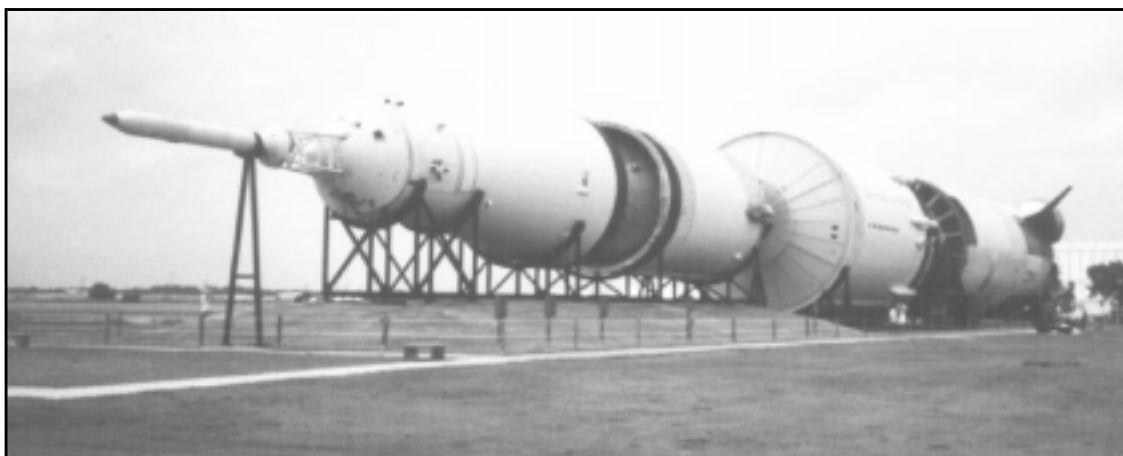


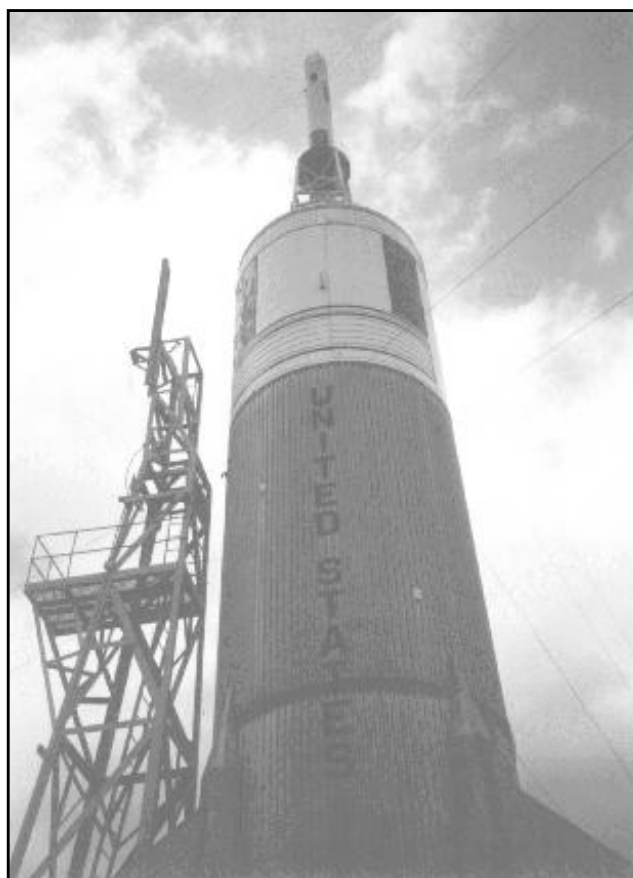
THE LEADING EDGE

Newsletter of the Northern Illinois Rocketry Association,
NAR Section #117, TRA #36

Volume 17, Number 5
September/October 1994



**Inside this issue: NARAM 37 COVERAGE
CHAD PAD
TOMCAT TIPS**



Top: A once flight ready Saturn V lies on its side in Houston.
Right: A close up of a not-so-little Little Joe II.
Above: Tom Beach gets up close and personal with a Rocketdyne H-1 engine from a Saturn 1B.

T MINUS 1 - NIRA'S CALENDAR OF UPCOMING EVENTS

MONTHLY MEETINGS

All meetings start at 7:30 PM, and include refreshments, entertainment and a brief business 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 Mark Bundick at 708-293-9343 if you can help with ideas or can speak yourself.

October 7 - Regular Monthly Meeting. RCHTA and 1995 planning.

November 4 - Regular Monthly Meeting.

December 2 - Regular Monthly Meeting.

OTHER ITEMS OF INTEREST

September 24 - HPR Launch, Chanute Aviation Center, 9 AM. Contact Greg Smith 217-352-9655.

October 15-16 - RCHTA Show at O'hare Expo Center. Contact Lawrence Bercini (312 561 8098) for more information.

October 22 - High power rocket launch at Chanute Aviation Center, 9 AM. Contact Greg Smith 217-352-9655.

November 5,6 - Fall Danville HPR Launch. Contact Dennis Wacker, 708-888-8587 for more information.

STAFF

Bob Wiersbe - Editor, Graphic Arts (such as they are), Production Manager, Folder, Stapler, Stamper, Mailbox Stuffer

CONTRIBUTORS

Larry Curcio and Mort Binstock, Mark Bundick, Frank Burke, Woody Harper, Ric Gaff, Ken Hutchinson, John Kallend, Bob Kaplow, Steve Koszuta, Bob Wiersbe

HELP WANTED!!

Brian Noon is looking for some help with a rocket building session he is organizing at the B.R. Ryall YMCA in Glen Ellyn. The building session will be either October 2nd or 9th, and the kids will be joining us at the October 23rd launch to fly their rockets. If you'd like to donate an hour or so of your time on a Sunday afternoon, please give Brian a call at 708-462-6318 (this is his office phone with voice mail, and is the best way to get in touch with him).

The October 23rd club launch will be very busy, and we will need some help with a couple of things. First, we'll need to help the folks from RCHTA and the YMCA with prepping their rockets. Secondly, everyone will need to be aware of what's going on around them when they are launching rockets. There will be a lot of activity, so make sure those countdowns are LOUD! Lastly, please don't fly anything unproven at this launch (no CHAD staging, RCRG's, etc), just to keep things safe. Thanks!

1994 CLUB LAUNCH DATES

All launches or other activities start at 2:00 PM. BYOL (bring your own launcher). Casualty insurance required or else RSO must inspect and launch your model. Location for our 1994 launches is Community Park in Lisle. Get off Route 53 at Short and head west. If you have questions prior to any launch, call either Mark Bundick at 708-293-9343, or Mike Jungclas at 708-910-1267.

September 18: Regular Club Launch.

October 23: Regular Club Launch. Note the date change! There will NOT be a launch on the 16th as planned so that we can fly the rockets from RCHTA.

November 13: Last Club Launch of the Year!

FREE ROCKETS! Ok, I lied. But before you read any further, look at your address label. If it has the message "Membership Expiring! or Membership Expired!" you'd better renew NOW! Please check your expiration date and renew your NIRA membership before it expires. You will not receive any more newsletters after your expiration date has passed! See the box below for the address to send your renewal to, and remember, you can renew for as many years as you want!

THE LEADING EDGE, published bimonthly by and for members of the Northern Illinois Rocketry Association, NIRA, NAR Section #117, is dedicated to the idea that Sport Rocketry is FUN! Articles, plans, photos, other newsletters, and news items of interest should be sent to Bob Wiersbe, 1835 Shetland Drive, Wheaton, IL 60187 (or electronically via Internet to hrbob@ixstar.ih.att.com.) Photos will be returned, other material returned if requested. Send membership applications (dues: \$3/year, including a six issue subscription to the Leading Edge) and nonmember subscriptions (\$5 per six issues) to Ken Hutchinson, 84 Jefferson Lane, Cary, IL 60013. Any item appearing in the Leading Edge may be reprinted by Sport Rocketry with proper credit given; all other uses require written permission of the Northern Illinois Rocketry Association. Tip #002 - There is no Tip #002.

Model of the Month

Ed Thiel and Mark Bundick are all grins with their winning models in August. Ed's Navy 1 Boxcar RCRG took the youth division, and Mark's Atlas-Centaur took adult. Congratulations!!



All Photos in this issue by Ric Gaff, unless otherwise noted.

The Wabbit Weports
NARAM-37
 by Mark Bundick

July 24, 1994, Sunday

I didn't arrive until after 1 PM and decided it was more prudent to finish my scale model than sweat on the field. Wandered around a bit, saw lots of old friends and settled into my room. The "network dinner" for RMR participants and CIS folks was a huge success with probably 30+ people attending. Thanks to Al Jackson for picking a great restaurant; the soft shelled crabs were great and the company entertaining. In the evening, I led the town hall meeting, most of which was consumed with Sport Rocketry issues, particularly content, lack of content, communication, lack of communication, etc, though we did cover material on the regulatory front as well. I didn't get a whole lot of new data out of that, though I'm sure some Trustee candidates got better insights about content issues.

July 25, 1994, Monday

F SD and 1/2 PD blinded timers today. The field thermaled, but not aggressively. PD produced the usual "yawn" type of model, three fins and a nose cone, with chute sizes tending to the moderate (18-24"). Non deployments rapidly took people out of contention, but Trip Barber and Dan Winings managed three maxes each. Since Dan was out of models and Trip wanted to maximize his section's points, there wasn't a flyoff. Good strategy.

F SD, an event where many people debated the merits of various engines before the contest produced what I thought were surprising results. There were some strips, but by in large, the models flew well, then disappeared into the Texas haze. I did a stint timing and several times spent nearly two minutes waiting for a bird to reappear. It took that long, folks. Recovery was then a BIG issue. If you're planning on flying this event at the Canadian Nats, keep the visibility issue in mind. A large model with less performance could be the key here. Many time the timers couldn't reacquire the bird; for bizarre reasons the Contest Board ruled such flights receive 30 sec. scores.

Flying was shut down for the last 30 minutes. Birds drifting into NASA upset someone who phoned security. Security thought their instructions were to shut down the launch despite the NASA-Houston's securing the field last February. Terry White and John Pursley went off to work things out and the 30 minutes lost were made up later in the week. The incident spawned all sorts of changes in the meaning of NASA, i.e. "Not Around Scientific Apparatus", etc. NASA got a nomination for Best Midwest Qualified flight for this effort, their first since Skylab reen-tered...

Monday night brought the election. Results were:

3 year terms:

Vern Estes 587 MT
 Trip Barber 516 SL
 J. Patrick Miller 498 SW

2 year terms:

Ed LaCroix 491 SW
 Mark Bundick 479 MA
 Jack Kane 448 NE

1 year terms:

Bob Sanford 435 PC
 George Gassaway 351 SL
 Bob Alway 322 MA

Other Candidates:

Mark Johnson 304 MA, Tom Lyon 273 SL, Peter Olivola 249 NE, Steve Lubliner 241 SW, Stu McNabb 236 SL, Connie Pursley* 13 SW

*nominated from the floor at the Association meeting

The new Board then met and elected 3 of four officers:

President - **Mark Bundick**
 Vice President - Trip Barber
 Treasurer - Jack Kane

Secretary had to wait 24 hours to allow some sorting out of various Board member time constraints.

The Board also established ground rules for its meeting and spent two hours reviewing the financials with Comptroller Stu McNabb who has done a dynamite job on getting our financial statements in order, properly filing our tax returns and overseeing Sport Rocketry's expenses. In general, NAR finances have improved quite a bit since December, and the Sport Rocketry debt is coming down.

July 26, 1994, Tuesday

Still too d--- hot down here. When will it cool off, January??? My day started with the modelers of the Garden State section humming "Darth Vader's Theme" to the new NAR President at breakfast. I took it in the spirit in which it was delivered ;-)

Flying today was again interrupted by zealous folks from NASA. Jay Apt managed to work it into his talk that night by saying something like "we flew a large radar on our flight so we could shut down rocket launches all over the world". Terry worked it all out again, and flying resumed with some limits about recovery. Given today's flight performances, I'm not sure they were necessary :-)

The new Board of Trustees seems to have caught "Pat Miller Disease" as our flying was far from perfect. Trip Barber started things off by shredding his tested and previously flown RG. I managed to prang my HD bird (thanks to teammate Ken Hutchinson for redeeming our team with a good qualified flight later in the day), and hung my RG on the rod. When the usual taunts and jeers came, my response was "When was the last time the NAR President even TRIED to fly this

event?" Team Neutron then shredded their first HD flight; George and Ed just sorta looked at one another dumbfounded. There were a large number of RG failures; shreds, no glides, etc. I don't know who did what and after wasting one engine on the pad, scoring a "no glide" and one mediocre flight, I packed it in and decided to prep more for today's Board meeting.

The highlight of today, IMHO, was Dr. Jay Apt's presentation tonight. This thing was a tremendous treat for those of us who celebrate the mystery and majesty of flight; thanks a million to Jay for sharing it with all of us.

Quote of the talk, delivered while showing a film clip of the launch:

"It really is a lot of fun to ride the rocket."

Most politically incorrect quote, delivered while showing a clip of the crew chasing chocolate covered malted milk balls around in weightlessness:

"Spaceflight is really no fun; you wouldn't enjoy it at all."

First treat: 16 mm film highlight all parts of the mission. In contrast to the stuff from Jay's first flight, the speed on orbit was VERY apparent. Many, including I, thought it was speeded up at first, given the time it took to cover California for much of its length. Reentry views out the upper observation windows were exceptionally cool, as were the shots of the ET sep.

Second treat: about 45 slides of earth. It started with Karen Dillon (Bob Parks' wife) launch shot; if you want a peak, check out CIS's Modelnet and Library 15. You won't be disappointed! Then, beautiful geology, shots of the aurora that brought ohhs, and ahs; thanks for the view of Chicago. The NIRA troops loved it. We also saw some sad pictures of how man has despoiled his home with bad environmental decisions.

Third treat: a photo album of Jay's training for the mission, as well as even more shots of our varied and beautiful planet. Jay had included a shot of Hampton Roads, VA, which included a view of Virginia's Eastern Shore, home to Wallops Island, and the place where I grew up. I wrote down the photo number and intend to order a copy for framing when I get back to Chicago. Seeing your boyhood home from orbit and knowing a friend was watching from that vantage point moved me beyond words.....

I didn't get a chance to attend the auction tonight, as presidential politics got in the way (to say nothing of the need for dinner given lunch was at 1 PM, and Jay didn't get done until 8:30 or so.), so I can't report on that aspect. I heard later that Joey McReynolds wanted something so badly, Vern Estes gave him \$10 to bid on it!

As for the Board meeting, we got Gassaway to sit as Secretary, reviewed the regulatory front and ground thru Sport Rocketry Contract issues.

We also discussed an alternate publication to be sent in months when Sport Rocketry isn't in your mailbox. Assuming the numbers work out and we find a body to edit it, look for this to start around the first of the year.

July 27, 1994, Wednesday

Wednesday morning's memory. A bunch of T38's blasting out of Ellington. What a great sight....

Wednesday's second memory: The CD taking a chance and putting three NAR Trustees on the first shift as the trackers: LaCroix, Gassaway and Bundick. Does this man have guts or what???

We set up the tracking and promptly were strained by Pete Olivola's D3 flight. Just before launch, I warned everyone that we should help out by yelling out which way the models tipped off etc. to make sure we were looking in the right spot when the tracking powder popped. Sure enough, George had to help me out when Pete tipped out of the tower a bit, but we closed the track. I was told last night that the altitude computed seemed to fall into the "Al Neinst Gravity Anomaly"; over 1400 meters. Pete, being a gentleman, took the second place in Teams and declined to file for a record. I left the field after my tracking shift; ceiling were pretty low, but improved during the day. Later I found out a couple more entries exceeded Pete's altitude, including Trip's 1700 meter flight. Old timers may remember his 2900 meter F altitude shot at NARAM-30. Maybe we ought to rename it the "Trip Barber Gravity Anomaly". Dual Eggloft claimed a lot of victims, something that I was a bit surprised about. I was personally bombed once at Tracking West.

The photo contest guys, all six of them, had a blast trying to snare that elusive picture of the X. Only one managed even a small corner of it, even though they looked pretty accurate on aim-

ing to me. People traded tips, rockets and even cameras, and the event generated more fun per person than perhaps any other one at NARAM. The participants also tried getting shots of the Saturn, and had trouble there too, but did get some pics eventually. They displayed the results at the award ceremony for all to see. Fun. Maybe they'll try again in Genesco.

I took the "extra" time before the Board meeting to visit Space Center Houston, and can highly recommend it. Your first stop should be the film "On Human Destiny". It's a review of Mercury, Gemini, Apollo, Skylab and Shuttle, well photographed and integrated with the music. The abrupt shift of mood the music introduced at the Challenger explosion literally made me cry.

NAR members should pay particular attention to a fellow member demonstrating the behavior of fluids in zero g in the upper left hand corner of the screen in the post-Challenger segment. He maintains a strict scientific demeanor, i.e. wearing a s--- eating grin and exclaiming "Look at that!" Another recommended film is "To Be An Astronaut", a semi fictionalized account of the journey from selection to first flight. Good fun, particularly the sequences in the ascent simulator.

Final recommendation from the Wabbit: take in the art exhibit there. This hobby and space exploration isn't all about the technology and science. There's beauty and inspiration out there too.

Another five hours of Board meeting, again principally Sport Rocketry related. The Board voted here to have a final contract in place within 60 days, and to have that contract include editorial selection and controls in place to insure good content. More of the details here when I get my notes on all aspects of the meeting finalized.

All I can say for now is that the Board fully understands the risks involved in this venture,

and we believe we've protected the financial and content interests of the NAR and its members in the contract we've developed.

Then the Manufacturer's forum. Vern Estes is working on a book that will document his entry into the rocket business up thru about the time he sold the company. Pete Alway says he's working on a plans book for things like Gyroc models, etc. Good fun sport stuff. Ed LaCroix announced he's going to exit the parts business just to concentrate on engines. Anyone out there looking to enter the business should contact Ed if you want to pick up that part of the company.

I called it quits by buying my VP a nice dinner, and yes, we shared a drink or two. How busy had we been here? That toast was the first drink of the week.....

July 28, 1994, Thursday

Thursday's Start: Jay Apt came out to the field prior to taking a T-38 checkride to test his knowledge of a new avionics system. He later overflew the range, rocked his wings, and headed off to work. What a life....

Scale. Some good variety in models. More large sounding rockets than I would have expected, but some nice manned stuff too. Bobby Gormley of NOVAAR had the best younger division model, a Saturn 1b. There were modified Saturn V's too, but none were staged. A large Nike Deacon by Tom Secrist; had too big a launch lug on it for my taste, but so it goes. Marc McReynolds SS-60 shoulder launched ground to air missile stood out for its curved fins. The actual vehicle uses four section of tube for fins, folded flat around the motor while in the launcher, that spring out. Marc's were fixed, but cool looking. Team NCR had one of their shuttle kits done to STS-16 marking. The orbiter and SRB's looked OK to me, but the ET wasn't detailed at all, and perhaps lacked some correct colors. Jack Hagerty had a Titan IIIB that was unique. Nice



Bob Kaplow preps his "Go, Baby, Go!" while Ken Hutchinson watches out for large babies.



Scale Day - Jack Hagerty loads his nicely done Titan IIIB.



The smoking remains of the NCR Shuttle after a G80 CATO.

Hey! That thing's only got 2 fins!!!



Mark Bundick preps his 2nd Place Atlas-Centaur, while Peter Alway makes a startling observation and Bob Kaplow's number is up.



Where else but a NARAM could you rub elbows with folks like Vern Estes and Jay Apt?

drawings accompanying his packet, and a neat story behind the data ("You're looking for what? How'd you get my name?")

I spent all my model time prior to NARAM completing a BT-70 version of the Pioneer 10 Atlas Centaur. Many thanks to Peter Alway, Bob Biedron and Balsa Machining Service, all who contributed to getting this bird done. Most of the complex parts were vacuformed; FAI types should look for an article in the next Journal of International Spacemodeling (JIS) edited by Tim Van Milligan. For stabilization, I relied on the faring and two small clear fins; my new VP offered "You're gonna put this bird in the dirt, Bunny".

Flying was a carnage of unimaginable proportions. Chad Ring's Saturn V, previously catoed back home, did its thing by first attempting lift off firing only one engine at a time. An engine would light, push the bird a bit up the rod, then burn out. The bird settled back down, then repeated the process for an engine or two. Second flight catoed the 29MM central composite and the bird pulled a "St. Louis Arch" to destruction.

McReynolds SS-60 looped all around the sky. Post flight, he remembered he'd removed the 1 oz noseweight to use in another model Tom Secrist crashed his Nike Deacon, but I'm not sure why it happened. Pete Alway had a good flight on his seven year old Saturn, four B4's right? But it landed on the asphalt and the wind dragging it along sanded the fins a bit. Ouch. Was it worth first place, Peter??

Team NCR's shuttle escapade has been well documented here already. Catos on all the FX motors to start, then an AT G80 failure. A disappointing end to a nice bird, though Matt says he'll rebuild.

JPK's Nike Tomahawk took first in Teams as a result of this crash, flew perfectly. My Atlas Centaur did OK on an Apogee C10-4 (thanks to Buzz McDermott for suggesting this motor!)

and two FX, though only one of those lit. I'll be anxious to see the final results, as I was only 4 static points behind JPK. Coned a bit up top and lost one fin and a nozzle on landing, and that might have made the difference.

R&D: Didn't get to see any presentations at all due to NAR business. Bobby Gormley did some experiments at measuring drag coefficients by dunking birds in his pool then pulling them out with some pulley mechanism. Team NCR did some stuff on drag coefficient determination too. Two reports were of the "survey" variety; much to the judges consternation. While some of this isn't bad work, in a technical hobby, one hopes for non-social science research in the reports.

Someone else is going to have to fill in the details on the more technical stuff; affairs of state kept me away.

Awards: President's Award went to NAR Standards and Testing who have done a SUPER job getting a huge number of engines tested, keeping up communications with manufacturers and planning new equipment all at once.

The 1994 Howard Galloway Spacemodeling Award, the nation's highest honor in sport rocketry, went to J. Patrick Miller, who served not only the NAR but the millions of hobby rocket flyers of this country for the 6,015 days he served as NAR president. Many of you can list the high visibility things Pat's done for us, but I had the unique perspective of watching "backstage". The little things he did, phone calls, letters, faxes and personal meetings smoothed the way for a lot of work done by other people and we sport rocket flyers have an unpayable debt to Pat for his work.

The National Championship Section for 1993-1994: Launch Crue, Holland, Indiana.

Newsletter Trophy: The Upstate Rocketeer, by the MARS Section of New York. (Boo! Hiss!)

Best Midwest Qualified Flight: NIRA's very own Ric Gaff of the "Can your beer do this?"

Team's "touch and go" unstable flight in F Streamer Duration on an F7-6.

Next Year:

NARAM-37 Site - Genesco State University Genesco, NY (about 30 miles south of Rochester)

Sat. 7-22 NARAM Sport Launch

Sun. 7-23 NARAM Sport Launch

Mon. 7-24 1/2A PD & A Flexwing (MR)

Tue. 7-25 C SD & A B/G

Wed. 7-26 C Eggloft Alt. & 1/2A Alt.

Thu. 7-27 D Super-Roc Alt., R&D Presentations (night)

Fri. 7-28 Giant Sport Scale, Peanut Sport Scale, Open Spot Landing

Waiver details still being worked on; looks like 5,000 feet with perhaps some limit on weights. More as details emerge.

Dan Wolf, an outstanding modeler and great guy, is the CD and ably backed up by his fellow MARS section members (Martians?). With Trip Barber serving as NARAM committee chairman, Tom Lyon offering his assistance, and perhaps the CMASS guys helping out on the sport flying, this could be a really great NARAM.

From a Bullet's Point of View by Bob Kaplow

Actually, I found Houston to be milder than my past 3 visits. That still makes it damn uncomfortable! Nothing will ever compare to NARAM-25. I've still got wet sneakers from that trip :-)

I ended up making a total of 17 sport flights, mostly Sunday and Thursday (burn them up because you can't take them back on the plane).

FIVE flights of the infamous Happy Meal, including 2 perfect flights on estes E15-Ps, two flights of my Skywriter-24 Pencil bank on E28-4 reloads, and a pair of nice flights of my brand new "Go Baby Go!". For those of you who missed both NARAM and MRFF, it's a 7" diameter baby bottle bank, flight converted for 29mm

My contest flying was a bit mixed. I'll leave it to Pete Olivola to describe the two events he flew for our team, "The Usual Suspects". I did well in the 3 duration events, but bought the farm in E DEL, my alltime favorite event (it was my first record, back in 1976). In PD I just missed 2 maxes by 7 seconds. My final flight was nearly lost on the roof of a building (no, not THAT building!), then took off and made another 30 second flight before dragging across a parking lot. That left me in third behind another team who missed by 3 seconds, and the "Dream Team" 3-max performance. I was bested by the dream team again in C RG. Gassaway flew an RCRG in C RG, and didn't get anything near a max, but ended up with 370 seconds. I had a ~90 second first flight, then shredded the same model on its second flight! Most unusual: the center of the T-rail just ripped clean out. The wing was virtually intact afterwards. For my third flight, I used my NARAM-29 D RG backup ship, had a poor boost, but caught a nice thermal for a solid max which was last seen still going up and heading north towards Chicago. That was the best flight of the event, and left me in a solid second place at 320 seconds. Third was way down at about half that total! In A HD I had a good returned first flight, then thermaled away my second flight for another BFOM and a first place. I did the same thing in HD last time NARAM was at the JSC! The next day, a NASA security guard had returned my lost HD model,

My favorite part of NARAM-36 was seeing Jay Apt again. His talk was incredibly entertaining, even if the picture of Chicago we asked for was stolen from another flight. We've got to find a way to get him back into active participation in the NAR. Perhaps eventually NASA will allow him to return to the board.

In spite of the heat NIRA was represented by a fairly large contingent. Myself, Mark Bundick, and Ric Gaff shared a room. Next door were Bob Kaplow and expatriate member Pete Olivola. One floor below and a little further down was Tom Pastrick. The living arrangements matched the competition groupings. We three roommates competed as the “Can Your Beer Do This?” team, our neighbors competed as “The Usual Suspects” and Tom participated as an individual. The suspects were definitely the most proficient competitors among us, placing in five or six

The three of us who shared a room obtained a rather rickety old cot from the motel so we would have three beds. One evening just before bed time Bob Kaplow and Tom Beach were in the room chewing the fat with the rest of us. As they got up to leave Tom asked "Who's sleeping on the Cardacian tonight?" Ric Gaff started to chuckle and Bob got a quizzical look on his face and asked "What do you mean?" Tom replied

"You know, Gol Darn Cot." I would imagine that at this point you are either rolling on the floor, laughing uncontrollably like Bob did or you are saying "Huh??" like Mark and I did. As it turns out a Cardacian is an alien race in the TV show, Deep Space Nine. One of the Cardacian regulars on the show is named Gul Ducat, get it? I know, you had to be there... Anyway, during our last night in Houston the cot collapsed completely underneath me, prompting me to follow my wife's suggestion to pull the mattress off the frame and just sleep on the floor. Gol darn cot indeed!

Part of being a NARAM competitor is paying your dues by helping to run the range. I helped time F streamer and 1/2A PD flights. The F models were a real test of your vision, they tended to disappear in the haze. One of the other timers sadly remarked that before this event, she hadn't lost sight of a contest model in four years. She wasn't competing herself, she was there with her son who was flying, she was just lending a hand. One of the many unsung heroes of the NAR. The PD models were literally a pain in the neck, two minutes each, standing with your head tilted all the way back, watching a tiny model hang nearly motionless overhead. Later in the week I helped track altitude models. The dual egglofters were easy, the D3 powered D altitude models were just plain invisible. Either you used tracking powder or you weren't tracked. Imagine trying to see a Zinger a mile away.

It wasn't everything I had hoped it would be but I sure didn't leave Houston disappointed. A little flying, a little work, a lot of hanging around with friends new and old. Unexpected moments like watching a row of adult strangers (one of whom was Vern Estes) chipping in to finance young Joey Mac Reynolds successful attempt to buy an Orion Pegasus model at the NAR auction. Culinary delights like the Crazy Cajun. It was a good week. If it sounds like fun, check out next year's

event in upstate New York. I hear the flying field is great...

August Club Launch by Bob Wiersbe

Community Park on August 21 was reminiscent of a 3 ring circus: there was a company picnic by the lake (complete with band, ponies, and stuff for kids), football games on the other side of the street, and NIRA launching rockets in the last remaining empty spot of the park. The rockets seemed to draw the most attention though, as people from the picnic wandered over and even the football players stopped to watch. Of course, rockets cruising over their heads might have had something to do with it, but the wind always blew the rockets safely away from the field.

Ed and Bill Thiel, Kleve Slouber and family, Don and Zach Vicha, Art Peterson, Mike Alterio, John Barrett, Greg Roman, Kevin Smith, Cindy Ingram, Ric Gaff, Jeff Gahris, and Ron Husak were just some of the NIRA I recognized at the launch. There were at least 15 pads spread out across the range, and probably 20 people launching rockets (many of them from the Thiel's rack).

A young guy named Damian Palmer flew his Estes Saturn V for the first time, and it made a picture perfect flight. I asked him if he was a new NIRA member, and he said "Almost." When I asked him what that meant he answered "I'm only \$3 short!" He was flying an FSI Excalibur, a twin chute rear ejection bird, until neither chute ejected and it pranged.

John Barrett had an Estes E15 blow up in his Cheetah, really fried the bird. He had incredible luck with his rockets all day, they kept missing the trees by inches! He and Mike Alterio appear to have taken out stock in Spherachutes - seemed like every one of their rockets had one of them in it. The Alterio Recovery Crew was hired to get quite a few birds out of the trees.

Bill Thiel tried unsuccessfully to CHAD stage a BT-20 bird, and it pranged under power. Fortunately, it went away from the flight line. Ed almost gave some folks a haircut with his RC bird; his flight profile was dive, stall, dive, crash! Ed also pranged his Cheetah on an E18 reload. An autopsy of the remains revealed the metal mess had jammed up into the top of the tube so much that nothing could get through. He flew his Jayhawk 3 or 4 times, it flies real nice, but needs a paint job!

Ron Husak flew some scratch built clustered bird on 2 B6-0's and 2 B6-4's. He didn't vent the B6-0's, and when they burned out they blew the tubes apart. It sounded like fireworks going off.

Someone I didn't recognize flew a beautiful V2, and pranged it. He used a D12-5 instead of a D12-3, and it ejected well after impact. A Tomcat attempted to glide a couple of times, but only managed to corkscrew in. Ric Gaff flew a weird glider (Flying Jenny??), a bi-wing thing that needed nose weight. He also flew this really neat rocket with pop out landing legs, it was a little unstable, but cool! (Look for the plans in an upcoming newsletter!)

Cindy Ingram flew her Omloid with an egg for the first time; she mentioned that a spider had moved into the rocket in the year since she built it. A nice flight, and no damage to the egg. Kleve Slouber's Point made a pin-point landing down the flight line, much to the consternation of someone working at a nearby pad.

A beautiful day, and a really good turnout. For all the rockets that didn't work right, there were probably 10 that did. Without flightcards it was hard to keep track of the flights (or all the people there), but I'd guess there were around 70 flights. There's only 3 more NIRA launches for this year, so make plans now to be there! They really are a blast!

Photos from the August NIRA launch



John Barrett loads his cool blue Shadow.



Just a few of the happy faces along Misfire Alley.



Left: Damien Palmer readies his Saturn V; Right: Art Peterson loads his Initiator, while his recovery crew waits patiently.



Eat Cheese or Fly! by Steven J. Koszuta

First, a little history about NIRA's first true High Power Rocketry launch. For the last couple of years, NIRA wanted to host a waived, HPR meet. The biggest hang-up was the launch site, better yet, the lack thereof. In order to get a descent waived altitude, we had to get far away from O'Hare Airport.

I knew that rocket launching was allowed at Wisconsin's Bong State Rec. Area, and at one time, model rocket sectional contests were held there. The site had plenty of acreage and the facilities to support a high power launch. Even so, as far as I knew, no one had successfully obtained a waiver from the FAA for this site. Then in March of this year, Ken Hutchinson started the ball rolling again when he proposed we look at the Bong site on more time. Bob Kaplow verbally confirmed getting a waiver with FAA Milwaukee and the rest is now history.

We reserved the site, applied for the waiver to 6000' MSL, and invited a few non-NIRA fliers from Illinois and Wisconsin to attend. This being our first true HPR launch, we had plenty of ground support equipment to build. Thanks to everyone for chipping in.

The day of the launch finally rolled around. The one thing out of our control almost stopped us before we even started - the weather. Saturday dawned a rainy, windy, very overcast day, but by around 10am, the rain stopped and there were breaks in the cloud cover.

"Eat Cheese or Fly!" was a very well attended launch by both NIRA members and non-members, especially in light of our purposeful lack of publicity. Eight non-members, mostly Wisconsinites, arrived eager to fly. Many of them belonged to Tripoli Madison or Wisconsin. There were at one count 65 attendees, filling the south end of the parking lot to capacity. Final count revealed 15 paid participants.

We had five high power certification flights: Kevin Smith flew his THOY Falcon on an H123-6 and then on an I-161(S) for two certifications; Steve Koszuta clustered his LOC ROC 4 successfully on two composite E15-7 & two D12-0 for his H rating (after two failed attempts with all black powder motors at MRFF-94!); Bill Thiel received his H certification by flying an Aerotech Cheetah with a G40-10; and last but not least, Bob Wiersbe clustered two H55-10 white-lightnings in his 4 X 4 to receive his J rating.

After tallying all the flight cards, there were 88 total flights. Ed Thiel again being our most prolific flyer with 13 models lifting off. Some of the many notable flights were: Ken Hutchinson cluster staging two sets of (6) C6's in his Black Adder, for 120 N-s total impulse. Ken also flew his LOC Magnum on a I284-6. Bob Kaplow flew his Ultimate on (2) F80 -15, (3) F41-9 and 2 rodent revenges. Bob's still having trouble getting those smoke generators to light, however. John Halberslaben flew the largest rocket of the day - his LOC Ness Monster (EXP Bruiser) powered by a J415 and two F50 silver streaks. This flight was a very exciting and memorable event for many attendees. John may have used a larger motor, if the weather was better. Ed Thiel tried his hand at RC/RG with his Navy 1 Boxcar glider, his third flight ending in a nasty CATO. Bob Wiersbe flew the only staged flights of the day with his Staged Thing D12-5 to C6-7, and his Nike-Apache on a F50-4 to an Estes E15-8. The E15 not only didn't CATO, but the Apache flew out-of-sight and was lost.

Hopefully this launch will be the start of something great. Next year we would like to have another HPR launch at Bong, probably in August again. Start your winter projects now, so you'll be ready for next year.



Left: John Halberslaben walks his LOC Ness Monster out to Pad 1, while Drue Mills grabs some extra fire insurance.

Right: The LOC Ness Monster rises under the thrust of a J415 and 2 F50 Silver Streaks.

Below, right: Bob Wiersbe preps his staged Nike-Apache, never to see the Apache again.

Photo by Lee Culver



You'd smile like Ken too, if your rocket just fell from over a thousand feet without a chute and only cracked a fin!



Kevin Smith's THOY Falcon made not 1 but 2 certification flights!



Homebrew Launch Pad

by Woody Harper

via Internet's rec.models.rockets

This may be old news to you guys, but I think it's pretty cool. I have been out of rocketry for a few years and have recently "seen the light". I was getting my old range gear together and could not find my old launch pad. I went to the hobby shop to see what was out there. I saw the old Estes design like I had many years ago for about \$17.00. I saw the Quest PVC launcher and did not notice a price. After seeing the Quest pad I said "Hey I can build a better one for a couple of bucks". (Total cost came to under \$10 with rod and blast deflector. - Bunny)

Here are the ingredients for my nifty new launch pad that I made "all by myself" :)

Parts List:

- one 3/4" PVC "Intersection" [it joins four pipes into a big plus sign]
- four 3/4" PVC end caps
- four 3/4" PVC 45 degree elbows
- one 10' long 3/4" schedule 125 PVC pipe (I had the guy at the store cut it into 1 foot lengths, see construction note below...)
- one Metal plate or serving platter from a thrift store
- one Metal rod for launch rod

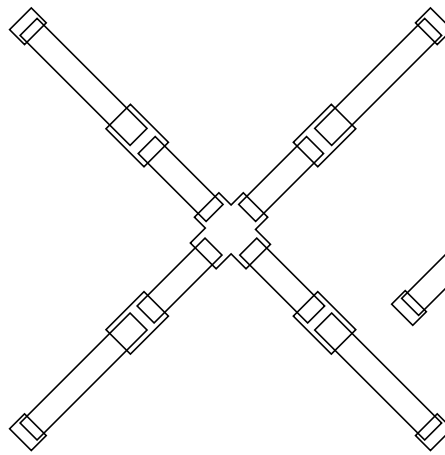
Take two of the one foot sections of pipe and cut them in half. It is much easier to just ask the guy at the hardware store to do this for you. Place the four 6" sections into the "4-way intersection" piece. Put the 45 degree elbows on the end of the 6" pieces with the opening pointing down. Put the 4 one foot sections into the other ends of the 45 degree elbows. Place the end caps on the open ends of the one foot sections. This is the basic frame and is quite sturdy as well as being easy to assemble/disassemble.

Drill a small hole in the center of the intersection and place the launch rod through it. Make the hole smaller than the rod as the pvc will provide a good snug fit if you twist the rod in (actually, drill the hole all the way through both sides for added support). Drill a hole in the center of the plate/platter and slip it over the end of the rod. Voila, a cheap sturdy launch pad. This thing works great and is so easy to lug around.

DML V-2 Plastic Model Conversion

by Frank Burke

I've just discovered a great plastic model conversion candidate. It's the Dragon Models Limited (DML) V-2 kit. I'm not sure of the exact scale, but it's about 14 or 15 inches long or so. The body diameter is just larger than a 1.6 inch Estes tube (BT-60) and is easily shimmed to fit perfectly. The only real conversion was deleting the steering vanes off of the bottom and



Top View

fitting a cardboard thrust plate to the bottom of the V-2 to take the motor thrust.

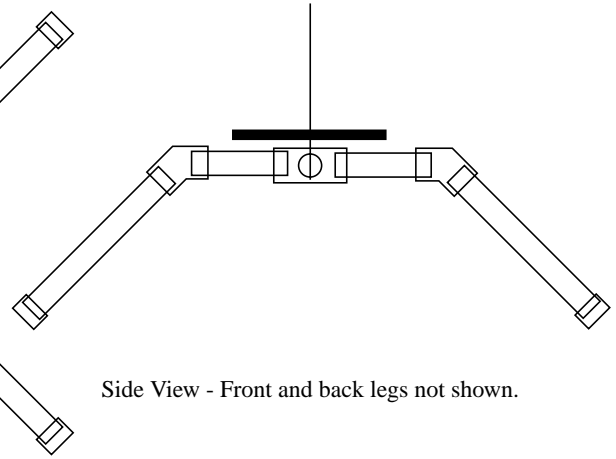
I assembled the model as per the instructions, adding the motor tube and the Body tube into the bottom half of the rocket. I left the upper nose section detached and glued the bottom half of a Big Bertha nose cone into the nose section of the V-2 to act as an adapter to the body tube and give a place to tie the shock cord. It is inset about an inch or so. Due to this, the body tube liner has to be extended above the plastic shell of the rocket about an inch so that the Big Bertha nose cone can fit into the body tube.

I opted to tape the motor in, and didn't use an engine hook. I added 1/2 of an inch of nose weight to the cone, and it passed the swing test with either an Aerotech D21-4 or E24-7. The model comes out about 6 or 7 oz. The stock fins are one piece and are heavy, but are strong and are large enough for stability. I added a piece of plastic tube for a launch lug. I built the motor mount and thrust plate with epoxy, and have not had any problems with these high thrust motors.

The great thing about this model is that it does not need any plastic fins added, not much nose weight, flies great and high, and the tube is large enough for two yards of 1/4 inch shock chord and a 24 inch nylon parachute (packed carefully).

I have about 8 flights with this model with the only problem being that I used a piece of square tube for the launch lug, and sometimes it binds slightly at liftoff. Using a round plastic tube would rectify this. A C6-3 could also be used, but since the model is so heavy, the altitude would be very low. I also think that the C6-3 motor is heavier than the Aerotech motors, so check the balance before flying.

The only negative thing about this model is that it is very detailed, and therefore costs a lot. ~\$30-\$35. It also comes with the launching platform.



Side View - Front and back legs not shown.

Estes Tomcat Tips

By John Kallend

I have now had six "successful" consecutive flights with my latest Tomcat (successful means no repairs required). I find:

- 1) The C5-3 is far better than the C6-3.
- 2) Don't angle the launch rod into the wind, launch straight up. Have the top of the model toward the wind - it will pitch "up" into the wind anyway. If all goes well it will arc over inverted, into the wind and then roll upright before the wings deploy.
- 3) The model "flops" around on the launch pad unless you do something to stop it. I put another 1/8" music wire rod into the ground, parallel to the launch rod, to support the wing and hold the model steady before launch.
- 4) The model seems to suffer from spiral instability on the glide. This does not really show up on the test glides (because they aren't long enough) but both of my surviving Tomcats would drop into a steep spiral on the glide. Fixing this would require a major re-design. Be very careful that your stabilizers and vertical fins are well aligned. I also reinforced the front of the body tube to avoid tearing when the nose cone hits the ground first.
- 5) both of my current models came out heavier than Estes suggested weight. I don't know how I could have made them any lighter.
- 6) I think this model could really do with a low thrust D motor (say D6 or D8). Anybody know of such a motor in an 18mm size?

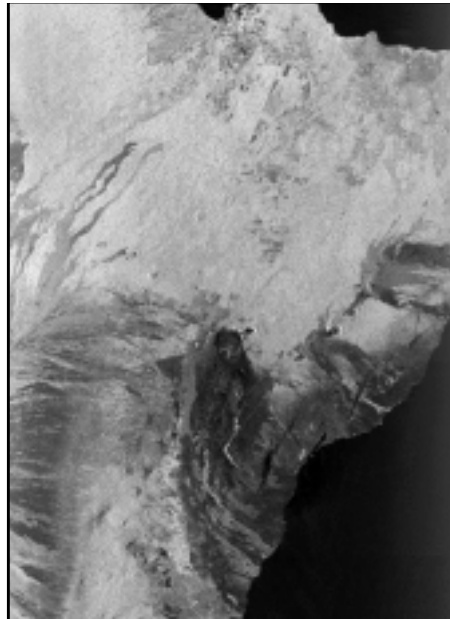
Got an interesting design, tip, or idea you'd like others to know about? Send it in to The Leading Edge! Our Graphic Arts Department can format any plans, as long as they're readable. We accept pencil, pen, MS Word, and Postscript format. Pictures will be returned. Email or US Mail is fine. Addresses are listed on the inside front cover (Page 2).

SIR-C Results by Bob Wiersbe

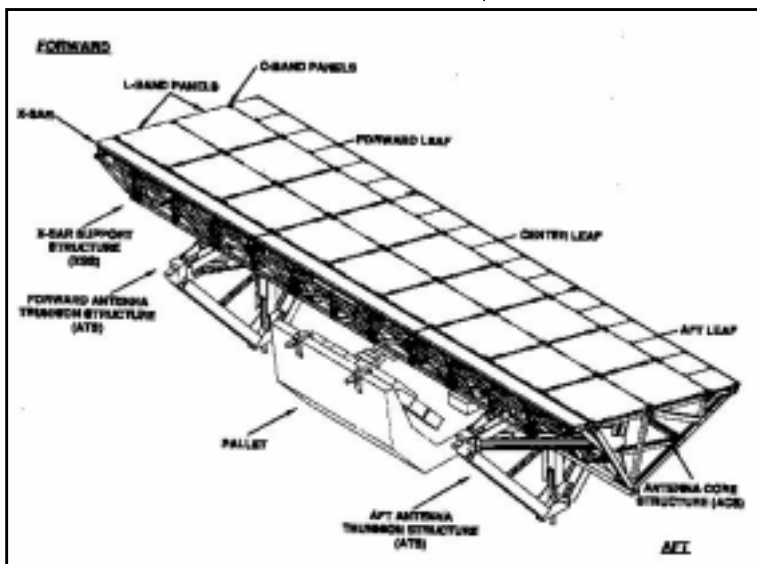
In the May/June Leading Edge, Cindy Ingrum introduced us to the Spaceborne Imaging Radar - C and X- Synthetic Aperture Radar payload that was flown on STS-59. While browsing through the sci.space newsgroup on Internet, I came across an article that listed a site where pictures from the SIR-C could be downloaded. The pictures and text on this page were taken from that site.

This composite C-band and L-band image of the Kilauea volcano on the Big Island of Hawaii was acquired by the Spaceborne Imaging Radar-C/X-band Synthetic Aperture Radar (SIR-C/X-SAR) flying on space shuttle Endeavour. The city of Hilo can be seen at the top. The image shows the different types of lava flows around the crater Pu'u O'o. Ash deposits which erupted in 1790 from the summit of Kilauea volcano show up as dark in this image, and fine details associated with lava flows which erupted in 1919 and 1974 can be seen to the south of the summit in an area called the Ka'u Desert. In addition, the other historic lava flows created in 1881 and 1984 from Mauna Loa volcano (out of view to the left of this image) can be easily seen despite the fact that the surrounding area is covered by forest. Such information will be used to map the extent of such flows, which can pose a hazard to the subdivisions of Hilo. Highway 11 is the linear feature running from Hilo to the Kilauea volcano. The Kilauea volcano has been almost continuously active for more than the last 11 years. Field teams that were on the ground specifically to support these radar observations report that there was vigorous surface activity about 400 meters (one-quarter mile) inland from the coast. A moving lava flow about 200 meters (660 feet) in length was observed at the time of the shuttle overflight, raising the possibility that subsequent images taken during this mission will show changes in the landscape.

Spaceborne Imaging Radar-C and X-Synthetic Aperture Radar (SIR-C/X-SAR) is part of NASA's Mission to Planet Earth. The radars illuminate Earth with microwaves allowing detailed observations at any time, regardless of weather or sunlight conditions. SIR-C/X-SAR uses three microwave wavelengths: L-band (24 cm), C-band (6 cm) and X-band (3 cm). The multi-frequency data will be used by the international scientific community to better understand the global environment and how it is changing. The SIR-C/X-SAR data, complemented by aircraft and ground studies, will give scientists clearer insights into those environmental changes which are caused by nature and those changes which are induced by human activity. SIR-C was developed by NASA's Jet Propulsion Laboratory. X-SAR was developed by the Dornier and Alenia Spazio companies for the German space agency, Deutsche Agentur fuer Raumfahrtangelegenheiten (DARA), and the Italian space agency, Agenzia Spaziale Italiana (ASI).



Kilauea volcano, Hawaii



RetroRocket - NIRA in the Past

September/October 1984

NIRA got slimed for the fourth time in a row by PULSAR in our quest for a National Championship. We consoled ourselves with Larry London's B Division championship and the second win of the LAC Newsletter Trophy by the Leading Edge (way to go, Gaffer!!) We also celebrated our annual Labor Day Demonstration Launch. Ben Roberto provided us with a product review of Sears' drill powered lathe.

September/October 1989

Lawrence Bercini provided one of the more details plans in Leading Edge history with his "Mephisto" fantasy bird. Larry Mika treated us to what was the final episode in a multi-authored sci-fi novel "Trek Nar's Lament". Bunny's lament was a report on the Allentown flyoff to select team members for the USA-USSR cultural exchange contest.

Bunny Tales

An ongoing look into the history of the new NAR President, as told by those who have served with him. This months installment comes from former NAR President Pat Miller.

- 1) In 1979 Bunny took over as editor of the "Model Rocketeer" (you know it now as Sport Rocketry), and published one of the most hideous covers in NAR history - the lime green "Sparky, the Flying Asparagus" issue.
- 2) After a 4 year term as Chairman of the Contest & Records Committee, Bunny was the victim of the 1982 "Dump Bunny" Campaign. While some thought the campaign was funny, word has it Bunny was not amused.
- 3) In 1986, after a long board meeting, Bunny had one beer too many and kept Pat Miller up all night singing "Jaba, the Kuhn" songs. Pat's comment: "I could have killed him."



The SIR-C/X-SAR at home in JPL.

Not Just Single Use by Bob Wiersbe

Don't throw away those disposable Aerotech motors! The phenolic casings are still useful, even if the motor isn't. They're strong, smooth, and have a lot of different applications. Here are just a few.

1. As a thrust ring - a single casing can be cut into many rings.
2. As a stage coupler - cut off both ends and clean it out.
3. As a payload coupler - cut off ejection charge end, and epoxy a screw eye in the nozzle.
4. As a motor tube protector - cut off both ends, clean it out, and glue ahead of the thrust ring.
5. As a paint holder - epoxy a dowel rod in nozzle or ejection charge hole.
6. As a rocket holder - epoxy motor to wooden base, or cut off ejection charge end and screw to base through nozzle.
7. As a bulkhead/coupler for staged models - cut off ejection charge end, clean it out, and feed igniter wires through the nozzle.
8. As a holder in the Estes Fin Alignment Guide - use a 24mm motor, the nozzle fits perfectly in the centering hole.
9. As a plug for clustered models - plug nozzle with epoxy, and cut 1" from nozzle end.
10. As a block for cutting tubes - insert in tube behind cut line.
11. As an ejection baffle - cut off nozzle, clean out, enlarge ejection charge hole, insert metal mesh, then glue in tube. You can also make a bunch of removable baffles this way, but you'll need to custom build the motor mount to be able to use them. For example, if you're going to be using D & E motors, glue the thrust ring far enough forward so that the baffle will fit between it and the motor.
12. As a rocket standoff - slip over launch rod.
13. As a launch rod cap - seal the ejection charge end and insert rod in the nozzle.
14. As payload ballast - seal ejection charge end, fill with sand/lead/etc, then seal the nozzle.
15. As a payload protector - cut off one end and build your payload into the casing.

16. In a piston recovery system - cut casing 1" above nozzle, epoxy leader wire through nozzle to attach shock cords to, insert nozzle end first into tube.

Heard on the Street - Rumors and Such (with apologies to the Wall Street Journal)

Welcome to the Club - Robert Adams, Anthony Cekay, Elliot Dibbs, Adam Elliot, Drue Mills, Daniel Plotnick, Phillip Steinhauer, Damien Palmer, Eric Dunker, Charles Kruminas, Mike Provenzano, John Kallend, Michael Ugorek, John Trilik, and Trent Tidmore are new NIRA members, welcome!

On the Right Track - Looking for a hobby shop in the Wheaton area? Check out Trains Plus Hobbies in Danada East (northeast corner of Naperville and Butterfield Roads). They carry Estes, Quest, Custom Rockets, THOY, and Aerotech kits, Estes motors, Sport Rocketry and High Power Rocketry Magazines, and a nice selection of plastic space models.

I Hear You Knocking - Two cosmonauts aboard MIR for nearly a year took a four hour spacewalk September 8 to install new equipment and to check for damage from the nearly unsuccessful docking by a Progress resupply craft. After two unsuccessful attempts, Russian ground controllers maneuvered Progress to within 10 meters of the station. The MIR commander then took over the craft and piloted it to a successful docking. (Wonder if he was an RC flyer?) No reports on any damage to MIR. The Progress was carrying food, water and experiments for both the upcoming French mission and the STS flight to MIR next year. If the docking had been unsuccessful, the cosmonauts would have been down to only a 15 day food supply, and probably would have been brought home.

Picking Up the Pieces - The DC-X single stage to orbit test vehicle will be flown again. NASA has agreed to pick up the expenses for repairs to the aeroshroud damaged in a June 27 explosion. Flight tests will then resume. After that, a follow up vehicle, the DC-Y is being studied to expand the flight envelope. NASA intends to use the program merely as a technology demonstrator and tester, and NOT move to regular

flight vehicle development.

Reloading the UK - British customs reports intercepting some small quantities of Aerotech reload casings and reload kits. Apparently UK flyers are buying these abroad and trying, with about a 50% success rate, to get them thru customs when they reenter the country. Even with the recent truce by the IRA, British authorities are extremely careful with any materials that might even remotely be considered available for terrorist use. There are still a variety of laws in the UK that make rocket flying much harder than in the US. British modelers are now trying to work with the UK regulators to allow legal importation of the reloads. More as this develops.

Look! It's Larry! - Long time NIRA members wishing to contact former National B Division Champ, NIRA member and all around nice guy Larry London may do so via the Internet at his wife's account :meyers@vt.edu. Larry reports he's still working for Volvo, and Carol is still at Virginia Tech.

Pulsing Buzzer by Larry Curcio and Mort Binstock Pittsburgh Space Command

Mort Binstock came up with a simple way of making a buzzer pulse. Radio Shack has a blinking LED, which draws juice and conducts only when the light is on. You simply hook one of these in series with a Piezo Electric Buzzer, and the buzzer pulses too. The whole thing fits into a spent D motor (or something lighter. Parts used by Mort:

LED [276-036 or 276-030] 12V Battery [23-144] Battery Holder [270-405] Buzzer [273-065A] Miniature Slide Switch (optional) [275-409]

Observe polarities on LED and Buzzer. Make leads as short as practical for maximum volume. Solder well, using heat sink. Twist two loose wires together to start, if you don't use the switch. The thing is light and dirt cheap either way.

If I had had one of these in the Estes Delta Clipper (TSTO?) that I followed to ground last month, I wouldn't have lost it in the grass.

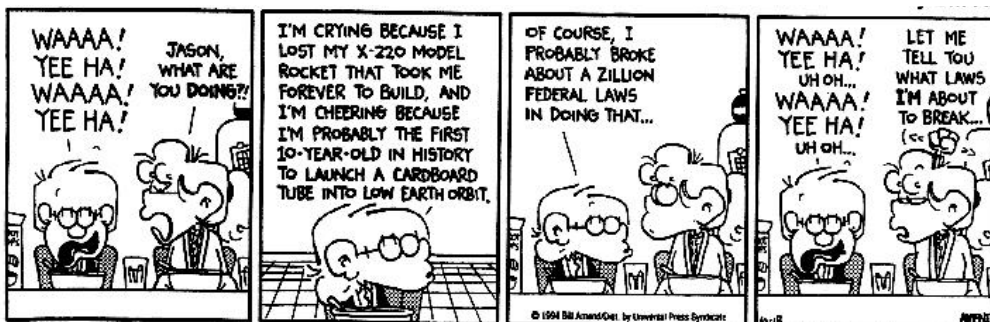
Sorry if it's too simple. I liked the LED trick :)

MRFF Corrections

The following MRFF sponsors were overlooked in the last issue of The Leading Edge:

Aero Design Research, Belleville Hobby, Commonwealth Displays, Inc, Designex Corporation, Quest Magazine, San Diego Discount Rocketry, Wicks Aircraft Supply.

We apologize for the oversight.



THE LEADING EDGE
C/O Bob Wiersbe
1835 Shetland Drive
Wheaton, IL 60187

Rabbit Elected NAR President!!

“It’s about time!” says Animal Rights Group.



NAR President Mark “Bunny” Bundick

Houston, Tx - In a bold but politically correct move, the NAR elected Mark “Bunny” Bundick President of the organization for the next 2 years. One NAR Board member said “We felt it was time for a new image, something softer and maybe furry. Bunny was the perfect choice!” Not everyone was pleased with the choice, however. Several board members were overheard in the restroom complaining “..he’ll be leaving little pellets all over the place, and we’ll have to eat at salad bars all the time!”

Rumor has it that his first official action will be to initiate the “Cottontail Award”. This award will go to the NAR volunteer who hops to it and works his tail off the most.

When asked how he swung the election, Mr. Bundick replied “I think my idea that newsletter editors should be paid really made the difference.”