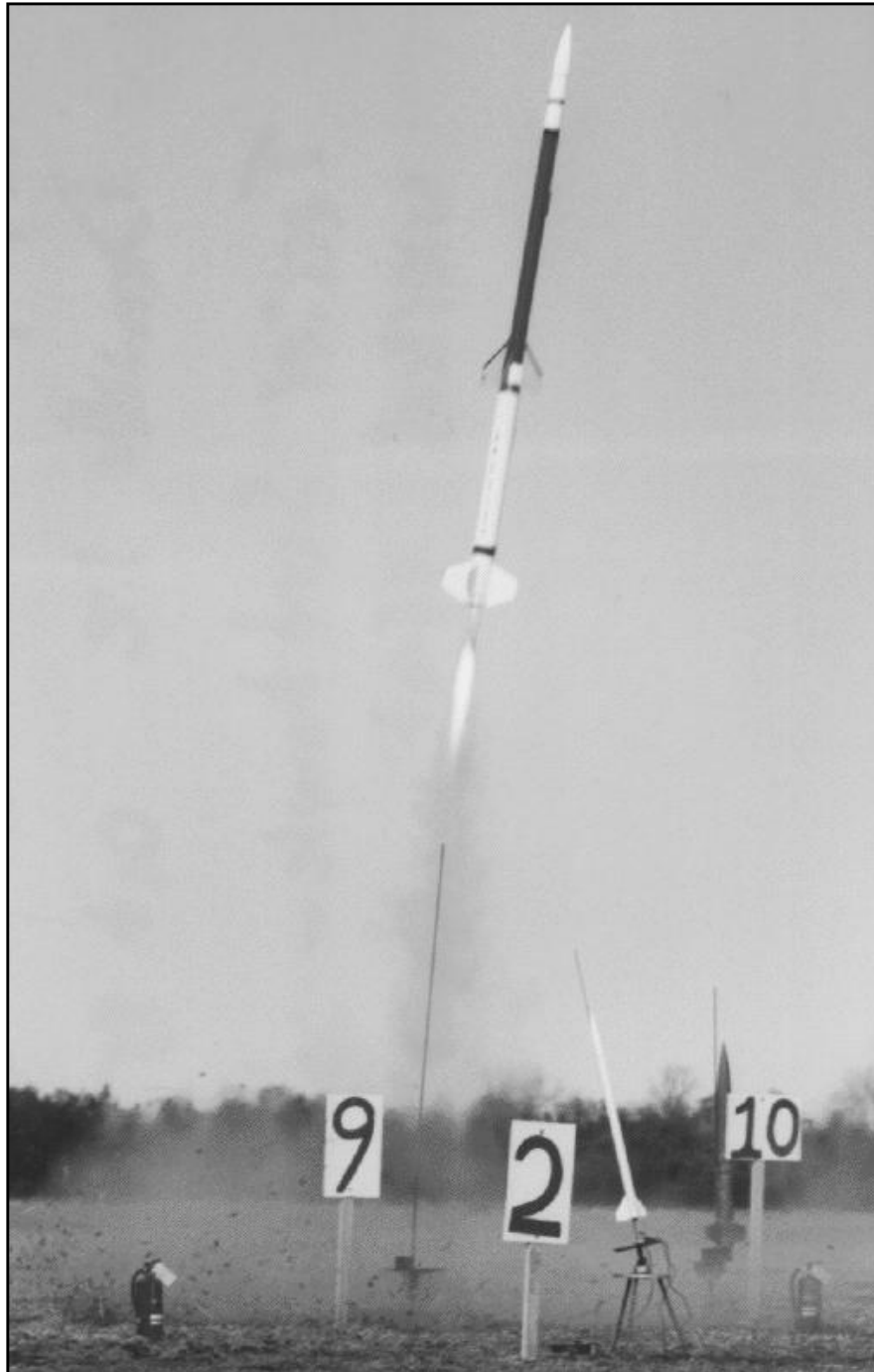




Newsletter of the Northern Illinois Rocketry Association,
NAR Section #117, TRA #36

Volume 18, Number 6
November/December 1995



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 Bob Wiersbe at (708) 690-5442 if you can help with ideas or can speak yourself.

- December 1: Regular Monthly Meeting.
- January 5: Regular Monthly Meeting.

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. When in doubt, mumble. Any similarities between "The Leading Edge" and any other newsletter, whether in current circulation, hiding in someone's desk drawer, or long since extinct, are purely coincidental.

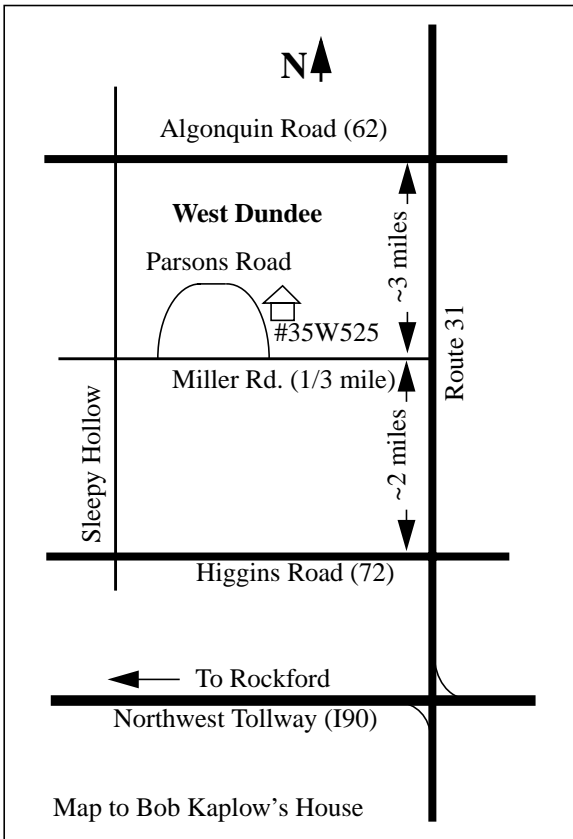
1995 CLUB LAUNCH DATES

All launches or other activities start at 2:00 PM. BYOL (bring your own launcher). Location for our 1995 launches is Community Park in Lisle. Get off Route 53 at Short St. and head west. If you have questions prior to any launch, call either Bob Wiersbe at 708-690-5442, or Mike Jungclas at 708-910-1267.

December 10: Holiday Party at Mark Bundick's, 2pm-6pm. Please call Mark (708 293-9343) to let him know you're planning to come and to find out what you can bring.

December 30: Beach Party at Bob Kaplow's. Please call Bob (708 428-1181) for more details. (Note: a Beach Party is when Tom Beach and Joyce Guzik are in town, not a surf and sand event)

January 21, 1996: Building Session at Bob Kaplow's! Bring whatever you're working on to Bob's Hobby Shop, and work on it! Loads of fun for everyone! See map below.



STAFF

Bob Wiersbe - Editor, Picture Scanner, Nagger of Members, Desk Top Publisher (sort of), Maker of Masters, Son of Warren.
 Ric Gaff - Graphics, Plans, Articles, Pictures, Copying, Folding, Stapling (he does everything except edit the newsletter!)

CONTRIBUTORS

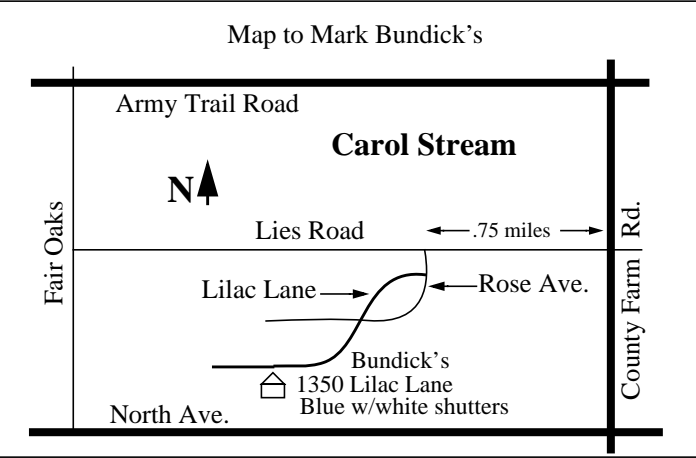
Mark Bundick, Ric Gaff, Norm Heyen, Bob Kaplow, Jerome Mrozak, Bob Wiersbe

Model of the Month Winners



And the October winners are.....
 Youth - Bryan Chesi with his Maniac.
 Adult - Ric Gaff pulls off an amazing feat, not only winning MOM, but winning with a large scale rocket! Oh yeah, that's his really nice Astrobee-D.

Way to go!!



On the Cover - a 10' electronically staged scratch built scale model of a Terrier-Sandhawk lifts off at Danville. Now that's my idea of a High Power Rocket!!!

1995 Radio Control Hobby Trade Association Show Report
by Bob Kaplow

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The 1995 RCHTA show was again held the last weekend of October at the Rosemont Expo Center, a huge building with crummy and overpriced food, far away and expensive parking, and rainy weather for travelling. NIRA again ran the Make-it Take-it booth. We had twice the space of past years, which was good, because they not only let scouts in for free, but encouraged them to do various activities like the rocket building by offering a patch for those who completed enough activities. We built all 850 rockets we were given by 3pm Sunday, and probably could have done 1000 if we had them. We managed to do this without ever having a line of kids waiting to get in. My "scouts" tell me that other model builders had to wait half an hour or more at some groups.

Best new product of the show: Stellar Dimensions Inc "square" rockets. That's right, they aren't round, but square. All parts are laser cut from plywood or basswood, and fit together perfectly. The kits have an ejection baffle which reduced the need for recovery wadding to a single sheet. 3 kits so far, all retail for 9.95 are sure to draw attention at your next launch. One is tumble recovery, the others use a parachute. All fly on standard 18mm motors, although the next kit in the works will take 24mm motors. Easily the most innovative rocket product at the show. Each kit comes with it's own sci-fi story, so you have to get a whole fleet to read it all. Soon they will offer an interactive catalog on 3.5" floppy for \$2. Contact them at Stellar Dimensions Inc., 2135 Roosevelt Ave., Enuclaw, WA 98022 (360)802-0953



Square rockets from Stellar Dimensions.
(photo by Bob Kaplow)

Best Ground Support Equipment: Doug Holver-sons Glider Slider, being kitted by Cedar Works. Doug has mentioned it here on the net, but now I've seen it in person. It's a tripod arrangement with elbow hinged legs to allow for just about any tilt or arrangement you need. Extra rods prevent the glider from being disturbed by wind, or it can be used as a 3 pad mini-rack. Just what you



Business was booming at the Rocket Make & Take booth. (photo by Bob Kaplow)

need for just about any BG, RC or not, and even most large model rockets too. Retail 79.99.

Best old product new to the show: BMS nose cones. Everyone on the net (hopefully) knows BMS, but now that Estes has dropped all of their balsa nose cones, BMS is taking up the slack by selling thru dealer channels. BMS has also taken over manufacturing and sales of the Apogee Medalist towers.

Best promise of more to come: Estes was there, and in force, with a huge booth. I wonder if anyone was left back in Penrose to answer the phone. New to the Estes line were a bunch of sport models, including two happy-meal like "backyard RediRocs" made of TuffLite foam that I'm sure to have lots of fun with, the Raider and the Intruder. The new line also included an F117 Stealth, Sidewinder missile, F22 parasite glider, and a neat looking Venus Probe. NIRA already has plans to turn it into a Mars Probe, and replace the Venusian with Marvin! Also showing from Estes was a line of balsa gliders, in assorted military jets F-14, F-16, F-18, F-22, F-4, a C132, Tornado, and a Space Shuttle glider. There were also some new lite-glid-ers to add to last years line.

The old NCR line has been revamped with TTW fins and 2.7 tube upgraded to 3.0, (they are using the existing tube sizes and nose cone molds from the soon-to-be-history Pro series) and some other enhancements. Back are the familiar NCR Patriot, SA-14 Archer, Phantom 4000, Big Brute, Lance Beta, Eliminator, and a very re-engineered Bomarc. New to the line was a rocket that will ruin my winter project, an Interceptor-G scaled up from the old Estes kit to 2.5" diameter. The "High Power Model Rocketry North Coast by Estes" brochure even includes the mandatory NCR replacement for the lovely Tracey Reeves. As to the NCR composite motors, they are being retooled to take advantage of

resources not available to NCR before, and should be submitted for certification this spring.

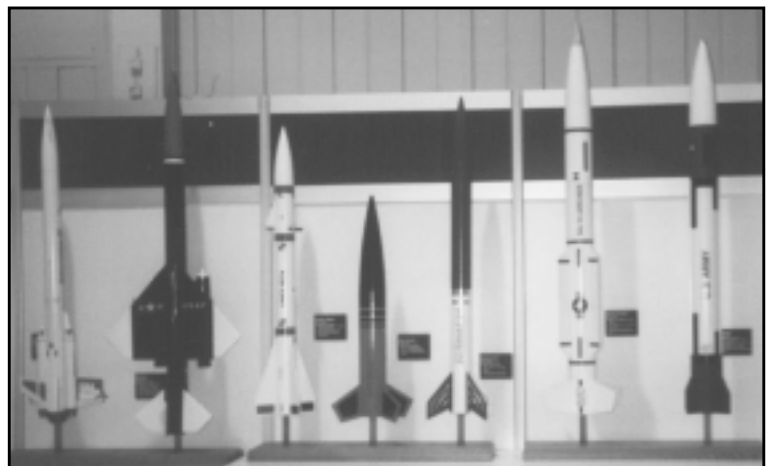
I also got more information on the E15 story. The problem doesn't show up with the motors until they age 4-6 months. Thus each tweak to try and fix the problem takes at least 6 months to test. I got no indication of when they would be released, but you can bet that they won't be called E15s when they are. My guess for over a year now is E14, like the 1970 D13 that became the D12...

Estes has also picked up Sterling models (balsa and tissue planes) and a line of MRD Russian airplane engines (NOT whoosh generators, but finger slicers). Talking with some of the Estes folks, it is their intention to become a full line hobby company. Expect more diversification from them in the future.

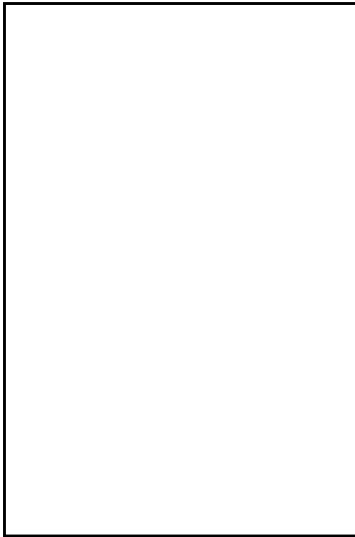
A new company (they committed the sin of not putting their name on their brochure...) is now marketing the Hobbylabs SR-71. It flies on Aerotech 24mm power, and can either fly free-flight or with RC control. Expect to see this marketed thru infomercials :-)

Both SpRocket and HPR were there. The Fall SpRocket is on its way out, and Steve Weaver is working hard to get SpRocket back on time, and improve the print quality. Steve also had T-shirts and hats, and a video. Bruce Kelly had some of the latest HPRs to hand out to the crowd.

Dennis Love was there with his mobile aviation historical display.



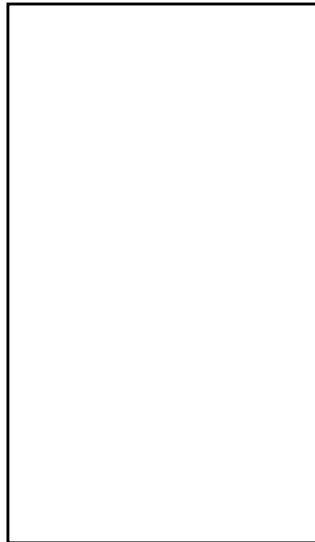
The "new and improved" North Coast line. (photo by Bob Kaplow)



The new Sidewinder (left), and Venus Probe (right). The sign in front of the probe reads "Please do not handle. It may break!!!" Not the best marketing idea.....



The new F22 parasite glider. (photos by Ric Gaff)



Cool! An F117 Stealth fighter. Imagine the fun we'll have with this, the F22, the Tomcat, and Shuttle! Heads UP!!



Need a nose cone? BMS is the place to call! (photo by B. Kaplow)

Cox had their 20+ year old plastic models...

Folks who were there in the past, but not this year: Aerotech, Quest, MRC (no rockets shown), FSI, Custom, Thoy, QED, SMI, and LOC (for sale if you are interested).

Interesting stuff for Rocketeers:

Glencoe Models is again adding to their line of sci-fi spaceships with a couple new models early next year, one that will be perfect for PMC at NARAM. It looks like some sore of early lunar lander, a bit like the old estes Mars Lander. The other is an interplanetary design that will be a very difficult conversion... Also available a blimp that should be easy to convert, but alas isn't legal for PMC, and the White house, and presidential sculptures of Washington thru Tricky Dick. They are going to make molds for all the presidents since the set was originally issued in 1970 or so.

ARII plastic models added a Patriot complete with truck and crate, to compliment its SCUD missile. Russian imports from MMD included a Soyuz, Sputnik, and a V2. These are economical at under \$10 each. I didn't see them, but John



Backyard Rockets! I can see it now, spot landing wars at MRFF, UFO invasions; these are going to be fun! (photo by Ric Gaff)

Viggiano told me that someone had Thunderbirds models too.

AMT/Ertl has expanded the Star Wars and Star Trek / TNG / DS9 plastic model lines, while Monogram seems to have grabbed Star Trek Voyager (Voyager and Kazon ships), Seaquest DSV, Batman Returns, and Apollo CSM and Shuttle orbiter.

I saw some paper model non-flying rockets that just beg a new event to parallel plastic model conversion. One kit includes a V2 and A4 and pieces parts, the other is a space shuttle. These are German imports, and each set is around \$35.

My favorite wizmos are both imports: the Zyliss vise (Swiss) is again available, but only thru the company that does show marketing. I'll have to wait for them to send me some literature to pass on details. The same company is also marketing a nice but expensive Hegner jig saw.

The Unimat 1 lathe was dropped by its manufacturer, Emco Maier, but has been picked up by Manfred Heindl. This is a multi function machine, including lathe, milling machine, jig saw, drill press, sander, and much more. Ideal for the scale modeler, in sets from just under \$300 to about \$600, and far less than what my bigger Unimat-3 would cost today (\$2000 in 1985) I was amazed to see the guy turning aluminum stock to make doll-house size goblets free-hand

ed! If BMS won't do for your needs, this is the way to go. Prazi and Smitty lathes were shown for folks who need bigger tools.

Jiffy Foam was showing a sandable foam balsa replacement. Withstands 400 degrees, and all model solvents. Should be great for scale details, nose cones, and other goodies. Gullows had a styrofoam sheet that looked like thin meat tray (or old McD foam) material.

Minicraft has a 12v DC dremel-like tool and accessories, while Dedeco has a line of accessories only. Dremel was handing out a new wrench for their collet, with a screwdriver on

the end. There were dozens of folks showing knives and tools, from the familiar X-acto and Excel to several importers with goods from Pakistan and China.

Of environmental interest was a non profit Rechargeable Battery Recycling Corporation, an industry association that wants to get old nicads out of the landfills and recycle them. Their trademark logo is the familiar 3 arrows with a battery in the middle. Cadmium used in nicads is an environmental nasty that seeps from landfills into water supplies, so please look for the nicad recycling stations that should be appearing soon. Call 1-800-8BATTERY for consumer recycling information.

Lots of airplanes, RC cars, trains, toys, games, and other uninteresting stuff too :-)) I spent about 3-4 hours wandering the show, and the rest of two days building lots of Pegasus clones.

Another show favorite of mine: meeting old friends and making new friends. I got to meet Paul Gennrich and Doug Holverson for the first time, and a surprise visit from John Viggiano. Other NIRA friends who dropped by were Bob and Kathy Hart and the Ft. Wayne gang, John Boren, Jim Hogue, and Bill Christian, and recently published author Tim van Milligan.

A big thanks to all the NIRA members who helped us work the make-it take-it booth. Thanks to Estes, Testors, Great Plains, Bob Smith, and Mike Jungclas for all the supplies we used, and to Mike Jungclas and Cheri Chaney for organizing things with RCHTA.

Newsletter Submissions

The deadline for submitting articles, photos, plans, comics, ads, and whatever else you can think of to me for the newsletter will be on the first Friday of the month (or, said another way, at club meetings). This will allow me more time to get the newsletter done sooner so that Ric has more time to get them in the mail, and you get it sooner.

**September Club Launch
by Richard Gaff**

The September launch was unusual in that several things were missing; soccer and softball players, high heat and humidity! Imagine that!

Over 40 members attended what was probably the best monthly launch since April or May and flew over 170 rockets.

The unofficial "contest" between Rick Kramer and John Barrett to see who can fly the most rockets in 3 hours continues with Rick edging out John by one flight at 13 vs 12. Rick flew his lengthened Broadsword Plus twice on D12's, a modified Skywinder that had been repaired since it's untimely prang in August and a "Nerf" rocket on a 1/2A3T. You don't get much altitude out of a Nerf rocket but they are hard to break!



While John was down 1 on flights he was up on Nt-sec's with five flights on D12's; Optima, Impulse (2 D's), Broadsword, Phoenix and a Jayhawk, the most D12's by anyone. John also flew several Custom Rocket kits; the Satellite Drone and the Serval which uses tubes for stability instead of fins (this type of design is often referred to as an "Infinite loop" design after the name of the first rocket of this type ever published).

With 10 flights under his belt Bill Thiel was giv-



Ray and Bryan Chesi try to answer the ancient philosophical question of "Which goes first, the nose cone or the chute?"

ing Rick and John a run for their money. His up scale model of the venerable Estes Mosquito, the Texas Mosquito, made 2 nice flights on C5-3's. That Neon Thing brightened our day on a C6-5 and a Custom Rockets Land Viper proved to be more of a "Sky Viper" on 3 B4-6's. Ed Thiel flew a Broadsword modified to add 2 standard size motors to the normal D12. The rocket was a crowd pleaser with it's D12 and 2 C6-0's. Clusters seem to be coming more popular at our launches! Working towards his masters degree in "chad" staging Ed flew 2 such models, his trusty if aging Estes UFO with a C6-0/C6-0 combo and an Estes X-15 on a A10/A10-3 combo. Both worked well and are always cool!

Leading Edge correspondent Ric(k) Gaff wowed the crowd with 2 flights of his "Pi in the Sky" UFO, a model made of paper plates. One flight was on the usual C6 and the second on a B4-2 producing a low altitude lob, lets hope he doesn't get any A's for it! Also flown was the Flying Jenny, an ancient (mid 60's) Estes bi-wing glider. People seemed to like the unusual look of this model.

Jerome Mrozak flew his "Mystery Ship", an Estes Big Bertha modified for side ejection. Yes, in this model the parachute comes out the side of the model not the front! Two successful flights on C6-3's demonstrated that the idea really works! Look for plans in this issue of the Leading Edge.

While the rest of us were content with C's and D's; Bob Kaplow, Jonathan Charbonneau and Brad Owen gave us a Tim Allen-like taste of "more power" with some E's and F's. Bob flew his Graduate on an E27-4T and his Skywriter giant pencil on an F39-3T. Jonathan flew his Tarzan rocket on an E18-7 and Brad gave us a spiffy E25-7 flight in his Skelter model. /// insert monkey-like grunting noises arharharhgrharh etc.///

This of course has only been a small sample of the many interesting rockets flown in September, there were plenty more! There is, however, one thing more enjoyable then reading about launches and that is attending one! Hope to see you at one next Summer!

(photos by Ric Gaff)

**NIRA Section Meet
By Bunny**

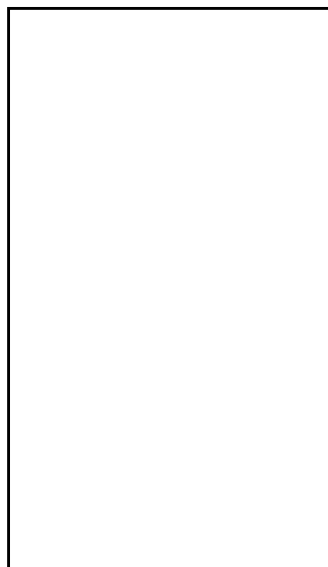
Maybe thirteen isn't such an unlucky number after all. We had that many competitors show up at the October club launch for our first section meet in years. Conditions weren't all that good for the "serious" competitors; chilly and a bit windy. Three events, 1/2A Parachute Duration (PD), 1/2A Streamer Duration (SD) and Open Spot Landing tempted the flyers. A slightly harried (no pun intended) CD, Bunny, was kept busy timing, ruling on flights, shuffling the flight cards, and recording the performances. But folks seemed to have a good time and the performances needed to win were pretty darn good. And afterwards, people said "let's do this again!", a sure sign of a good contest.

As we had one A and one B division competitor, those two division were combined. But there weren't any easy winners here. Ed Thiel edged out Bryan Chesi, 162 to 158 points. Brian won PD and Spot Landing, but Ed took first in SD which had a higher contest weighing factor to squeeze him into first place. Both folks flew kits, as I recall, but Brian's 32 sec. in PD was pretty good for his first contest and the wind.

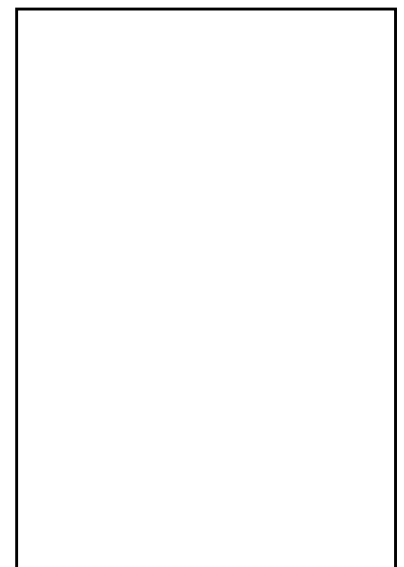
The rest of the C Division world tried a variety of strategies and models. First, however, hats off to Jonathan Charbonneau, who showed the rest of the club how to properly fly the contest. No, he didn't win, but he flew the maximum number of possible flights (5) and helped time lots of other folks' efforts as well. Atta boy, Jonathan!

Steve Koszuta tried some vellum models, probably the most competitive birds on the field. He won SD with a 78 sec. total with consistent 42 and 36 second flights. He had a good effort in PD, as well, but his competitors got some better weather later on to push him to 4th in that event, and his spot landing effort read "far". Steve finished 3rd with 98 points for the day.

Tom Pastrick, who may well have flown more competition flights than anyone in the club (or maybe even in the NAR for that matter!) used his experience to do some very consistent flying



A Tale of Two Thiel's: Bill (left) has his finger stuck in the tube, while Ed (right) has just jammed an igniter lead into his finger.



taking two 3rd's and a 2nd. One third was in spot landing, a surprising result given the large protractor he used to aim his launcher. Tom's efforts landed him 106 points for second place among the seniors.

A relative competition rookie, Bob Wiersbe, took top honors with 118 points. Bob won PD by thermaling away his first flight, and backing it up with a decent (for conditions) 22 sec. flight. SD fared worse for 7th, but he won spot landing with 20'-10", an excellent distance considering the wind. Now build a scale model for NARAM, Mr. Editor!

Everyone had such fun with this low key approach to contests, that we should do it again in the spring. A couple of duration events and spot landing make for a perfectly relaxed contest that can be easily flown during the regular club launch hours. People with event suggestions are welcome to pass them along to me. I'm even willing to be abused as the Contest Director again. Get those event suggestions in, folks and bring those top secret competition designs out to Community Park next spring!

MECO, or NIRA Ends the 1995 Season by Bunny

We're always cutting things a bit fine at the November launch, and this one wasn't any exception. While it wasn't the first NIRA launch I've attended when it SNOWED (!), it had been quite some time since flakes of the meteorological kind graced a NIRA gathering. Skies were a typical fall "Grey City" shade, and the winds, out of the south, weren't gale force, but were persistent.

Undeterred, the NIRA management set up the range and awaited what we thought would be a pretty light crowd from the "Make It-Take It" (MITI) session at the National Model and Hobby Show. (note to Dave Price: See? I eventually got it right.) In years past, bad weather meant poor attendance.

The MITI crowd didn't follow that trend, totaling 77 flights in a bit over 2 hours. Thanks to Mike Jungclas and Cherie Chaney's advanced planning, things went pretty smoothly. All the builders were suitably awed, and the NIRA troopers managed to maintain their enthusiasm, even though we've all seen upwards of several hundred of these Pegasus flights on an A8-3 by now.

Special thanks to "Cheerleading" Ray Chesi, who gave each kid he helped an extra special "atta boy" after their flights. (We oughta make this guy "rush chairman" for next year, hint, hint.) We had sufficient engines to allow second flights for those interested. Top dog was Rick Kinifer who went 5 for 5 after dad apparently sprung for even more engines. This kid could push Jennifer Chaney's Bandit for "most flights by a RCHTA Rocket" if he shows up next year.

NIRA flyers realized this was their last chance to fly for 4 months, so they punched up a total of 61 flights on their own. There weren't any outrageous prangs, though the cold weather hurt some launchers. Those alkalines just don't cut it at 40 degrees. We also were visited by a few D12 catos. Notably, Adam Elliot's D-Region and Tom Pastrick's Omega, both out of production kits, fell victim to the earth shattering kaboom.

Adam redeemed himself and wowed the crowd with his original "D80" design, a cluster of eight, that's right, eight, A10's. It boosted perfectly both times, and I particularly liked the popcorn popper imitation it did at ejection as eight ejection charges all went off one after another. You really gotta do something about that Rube Goldberg launcher though, Adam.

Bill Larry returned from a summer long absence, and gave the RCHTA folks a nice taste of HPR. He had a beautifully finished G80 Thy Phoenix, and a F50 Silver Streak Sandhawk. The latter was particularly appreciated by the crowd in the darkening skies. Thanks for the show, Bill!

The Sloubers also put in an appearance. Klevé got in the only other scale flight of the day, a Nike Smoke on B6 power. Rosela prepped a brilliantly florescent green Galactic Taxi that stayed on the ground for some reason. Steve tried to copy the Estes Bailout in his "Solar Bandit" modified from the Estes Kit. It supposedly had a plastic scorpion on a chute, but yours truly didn't see it come out.

Rick Kramer kept putting up flights regular as clockwork, all of which worked pretty darn well. A Custom Serval graced our range with something non-Estes for a change. Rick's Skywinder Plus put some modification I didn't catch on the Estes kit; whatever you did, sir, made the beast spin almost immediately after ejection. Finally a BT-80 Ultimate loop flew better on D12-3, than the D12-5 of Flight #1, but both were successful.

The Thiel Squadron, Ed and Bill, did their part for the launch by supplying not only their usual rack launcher setup, but also firing up a camp stove and dispensing hot chocolate. Thanks, guys! Ed flew an original design with a 5 engine cluster, worked great both times, peppering the range with spent engines. He also snuck a CHAD staged A10-0/A10-3 Ninja past Bunny's RSO'ing, and proceeded to write Klingon phrases in the air. Bill humored us with another successful flight of his "Pringle Roc" made entirely of Pringle cans and his C6 powered Texas Mosquito. I really like the nice slow roll this bird does on the way up.

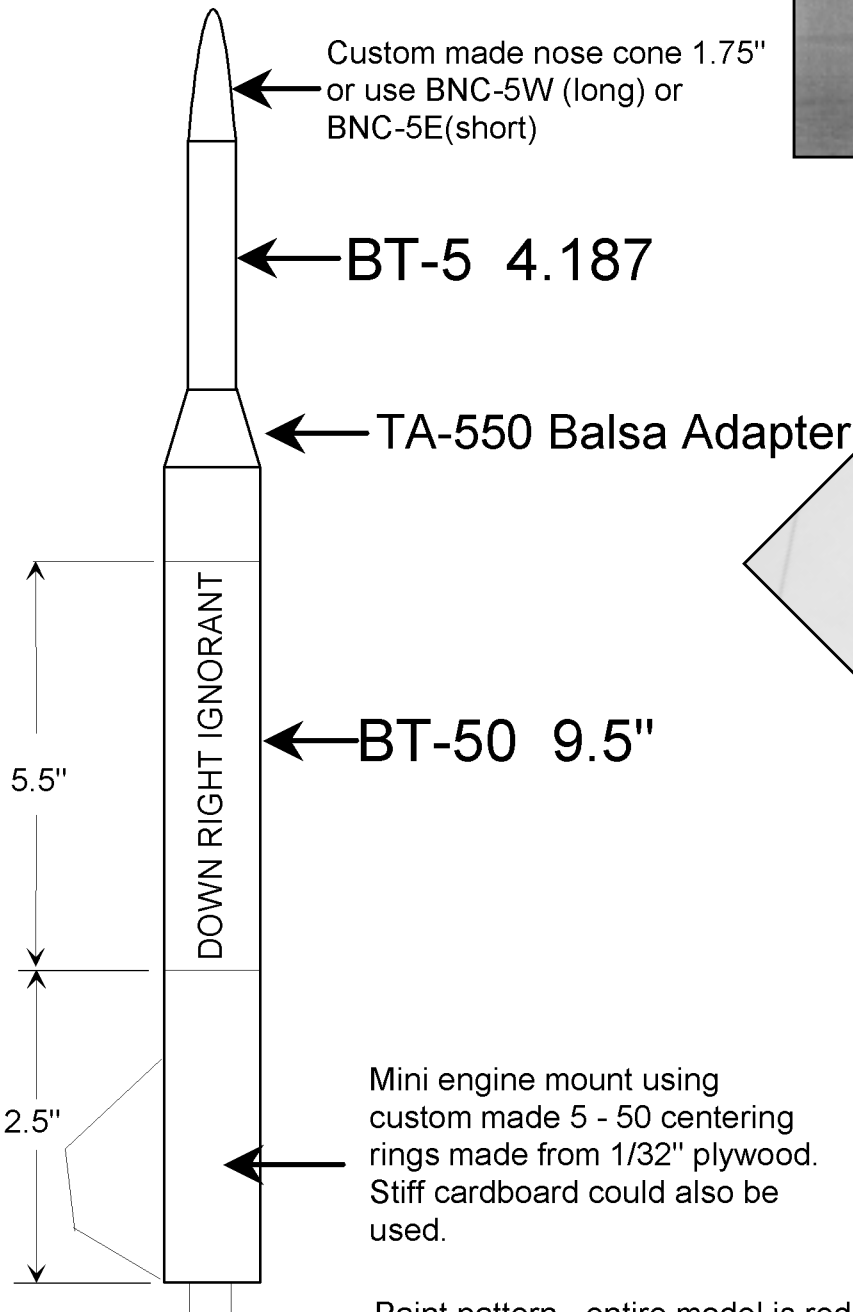
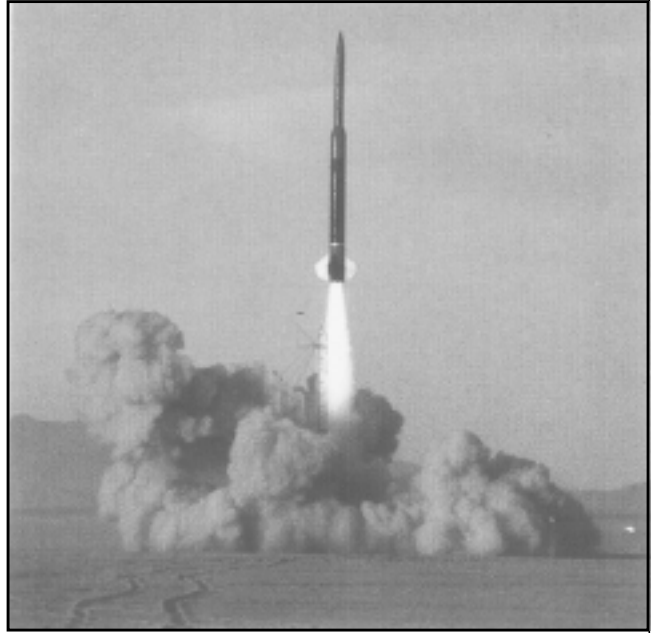
Drew Pierson's flight card for his C6 powered Maniac read "Please God!", and it must have had the intended effect, as a perfectly heavenly flight resulted. John Patrick Stanley went with two flights of his B6-0/B4-6 Mongoose. As the booster played "lawn dart" both flights, I gotta remember to write Estes about redesigning that thing. Ric Gaff's IFO (that's "Identified Flying Object" to those of you, like me, who weren't in the know) did its UFO imitation, then slowly spun down on recovery. Cute. Ken DiGiulio's Sidewinder played "chicken" with Mother Earth on B's but did better on C's. Mark Soppet's Quest HL-20 card read "alert the recovery crew". Whether that was for protection or because he expected better flight performance wasn't clear.

Frozen outside, but warmed on the inside by another successful launch and season, we struck the range and headed to Wendy's to rehash the event. Many thanks to all who flew and helped out. We'll see you back at Community Park come April 1996, so get building!

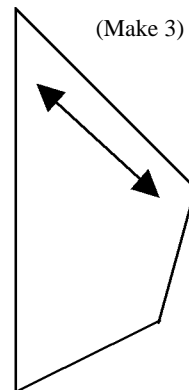
Section Meet Results									
A/B Division	Time or Dist			Event Place			Overall		
	PD	SD	SL	PD	SD	SL	PTS	PL	
Chesi, Bryan	32	8	FAR	1	2	1	158	2	
Thiel, Ed	11	20	FAR	2	1	1	162	1	
C Division									
Charbonneau, Jonathan	21	25	37'-7"	8	6	4	23	7	
Chesi, Raymond	37	11	DNF	5	10	--	0*	10	
Elliot, Adam	28	28	51'-2"	6	5	6	27	6	
Kaplow, Robert	4	33	26-8"	9	4	2	63	4	
Koszuta, Steve	64	78	FAR	4	1	8	98	3	
Nowak, Joseph	0	61	DNF	--	2	--	0*	9	
Pastrick, Tom	110	56	34'-9"	2	3	3	106	2	
Pleimling, Jeff	0	28	DNF	--	5	--	0*	11	
Price, Dave	73	18	38'-1"	3	8	5	40	5	
Thiel, Bill	22	13	98'	7	9	7	19	8	
Wiersbe, Bob	113	19	20'-10"	1	7	1	118	1	
* - Non NAR members	DNF - Did Not Fly			FAR - beyond 50 meters					

Mini Down Right Ignorant

by *Richard Gaff* NAR 22906



Full Size Fin Pattern



Paint pattern - entire model is red and the 5.5" section of BT-50 is black. Lettering is 1/4" high white rub-ons.

Side-ways Ejecting

aka "Not Quite A Bertha"

The rocket lifts off its pad, mighty and majestic in appearance. Straining for altitude as it completes its mission, it rolls over and...breaks its neck as the chute pops out.

There is just something not right as an SR-71 or other sleek space transport has to blow off its nose cone in order to come to earth under its retarding parachute. What if it could come down horizontally, with a parachute or a Rogallo wing deployed out of its topside like the Gemini capsules were supposed to do? More practically, large-finned rockets like Jayhawks frequently break their fins because they land tail first, under a nose-supported parachute.

I had an unbuilt Estes Big Bertha kit available to me, and got the urge to experiment. The goal was to create a working side-ejection system, so that the rocket would descend sideways under its chute, with the body horizontal to the ground. This article describes my design decisions, how I accomplished its assembly, and observations regarding the success of my project.

Design and Assembly

NOTE: don't build and mount the motor mount until after building the parachute chamber! The extra access available in this sequencing is very important.

A side-eject rocket needs a hole cut into the side of the rocket tube to allow the parachute to come out. The dimensions in my tube were a compromise. First, the Big Bertha has an 18" diameter parachute, so the hole needs to be large. But if the hole is too wide it might encompass half of

Recovery

by Jerome Mrozak

Illustration by Richard Buff

keel, but I decided to limit my hole width and reinforce the tube along its edges.

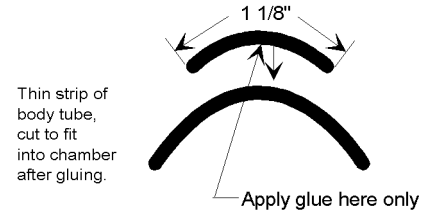
Stable rockets have their center of gravity (CG) closer to the nose than is their center of pressure (CP). From my prior experience I remembered that my rockets' launch CG tended to be not too far in front of the leading edge of the fins. For the rocket to come down horizontally, I would have to mount the shock cord at the back edge of any opening. In the end, I cut a 5" long by 1.125" wide hole in the tube, with the back edge of the hole 6" from the motor mount end of the tube. The hole extended about one-third the circumference about the tube. I cut the tube carefully along a pre-drawn line so that the cut-out piece could serve as the parachute chamber door.

I was concerned about the tube's strength to resist crushing, so I now reinforced the long walls of the hole with .188 x .188 basswood strips, one on each side. Glued in, they resist the tendency of the hole walls to bow outwards. The rocket tube is still vulnerable to twist forces, so I needed bulkheads. I knew that the motor mount end was one bulkhead, especially since I would glue in both motor mount bulkhead disks later. The tube on the other side of the hole needed a bulkhead, which I cut out of available cardboard and glued in. After this, I trimmed and smoothed the exposed edges of the basswood so that it didn't protrude so much into the area of the chamber hole and threaten to rip or pinch the chute when it deployed.

To eject the parachute from this chamber I de-

the rocket tube and the tube would buckle upon liftoff. One way of coping would be to install a load-bearing

ramp. I glued everything down in a way that only the smooth surface of the cardboard presents itself to the parachute. I then realized that I needed more help to prevent the chute from being pinched at the top end of the ramp and used more angled balsa scrap to build smooth walls with no pockets for the chute to be jammed into.



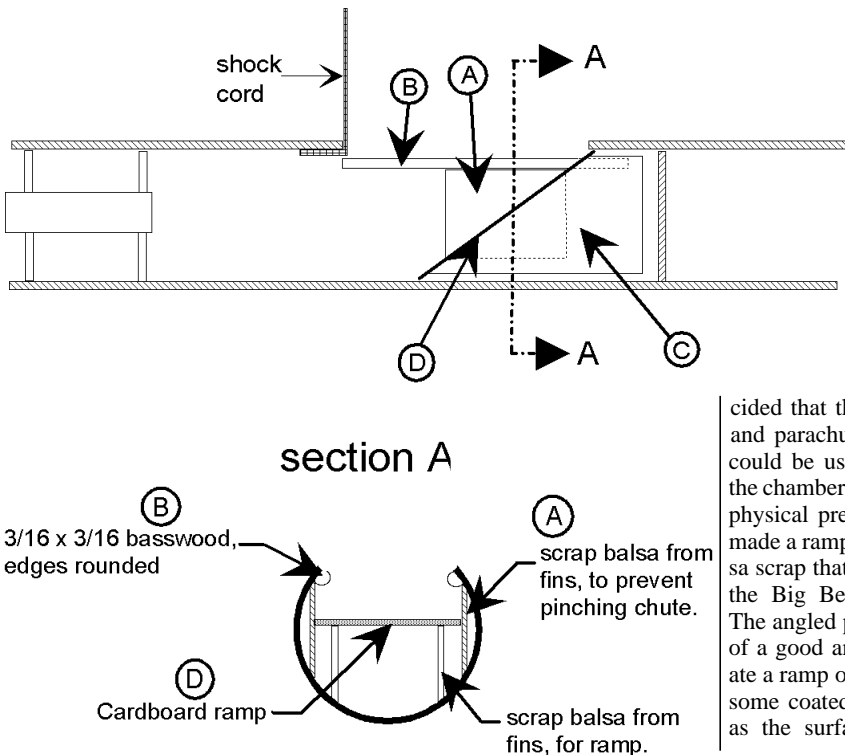
I then coated all of this material with Titebond, which was my glue of choice. I reasoned that it would smooth the surfaces and keep splinters from being raised.

Now, how to mount the chamber door so that it will stay on during ascent, with atmospheric pressures acting upon it, and still come off when requested. After toying with ideas involving tape and Velcro, I hit upon something stupidly simple. A circle of rocket tube has a certain springiness to it. If I cut about a .125" width of it, about 2" long or so, I had something like a leaf spring. Glue a couple of these to the chamber door, putting glue only onto a spot of their center so that the legs can flex. The door now looks a bit like a beetle, but the legs can be carefully flexed to fit into the chamber, bracing themselves onto the basswood strips. Hmm...the legs at the nose end bump into the ramp, so cut access holes into the ramp, but it will still work.

At this point I assembled the fins and motor mount, gluing them to the rocket. On the Big Bertha the motor mount tube is extra long, so that the ejection gases has a chance of popping the chute. I cut this tube about in half, allowing about two inches between the top motor mount bulkhead and the aft edge of the chamber hole. I glued in an elastic shock cord at the aft edge of the hole, and got ready to swing test the rocket. With a C6-3 engine and a nose cone, the rocket was just barely stable, but turned out to be slightly nose heavy -it wouldn't rest horizontally. So, I cut off about 2" from the front of the model (it's where I got my beetle legs from).

I decided to attach the chamber door directly to the tube body, rather than to the shock cord. So, a string was run from the two, mounted at the aft end of the chamber hole. This would encourage the door to lift at the front edge and come off from air drag.

I built and attached the chute, and then tried folding the chute and stuffing it into the parachute chamber. Through extensive testing (using lung power as the eject charge), I eventually discovered a folding technique that would both get the chute into the cramped quarters and still guarantee free and easy ejection. One of the problems I discovered was that as soon as the chute cleared the aft edge of the chamber hole, it would stop moving and even keep the chamber door half-stuck. This was because the ejection gas could now escape rather than work at push-



ided that the wadding and parachute together could be used to force the chamber door off by physical pressure. So I made a ramp out of balsa scrap that came with the Big Bertha's fins. The angled pieces were of a good angle to create a ramp out of, using some coated cardboard as the surface of that

ing the chute. I decided that a large amount of wadding, about 6 sheets, would be needed to guarantee ejection of the chute. I then painted and decorated the rocket.

Flight Testing

The first flight took place during the August club launch. The rocket ascended "nominally" and ejected the chute perfectly. When I reached the rocket, I was grateful to receive it back in one piece because the elastic shock cord had burned clear through, leaving only the rubber of the cord to connect the parachute with the rocket itself. The inside of the chamber was filled with bits of burnt clay and motor debris, as well as a lot of compressed wadding. What had happened was the gases got to the edge of the chamber hole and then burnt up the shock cord. As for the debris, it probably is ejected in *every* motor, but not evident in other flights because a nose ejection lets it all come out freely. I retired the rocket for the day to examine this further.

I reinforced the shock cord area with some heat-reflecting tape and wrapped some around the first couple of inches of a shortened and remounted shock cord. I also reattached the chamber door directly to the shock cord. The next flights took place during the September club launch. On its second flight, it tipped over from the pad just at launch and became a "land shark." No real harm done, except that the chamber door came off. Probably from ground friction, so I reattached it and prepared for another launch.

This third launch was as successful, with perfect chute deployment and recovery - except that the chamber door fell off again. It was recovered by some of those sharp-eyed boys who have taken to recovering our rockets. Also, the chute has started to show signs of being holed by some of those motor ejection fragments.

Evaluation

On the whole, the rocket achieved what I wanted it to. It successfully launched and kept its chamber door on during ascent. At the proper moment the chute reliably deployed. The rocket returned reasonably horizontally to the ground. But as a prototype for a larger and more elaborate rocket it has its shortcomings.

First, the ramp idea doesn't scale up very well. Wider tubes make for an easier time in stuffing chutes but a harder time to keep the gases from escaping too soon. Then there is the need for all of that wadding. By its nature, only so much push can be put into a chamber with a ramp before the gas gets to escape unhindered out of the rocket tube hole. Second, this method of using massive amounts of wadding traps hot particles within the rocket tube, leading to a short number of flights before the rocket is worn out. Third, the chamber door is mounted crudely, instead of by some elegant hinge mechanism that snaps shut after parachute deployment.

The way the chamber door fell off is interesting. I suspect that attaching it to the elastic shock cord by a string is causing it to fall off at eject time. I'll reattach it to the rocket tube body.

Other schemes I am considering involve either a

spring-loaded parachute ejection chamber, or bending the parachute ejection tube so that it acts on the bottom of a parachute ejection chamber. This latter idea would allow the complete ejection of motor particles.

Fall Danville Report by Norman Heyen

Saturday was a waste of time. We got there about 11AM, and watched a few rockets. But it was very windy, slightly rainy, a little muddy and 2500' cloud ceiling... Not nice weather for much of anything. We wandered around talking to a few people, but didn't stay too late. Found the hotel, the shopping mall, etc. Ate chinese, floated around in the pool and soaked in the hot tub. I think I was sound asleep by about 10PM. Early for me. Since I'm not TRA, I didn't get invited to the meeting Saturday night, but no one was talking about it Sunday AM, so I guess there wasn't much going on.

Sunday broke cool and windy, but clear. We were at the launch site by about 10AM, and it looked like they had been flying since 9. There were lots and lots of big rockets. Many J, K and L's. Some very nice flights, many lawn darts/core samples, and the occasional scary moments. With the high winds (guessing 15-20mph), long walks were the rule of the day. I'm guessing that a few drifted into town, about 1 to 1-1/4 miles away.

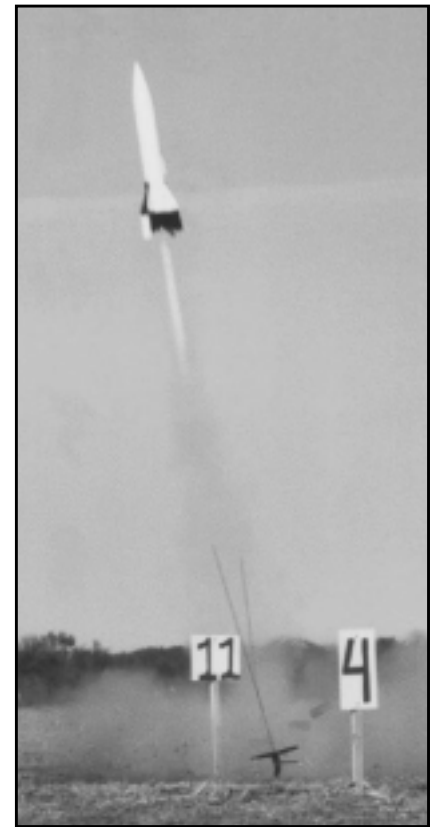
There were several vendors there, kept the plastic in my pocket... Magnum, Rocketman, Top Flight Recovery, Robbie's Rockets, Rocket R&D, High Power magazine, Raging Rockets come to mind, there might have been others. I picked some pre-wired flashbulbs for my Adept from Robbie's Rockets. Rocketman was selling his chutes for 50% off, a good deal. I did buy another one (small). I like them! No twisting, easy open and strong. Most folks looked like they were doing pretty good business.

There were 13 pads setup, with an RSO table before you could bring the rockets to the launch line queue. One pad with an 1/8" rod, about 6 or 7 with 1/4" rods, 4 with 1/2" and one with 3/4" and bigger. They had an LCO, an RSO and 1 or 2 pad managers. A good PA system and things seemed to have been pretty smooth. It looked like they were using 24 volt ignition (2 car batteries in series) which caused some problems with the copperheads. I saw many that popped out without lighting the engines.

The lunch truck with coffee, hot chocolate, chips, brats and dogs was nice. The town (Tilton) was a couple of miles away, so on site food was appreciated.

The fields were all harvested this year. I think the big field was about 600 acres, with maybe twice that in surrounding fields. A couple of gravel roads between them and a set of high line wires. (Only one rocket got caught in them that I saw.) Plenty of close parking and a couple of porta-potties.

I took a couple of rolls of pictures so I'll have to wait and see how well I did. I was about a 100' from the main launches, so they were close



More scale beauties, a LOC V2 (that failed to recover), and a scratch built Black Brant II. (photos by Norm Heyen)



enough for my 200mm. I need a video camera... Speaking of which, Ky Michaelson was there filming away, so look for a Danville video in a couple of months.

I saw cars with Missouri, Ohio, Minnesota and Kansas plates, as well as Indiana, Wisconsin and Illinois. A pretty decent turnout, considering the bad weather on Saturday.

Most rockets were LOC or PML. But there were some Thoy, Rocket R&D and even a Binder Designs. Didn't hear any US Rockets announced... Most were launched with Aerotech, a couple Kosdon, some Rocketflite, a few Vulcan and one or two the I didn't recognize. I'd say that H's and I's were the most popular. Many I284's and I357's. Folks had too long of delays because

of the launch angles into the winds. Saw a few stripped chutes and zipped body tubes. My guess is that most rockets were the 3-4" diameter, 4-6' tall.

Good stuff: There were many scale, or semi-scale, rockets there. Black Brants and Irises seem popular. There was a very nice Terrier-Sandhawk (it was about 10' tall...) that staged and flew well. Someone had a Nike-Hercules (Launch Pad plans, I think) that had 2G's in the booster and a G in the upper. This is such a mean looking rocket. I want one!

There were lots of LOC Magnums and rockets of that size (big!). Many claimed to have Adept two event deployment systems, but I didn't see many that really worked well. There was a King Viper on 3 K550's that was pretty impressive. Even if one K550's got spit out and burned on the pad. Lots of EZI-sized rockets, lots of Expeditors, etc. There was a group photo, counted 94 people in the photo. And maybe 20-30 more that weren't in it (me for instance...) Someone from Tripoli Chicago is planning on doing an article. They were launching racks of 13 about every 20 minutes. A busy day. We only stayed until about 1PM before heading back, so I don't know if some of the really big ones flew or not. There was a nice AAMRAM (7.5" dia, 10' tall) on an L (I think, no notes, just poor memory) by the Wisconsin folks, Paul Olson and John Halberslaben. Nice flight and recovery.

Kids were flying Alphas and the like on C6's, which was nice to see. I don't think that anyone was looked down on for anything. There was a Comanche staged on D12's. I think he even got it back, mostly because the upper stage was



A staged Nike-Apache heads into the wind.

pretty horizontal by that time.

Silver Streaks are very cool when they work. Look like a bottle rocket going up. I need to see one of these at night... :-) My favorites are Smokey Sams and Black Jacks. There were a few Kosdon engines or something like that. They are very loud, a literal roar, hard to describe, but very cool. J800's really kick the rockets into the air. :-) I want to try a J90 in my EZI. They burn for a real long time.

Lots of people used altimeters, but I didn't have time to check with them to see how high. Many used flashbulb ignition on the pads. Messed up my timing with the pictures... I don't know if I trust the idea or not, seems like an accident waiting to happen. After the bulb lights the thermalite, there is no way to stop it, and there seemed like many had a long time before the engine started.

There was a hybrid flight, a J I think. Worked well, but no tracking smoke. I lost it right after launch as it didn't have much for a smoke trail. This is a problem with all the hybrids I've seen.

The bad: A nice rocket blew up about 10' off the pad on an F50 Rocketflite engine. I was about 100' away and felt the pressure wave. There was a Mother Lode that land sharked. The K or L main engine didn't light until it was laying on the ground. Traveled about 500' along the field, fortunately not towards anyone. There were lots of lost rockets due to the winds, no ejection, spit engines, etc. A few misfires on the pads. Someone had a lever activated switch that didn't work right and launched as they were setting up. Fortunately, no one was injured, but scared everyone. There were a couple of real long delays between pushing the button and actual ignition. One was long enough that the LCO was ready to give up and launch the next pad when it lit. I don't know why.

There was a nice white LOC V-2 on an L. It went up and up and up. No chute though, so it went down and down and down... My heart goes out to the owner. No one saw where it landed (well down range).

There were a couple of chuffs. One sat on the pad and sort of fizzled, then the announcement of we had a good chute... Crowd applauded... I don't think it ever moved. A couple of engines had a hard time getting going, but worked OK. Only the silver streaks had problems with CATOing. Many worked OK, but more than a couple didn't. Ross had no magnalites and was a bit upset with MRED for not delivering them.

General comments: The launch was well run, and pretty safety oriented. They held up when the wind gusted. I think they rejected a couple of rockets due to safety concerns. There was a line for most of the time we were there, but never more than a rack or so. There were fire extinguishers at all pads, and pad fires were quickly put out. (Of course mud doesn't burn well or fast...) Spectators were warned when rockets were coming in towards the area, constantly announcing to *NOT* try to catch them as they drifted in. The field was big enough to allow lots of room between the pads and parking.

I hope there is one in the spring!

NAR S&T NEWS - Release 31

MOTOR CONTEST DECERTIFICATIONS

The following motors have been decertified for NAR contest use indefinitely. Contest certification will be restored if and when the manufacturer resumes production, at which time another announcement will be made by NAR S&T. These motors remain certified for general use.

North Coast Rocketry (NCR): F30-4, F30-6, F30-P

Jim Cook, Secretary for NAR Standards & Testing <JimCook@AOL.COM>

Jack Kane, Chairman

NIRA Reprint Series

More new reprint booklets from the desk of Ric Gaff. Free at club meetings or send 32 cents per booklet to Ric Gaff, 3175 Norwood Court, Streamwood, IL 60107.

The Lawrence Bercini Collection of Rocket Plans, Vol. 3. Yet more of "Mr. Strato's" eclectic collection of unusual rocket plans. 10 plans

The Lawrence Bercini Collection of Rocket Plans, Vol. 4. Where will it end? Yet even more of "Mr. Strato's" eclectic collection of unusual rocket plans. Includes plans for a Maxi-Little Joe 1. 8 plans

Best of the leading Edge, Vol.1. Sound barrier breaking rockets, designing "F" engine Boost/glidors and more!

Cluster plans and articles from Sport Rocketry. How to cluster articles and 8 cluster plans.

Science Fiction Rocket Plans from Sport Rocketry. Artoo-Detoo, X-wing Fighter, mini Mars Lander and four other plans with a futuristic flavor.

Ancient 1960 plans from Estes Industries, Vol. 1. The '60 were a "golden age" of rocket design for Estes and this collection is just the start! Includes Moonnik-1, Sputnik-2, the Flying Why, Flying Jenny and 11 more great oldies!

It's a Wrap!

Well, the 1995 flying season is over, and this is the last newsletter for 1995. I think we had one of the best years ever! Our membership has grown considerably, the launches were well attended (**with over 1850 launches, WOW!**), MRFF was outstanding, and we set a new record for the number of kits built at the RCHTA (whoops, Hobby) Show.

I'd like to personally thank all of you who have helped out at club launches, MRFF, RCHTA, demos, and especially those of you who have sent in material for the newsletter. None of the things that NIRA does could be done without members pitching in and helping out.

Thanks for making 1995 such a great year, and get ready for 1996!

Bob Wiersbe, Editor

Heard On The Street

Rumors and such, with apologies to the Wall Street Journal

Welcome to the club - Andrew Newman, Zachary McConnell, Jonathan Maduza, Phil & Ken Sterka, and Jimmy Triggs have joined NIRA recently, welcome!

Tips for Our Times

Here's a tip for reinforcing the attachment of shroud lines to plastic parachutes, commercial or home-made. Get some of the plastic (mylar?) reinforcement rings used on loose-leaf paper from an office supply store. They come in white and clear. Put one on each side of the chute at the attachment point and poke a hole through by the bottom inner edge. Tie the shroud line on like with the newer Estes chutes. This makes a very strong connection, the chute will rip before the shroud line comes off.

Jonathan Sivier - Central Illinois Aerospace

How to spot those high altitude birds using tracking powder: (this is from a thread from rec.models.rockets)

>>> My personal favorite is florescent red carpenter's chalk from the local Supply One. Powdered Tempera (kids paint) is way too expensive in comparison.

>> You won't think so after your kids track it all over your car upholstery. Powder paint washes out. Chalk don't. I speak from sad experience.

> The carpenter's chalk also messes up your rocket finish. I recall using it just once a few years ago. Eventually I repainted the rocket. Glossy paint finishes may clean up, but flat finishes don't, too well.

I learned how to prevent this years ago, from someone on the internats scale altitude team. When prepping the rocket, dump talc all over the outside. Then load the tracking powder. After the flight, the talc and any crud wipe off clean. It works! - Bob Kaplow

NIRA Meeting Notes from Bob Kaplow

At Friday's meeting the membership voted to hold the regularly scheduled 3rd Sunday launch on November 19th in addition to yesterday's RCHTA launch. Don't blame me, I'm just the messenger, and I abstained from the vote.

Just to make matters worse, I've also been nominated to hold a backyard snow launch in conjunction with the January building session and tour of Bob's Hobby Shop. Just so everyone understands, my back yard is maybe 150' square, and anything that leaves will end up in the yard with the 8' wire fence and guard dogs.

The roof is also quite inaccessible. This wasn't my idea either; you're free to stay inside where it's warm. Dinner afterwards will be at the Texan BBQ in Algonquin.

One last NIRA topic. The following were nominated for officers at a hastily reconvened meeting (we forgot to do so earlier) mostly because no one else wanted to run. If you want to run for office or nominate someone else, get the names to Bob Wiersbe in time for the January meeting.

Prez: Cheri Chaney

V.P.: Mike Ugorek

Sec/Tres: Ken Hutchinson

RSO: Bob Kaplow

Hobby rocket hits shed in rural South Alabama - The Associated Press

LEVEL PLAINS, Ala. A small rocket that hit a shed this morning, prompting the evacuation of nearby homes, was just a toy bearing a U.S. Air Force decal, Army officials said.

The projectile was a "hobby rocket" and posed no danger, said Rich McDowell, a spokesman for Fort Benning, GA, which sent a bomb squad to investigate. Police were investigating the rocket's origin.

The rocket was found lodged in the roof of a storage shed outside a house. The family to whom the shed belongs found the object at about 6 a.m. when they went to investigate a loud crash, police Lt. Ralph Reed said. Reed initially described the object as a live, 18 inch long missile.

The white projectile, cylindrical with fins and a U.S. Air Force decal, was about that long, but not live, according Steve Eisenhardt, a spokesman for Fort Rucker, a nearby Army flight training base. A one block area was evacuated for about four hours while investigators checked out the rocket.

The small town is about 80 miles southeast of Montgomery, about 100 miles northeast of Eglin Air Force Base and about 100 miles southwest of Fort Benning.

-The Huntsville Times, October 17, 1995

[The story was further shown on local TV. The rocket that was so intimidating was seen to be a standard Estes Bullpup-12D kit.]

Books Worth Reading

Model Rocket Design and Construction

Tim Van Milligan

Kalmbach Books, 1995

Synopsis:

120 pages, 16 chapters, 240 illustrations, 40 photographs; This is a new book geared towards modelers wanting to know more about the art and science of building better rockets. Includes

chapters on design, improving performance, constructions and other topics.

The coverage of glider and helicopter recovery, the glossary, and construction and repair techniques is very good.

Send check (U.S. bank) or money order for \$17.95 + 2.50 S/H to

Tim Van Milligan

708 Piedra Drive, Suite C

Canon City, CO 81212

Email: 102374.2533@CompuServe.COM

Teaching Science Through Model Rocketry

Tony Wayne

3 Pigs Publishing, 1994

Synopsis:

The book is for the individual who teaches rocketry to others or is looking for another aspect of science to teach. It covers lesson plans, class setup, physics demonstrations, rocketry labs, rocket science background, teaching aides and more. Over 250 pages.

Send check, money order or school P.O. for \$44 (\$40 book and \$4 ship -VA residents add \$1.80 tax to the \$44) to

Tony Wayne

58 Court Place

Charlottesville, VA 22901-2457

Colorado residents please add 6% state sales tax.

ECLIPSE COMPONENTS

Eclipse Components was created to continue supplying competition components for the model rocket community. We have obtained an exclusive agreement with Ed Lacroix of Apogee Components to carry his former line of products, with the exception of his competition motors. We are pleased to do so, and we hope to continue his tradition of supplying top quality materials and service to the rocket community.

There have been some changes in the product inventory, some items will be added and others will be deleted. Also some product inventory was completely sold out, and we will be working hard to find new items to replace the ones which aren't currently available.

You probably won't see anything written about us in Sport Rocketry magazine for a while, because we couldn't get our ad submitted before the deadline, but we are in business.

If you would like to receive our current 1995 catalog, please send \$1.00. This covers our printing cost and mailing cost for this catalog and our updated one which will be available on January 1996.

Address: Eclipse Components 570 Buckeye Dr. Colorado Springs, CO 80919-1212 (719-598-6105)

CIS: Todd Schneider 102100,1566



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GM

By Gabe Martin
borderln@cts.com

The BORDERLINE

When his Aunt Edna had asked him what he wanted for his birthday, Johnny sadly had forgotten that her hearing wasn't so good anymore.

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