47110 JR

PARTS LIST

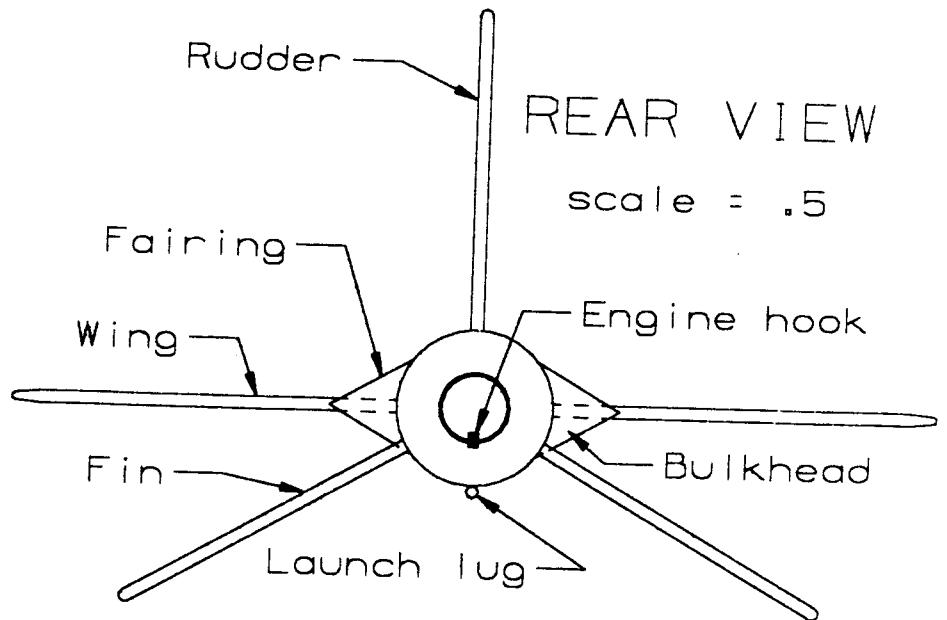
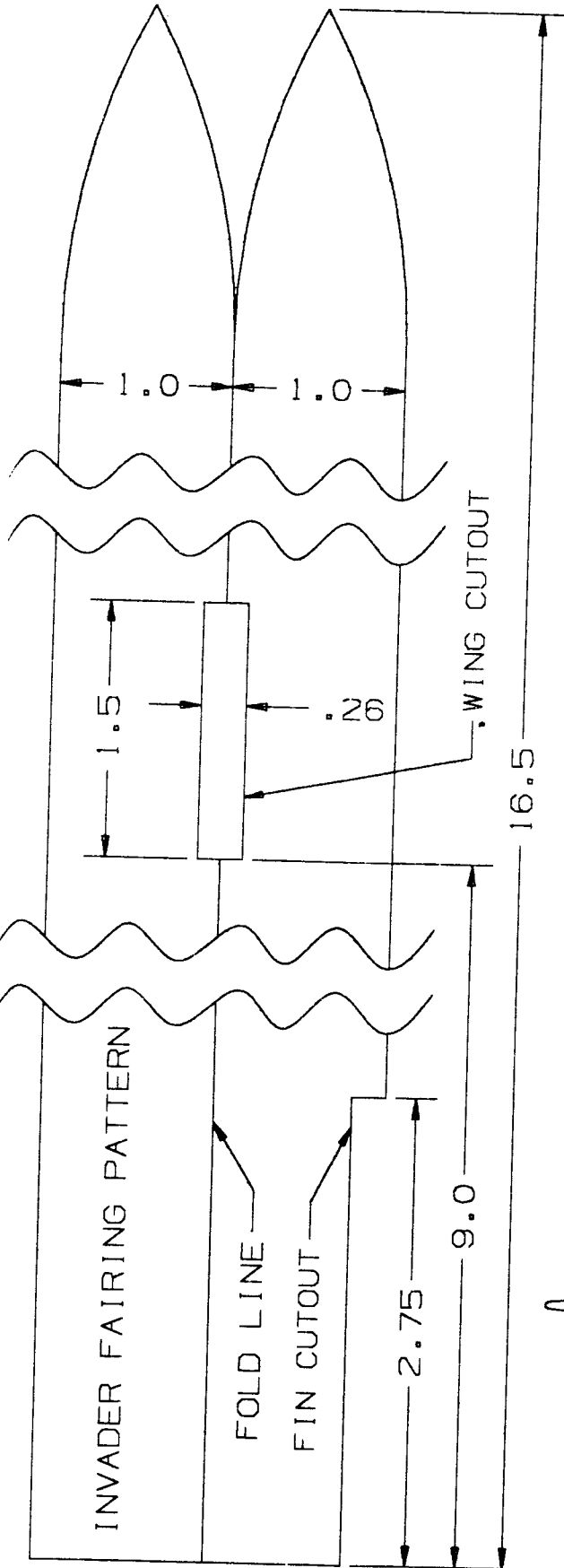
| QTY. | CAT. NO. | DESCRIPTION            |
|------|----------|------------------------|
| 1    | BT-60    | BODY TUBE              |
| 1    | PNC-60AH | NOSE CONE              |
| 1    | EH-2060  | ENGINE MOUNT ASSEMBLY  |
| 1    | BFS-40   | BALSA FIN MATERIAL     |
| 1    | 2321     | LAUNCH LUG             |
| 1    | 2277     | SHOCK CORD             |
| 1    | PK-18    | PARACHUTE              |
| 1    | 2292     | SNAP SWIVEL (OPTIONAL) |

NOTES:

The fairing pattern is full size, but with two sections removed. It may be constructed by laying out the top section on suitable paper, then extending the lines to the dimensions shown. The two cutouts are then laid out. Then flip pattern over and lay out a mirror image for opposite side. Eight bulkheads are required. Place one just behind front radii, one at rear, and one on either side of the wing. Repeat for opposite hand.

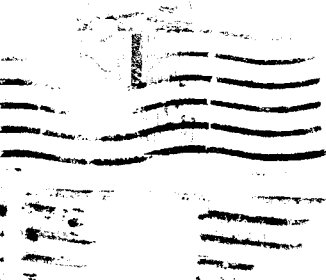
The launch lug should be cut into two equal parts, and one glued 3" from rear of BT, and one 3" from front of BT, then aligned with a launch rod.

In addition to the engines listed on the other side, the B6-4 and C6-5 engines have been used with this rocket. In both cases the recovery system deployment was well past apogee. They are therefore not recommended for use in this rocket.



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THE LEADING EDGE  
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UNIVERSITY OF UTAH PRESENTS

# CHAD FUSION

COMING SOON  
TO A HOBBY SHOP  
NEAR YOU



A Martin Fleischmann and B. Stanley Pons Production