



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

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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.

September 3, 1993 - Regular Monthly Meeting: Last meeting before the 30th Annual Labor Day Launch! Come and help Ken Hutchinson plan for this historic event, and find out what happened at NARAM.

October 1, 1993 - Regular Monthly Meeting: Planning session for the RCHTA show.

1993 REGULAR 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 1993 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.

August 15: Got an itch to build an old kit and do some scale modeling all with one rocket? Then fly "Catalogue Scale" where you scale up or scale down a design from a catalog.

September 6, 1993: 30th Annual Labor Day Launch at Newton Park in Glen Ellyn. Come and be part of NIRA History!

September 19, 1993: NAR Section Meet. Events need to be determined, so let us know what you want to fly!

OTHER ITEMS OF INTEREST

August 28, 1993 - Central Illinois Aerospace (CIA) high power launch (rockets of all types welcome). Chanute Air Force Base, Rantoul, IL. Contact Jonathan Siver, 217-359-8225.

NIRA welcomes it's newest member Kevin Smith of Bollingbrook! Kevin joined the club at the August meeting.

Thanks to Bill and Ed Thiel for bringing the munchies to the August meeting! Ed did a commendable job at running his first NIRA meeting as VP.

On The Cover - Ken Hutchinson's Phantom 4000 HD takes off under H128 power at MRFF 93. (Photo by Mark Eastman)

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Bullwinkle Moose - Inspiration

THE LEADING EDGE, published bi-monthly 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, other newsletters, and news items of interest should be sent to Bob Wiersbe, 1835 Shetland Drive, Wheaton, IL 60187 or electronically via Internet at hrbob@ihlpb.att.com. Send membership applications (dues: \$3/year, including a six issue subscription to the Leading Edge) and non-member 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 American Spacemodeling with proper credit given; all other uses require written permission of the Northern Illinois Rocketry Association. Is anyone out there listening??

GENTLE REMINDERS

September Refreshments:
Ken Hutchinson

September RSO:
We need a volunteer!

MODEL OF THE MONTH

Ken Hutchinson took the adult division with his electronic air-starting Viking II. Ron Husak and Andy Linder tied in the youth division, Ron with his Black Brant II, and Andy with his boost glider. Congratulations to the July Model of the Month winners!



The August winners were Ed Thiel in youth with his Cheetah and a tie in adult between Jonathan Charbonneau's Terrier-Sandhawk and Bob Wiersbe's Hi-Tech H45. Well done!

The KGB Aerospace Relay Launcher for HPR

By Bob Kaplow

Relay launchers are neat because they reduce the length of heavy gauge wire you need to a bare minimum. A relay switches current through the igniter, while a lighter weight control cable is strung between the pad and your controller. Current losses due to wire length are minimized, resulting in faster, more reliable ignitions and lighter equipment. The latter is a big plus if you have to carry your range box far to the launch site.

The original relay launcher used in NIRA was designed by Ric Gaff for Bunny. Ric's design used two relays and a three wire cable. The first wire does the continuity check remotely, and the second fires the rocket. I did my relay launcher design using only one relay, eliminating the remote continuity check. When the launcher is ON, it fires the rocket. At 150 feet from the pad, you can't hear the continuity buzzer anyway, so it seemed logical and saved me a relay for another system. (Ah, but Bob. You forgot something. The people who REALLY need to be warned by the buzzer about the impending launch are the ones CLOSE to the pad. Hence the location of the buzzer in my system. - Bunny)

My relay is a SPDT (single pole, double throw) device. I originally used the other pole as a buttonless continuity check. As soon as you hook up the igniter, the buzzer tells you all is OK. If that becomes annoying, you can install the optional continuity check button. The Button also eliminates the need for a SPDT relay, so you can use the more common SPST (single pole, single throw) device.

I really need to use a heavier duty relay. The ones used by Ric were only rated at 5 amps. I'm obviously way over that. Radio Shack has a heavy duty 30 amp, 12 volt SPST relay for car stereo applications that should work fine. (Relays are generally rated for the continuous current they can safely handle; if you can't find relays larger than 5 amps rating don't worry too much. It's generally safe to run momentary loads higher than rated capacity thru them. - Bunny via Ric)

The system is built into a plastic project box, 2x4x6. I used a dual banana jack for the output, so I can connect NIRA or NARAM launch system clips to the output. I can also connect all my igniter leads from home that use the dual banana jack. There is also an RC jack that serves as both charge and launch cable connector.

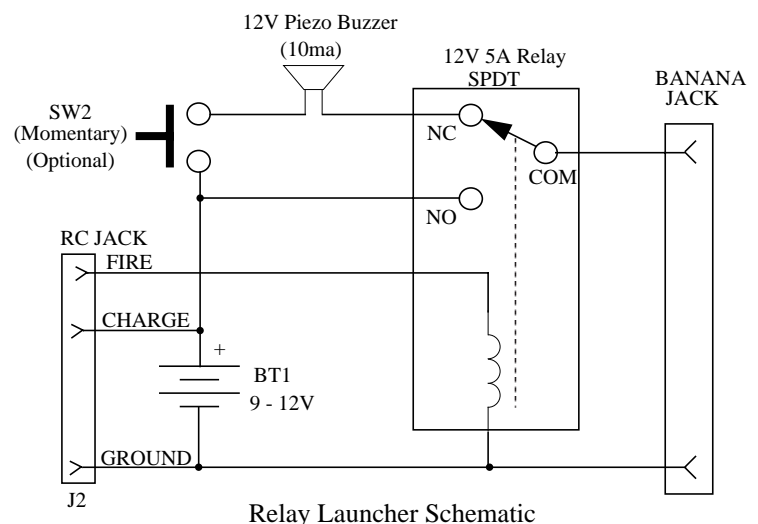
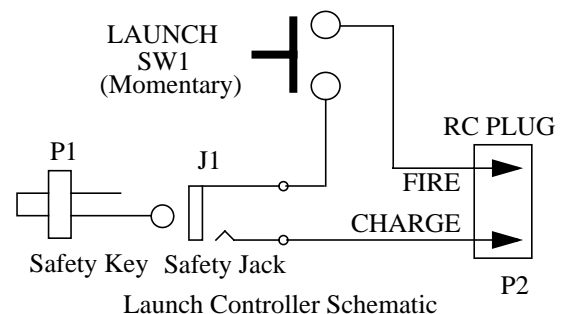
My launch cable is 150' long. Make yours as long as you need for the engines you intend to fly often. At the other end of the cable is a 35mm film can. We've been using plastic 35mm film cans for launch controllers for about 10 years now. Mine contains a mini pushbutton switch and a mini phono jack for a removable interlock. (The contacts are shorted on the phono

plug to create the safety key.- Editor) Run your wire through the bottom of the film can, and don't forget to tie a knot in the wire for strain relief.

Ric's versions of launchers contain a spring loaded switch for a safety key, but the safety code requires a removable interlock. (Yeah, yeah. But having a spring loaded switch means you've got to use two hands to launch the rocket. As soon as you let go of the controller, you will disable the circuit, removable or not. And as a technical point, my removable interlock is at the battery. If you disable power to the pad, you'll never get an accidental launch, a point I argued at length in the 1985 Board meeting that got us the current safety code. - Bunny)

Construction was pretty easy. Drill holes in the plastic box for the banana jack, cable/charging jack and optionally, for the continuity check button. I used hot melt glue to attach the relay, piezo buzzer and my Ni-cads. My Ni-cad cells were a very tight fit. You can use a holder if yours are looser. All connections were point to point wired, except the connections to the banana jack. Those are attached to terminal lugs bolted into place. The larger 30 amp relay has spade lugs, so you wouldn't need to solder those connections if you went with the larger relay.

Build yourself a reliable, rugged relay launcher today!



Parts List: Most parts (except 35mm film can) can be found at any good electronics store or your local Radio Shack.

Main Box:

12 volt 5 amp (or larger) relay
12 volt piezo buzzer
12 volt Nicad or Gel Cell battery
Dual banana jack
Dual banana plug
micro clips
RC charging jack, panel mounted, three conductor (J2)
Project box big enough for battery, relay, buzzer and other parts
Heavy gauge (18 or better) wire for all connections
small push button for continuity check (SW2) (optional)

Remote Controller:

one plastic 35 mm film can
two conductor stranded wire of desired length
RC charge plug (P2)
3.5mm phono plug (P1)
3.5mm phono jack (J1) (for Safety Key) (if desired spring loaded SPST switch may be used instead)
small pushbutton launch switch (SW1)

(Editors Note: if you substitute components for J2 and P2, use only non-shorting polarized plugs and jacks. Accidentally shorting the Fire and Charge leads will cause the relay to close and ignite the rocket while you are at the pad. You also don't want to short the battery through the launch controller.)

MRFF-93: Flights, Food and Fun in Illinois

by Mark "Bunny" Bundick

The Midwest Regional Fun Fly 93, the NAR's oldest regional sport launch, got off to a good start when the FAA granted NIRA a waiver for their Pratt Wayne Woods site. Due to shifts in approaches to DuPage Airport, and lack of time to adjust to new procedures, the waiver application was denied in 1992. By working with the FAA's Mike Caldwell at O'Hare, we worked out the bugs and flew 354 rockets over two days. Weather over the June 19-20 weekend was nearly perfect, with only a brief thunderstorm. The occasional moderate winds were offset by blowing the long leg of the field, providing plenty of recovery room. And with a picnic dinner Saturday night in advance of the evening activities, plus generous donations from manufacturers, MRFF 93 achieved its principal objective, FUN!

NIRA as a section has always welcomed and encourage kids in their activity, and MRFF 93 was no exception. Jennifer Chaney only 6 years old, built her Bandit with a little help from Bob Kaplow. She's been a regular attendee at NIRA's monthly launches all spring, and flew her model just as well at MRFF. Andrew Christensen proved kits hang around by boosting his Gnome, a product of the 1991 RCHTA Show Consumer Fair. Christina and Wesley Sorrill were more ambitious in their

selections. They went the Aerotech route and had many successful flights with an Initiator and Barracuda. Other sections please note. It pays to work with those kids!

The adults went for more variety due to their experience. Oddrocs, normally seen in great numbers at previous MRFF's, were down a bit this year. Bob Kaplow's offering was appropriately named Three Nose Cones and a Fin. It was a kitbash of three Bandit kits using, you guessed it, nose cones for fins and a fin for a nose cone. The clever conversion needed a bit more noseweight. Bob also flew his "Sound and Fury", an enlarged Tasmanian Devil HD model on FSI D18 power, just to wake up the crowd. Dave Basset, visiting from Michigan, popped off many flights on his Birdie. Lest you think Dave's into easy to build kits, think again. His original ring finned design, Deimos 1, won the People's Choice voting.

A surprising number of people flew competition rockets, even after the cancellation of a planned regional meet to run concurrently with MRFF. The Cardiac Attack Team of Bob and Kathy Hart from Ft. Wayne, IN flew lots of helicopters testing different models and engines. Dave Hoxie of the SMASH section in Michigan didn't smash anything with his Rotaroc and RG flights. Howard Olsen, a BAR who flew for years with the WWAR section in Wisconsin, returned to "active duty" with three original glider designs.

Since Chicago is home to the Gold and Silver medalists in Radio Controlled Rocket Glide, it wasn't too surprising to find the glider flyer crowd in attendance. Kevin McKiou wasn't even flying RC two years ago, but now has turned into an excellent pilot with sharp building skills as well. He flew his Knightstar 3.5 testbed model four times before being grounded by a cat. Mark "Bunny" Bundick brought out another "Boxcar" variant. The Boxcar follows a Chicago tradition of passing along old models to upcoming flyers. Bunny adapted an old "Jedi" George Riebesehl model with a large pod to hold his gear and build some "stick time". An attempt at his first E6-P powered flight however cut his time short when he pranged on liftoff. His radio undamaged, Bunny vowed to keep practicing with D11-P's, as soon as he gets through rebuilding the model.

Saturday's flying concluded with a picnic dinner right at the field. Flight weary modelers chowed down on burgers, brats and chicken, with side salads and chips, then used cold soda to wash down the brownies for desert. Then it was off to the St. Charles Best Western for the evening's activities. There, MRFF participants got a brief pitch from Rocket R&D (thanks for showing up, guys!), waited anxiously for the merchandise raffle, and voted for models entered in the People's Choice event.

After the voting was over, entrants were divided up into random teams for Team Kitbash. What would you have done with some Bandit parts and an old Estes Mini Tri Pak? Well, we got a lot excellent models, people made some new friends, and the judges were left scratching their heads about which bird should



Dave Miller readies his Saturn V...

Dave Miller's Archer on the pad and in the air.



A behind the scenes look at NIRA

Photos by Mark Eastman



a smooth liftoff.....



Robin Miller helps Nichole Eastman with her artwork.



and recovery!

win. The "MRFF Medical Express" team, of, created "Pepsi Tri-Hypo", with outrigger tubes and fins, and some somewhat sinister spikes to win the event.

While the evening's activities were fun, MRFF really centers on the flying. Sunday morning found the field and weather ready to go again, and people responded by flying stuff strictly for fun. Two of every three flights at MRFF were sport models. NIRA's Slouber family, Kleve, Rosella, Lionel and Steven led the way with a variety of Estes kits, all with excellent flights. Mark Eastman of Minnesota got invited to MRFF via Compuserve's ModelNet SIG. Worried he'd be out of place with "so many experienced modelers" his Alien Probe fit right in. When not busy flying, he shot the photos accompanying this article. Thanks a million, Mark! His daughter Nicole had as big a weekend as Dad. The nine year old Ms. Eastman won the impromptu Eggloft event, gamely flew her team's Kitbash model when none of the adults were around to help with the flight, and then created MRFF's biggest photo opportunity. With some help from Robin Miller, Nicole literally hand painting Mark's Initiator using acrylics and her digits.

Mike Guslick punched up repeated flights with his Sentinel and Thunderhawk. Former NIRA president Mike Jungclas took some time off from check-in and proved variety is the spice of life Mike put in 16 flights with various Estes kits and only used one of them twice in the process. Mike and Anthony Remijan tested out the catalog listing for their fleet of kits by starting with the lowest power and proceeding through the highest class engine recommended by the manufacturer. Their models had won several ribbons at local 4-H events. Ron Husak bucked the kit trend, but still had fun. His "Cyclone" bird featured a large wrapping tube, home made nosecone and chute and original design fins. With D12 power, the model rose majestically into the air and popped the chute at the peak every one of the nine times he flew it.

Scale models were the second most popular class at MRFF. John Schwarz rolled out an old FSI Black Brant. On F100 power, it was quite a crowd pleaser. John also managed to have his picture land in the local in paper the following week when the Daily Herald sent out a photographer to cover MRFF. Steve Koszuta, NIRA's faithful Milwaukee connection came down with a unique kitbash. He turned an Apollo Saturn V into a Skylab Saturn. Nicely finished and drawing attention from all sides, it had a perfect flight on E15 power to the applause of the crowd. Dave Miller used a more conventional approach with the Apollo version and D12, but got the same result. The scale flight of the meet went to Bob Wiersbe. His scratch built Nike Tomahawk stood about 6 feet tall. The Nike's F50 got things going in fine style, and Bob's homebrewed electronic staging system kicked off the D12 in the Tomahawk 2 seconds after burnout for an out of sight flight. Bunny pronounced the flight "just like the ones at Wallops Island".

HPR flyers got their show in, too. In April, Greg Roman "didn't know there were any rocket clubs around here", but was

promptly recruited by NIRA. He sent his LOC Graduator aloft on FSI motors several times and kept coming back to the prep area with a big grin on his face. Michigan's Steve Scherbinski's woke everyone up when his THOY Falcon roared off Pad #4 on H180 power. Clustering his way to a nice flight, Jim Christensen got his four D12 powered Viper IV off to a good launch. He then followed with an NCR Phantom 4000 HD with an H70-10 moving things right along.

Ken Hutchinson dueled right back. His Phantom 4000 HD smoked skyward with an H128. Ken then prepped his, Viking II with an F50 core and D12's in the outboard pods. Ken, an electrical engineer with Motorola, didn't like the idea of airstarting with thermalite, so he designed and built his own electronics package to insure that a misfire in the center engine wouldn't inadvertently set off the outboard motors for a prang. His system worked perfectly on both flight attempts.

NIRA ended the day tired but happy over another successful MRFF. While many people helped make it happen, many thanks to MRFF manager Ric Gaff for keeping everyone organized, to Mike Jungclas for another excellent dose of PR, and to Kevin McKiou for his work with the manufacturers. NIRA would especially like to thank these sponsors for their generous support: Mike Caldwell, FAA-O'Hare, Ace R/C, Advanced Rocketry Motor Sales, Airtronics, Inc., Belleville Hobby, Composite Structures Technology, Countdown Hobbies, Cox Hobbies, Inc., Estes Industries, Inc., Flight Systems Incorporated, Futaba Corporation of America, Hitec R/C USA, Inc., NARTS, National Association of Rocketry, North Coast Rocketry, Peck Polymers, Public Missiles Ltd., Quest Aerospace Education, Inc., Top Flight Recovery, Tower Hobbies, Transolve Corporation, and Wicks Aircraft Supply.

We hope to see you next year at MRFF 94 where we hope to have even more fun and more flights. If your section would like to host its own regional sport launch and bring the fun to your area, write for a free organizational guide by contacting Chris Tavares, 339 Crawford Street, Northboro, MA 01532 and ask for your Regional Sport Launch Guide.



Ken Hutchinson's Phantom 4000 HD.
Photo by Mark Eastman



A reflective moment at MRFF.....



That's one long shock cord!

Left: Mark Eastman's Alien Probe

Below: Lionel Slouber displays the winning Team Kitbash entry - Pepsi Tri-Hypo



Above: Mark Eastman's HPBNI (Hand Painted By Nichole Initiator) on the pad.

Above Right: The HPBNI takes off on G80 power.

Right: Nichole Eastman displays her finishing skills on Mark's Initiator.



All photos by Mark Eastman

Rantoul Ramblings

by Ken Hutchinson and Bob Wiersbe

On July 10th the CIA (Central Illinois Aerospace) held their monthly high power launch at Chanute Air Force Base in Rantoul, IL. NIRA members Bob and Judy Kaplow, Ken Hutchinson, Jim Christensen, Jonathan Charbonneau, and Bob Wiersbe decided to take advantage of the mile high waiver and made the trip down.

This was a special event for the CIA, it was supposed to be part RC airshow and part rocket launch, but the RC folks backed out a couple of days before the event. That didn't stop people from coming out though, and the large turnout of spectators and rocket flyers really surprised the event organizers. A couple of RC aircraft were flown by one of the local hobby shop owners, but no one paid much attention to them.

The Kaplow's wisely brought a tent, and had company all day from people looking to get out of the sun for a while. (A special word of thanks to them for letting Chris and Kyle drive them (and Belker) nuts all day! - Editor) At one point, the wind picked the tent up and deposited it on top of Kyle, possibly as a way of saying "Enough!" It didn't work; Kyle's comment on the incident: "I LOVED it under there!".

One of the best flights was Jim Dunbar's 35lb Esoteric with a K550 in the core, with 2 Vulcan H260's and 2 Rocketflite H220 Silver Streaks that were airstarted. Lots of noise and flame, and a beautiful flight most of the way to the waiver ceiling. The LCO announced that the flight had been heard as far as Clinton Illinois. Clinton is near Ken's sister in law's house and is about forty five minutes from the base by car. That seems a bit far for the sound to travel. Later on we heard that the payload was an Amateur band walkie-talkie rigged up to operate as a repeater station. Perhaps when they said it was 'heard' in Clinton, they were talking about radio not sound waves.

The most memorable failure had to be Ken Ferran's tall blue rocket with a cluster of 4 motors in it. The motors were 3 focused-thrust FSI F7's surrounding an Aerotech G80. The F7's were supposed to initially lift it, and the G80 was to be ignited by an onboard circuit triggered when a pin pulled out of the rocket as it left the pad. At ignition one F7 catoed, bending the rocket enough to jam it on the launch rod while the other F7's continued their 9 second burn. There was flame and smoke, then an ejection charge went off spilling recovery wadding around the rocket. People began to applaud the spectacular show, when suddenly the G80 ignited and lifted the rocket off of the pad! It did a mid-air cartwheel and crashed in the grass next to the pad. It was quickly voted "Prang of the Day". Bob Kaplow tried 4 times to ignite the motor in his upscaled "Spaceman". When it finally lit, the Spaceman went on a wild rollercoaster ride but it was still a successful flight. No launch would be complete without Bob flying his Happy Meal, and this day was no exception.

Ken Hutchinson flew his electronically staged Nike-Tomahawk with a C in the booster and an A in the upper stage. The Tomahawk was nearly horizontal when it ignited and Ken walked a long way to recover it. His comment "I think I need to use a D in the Nike." summed it up nicely. His Black Adder flew on a cluster of six C6-7's, only 5 fired, but no one noticed. His Viking II made its third flight with electronic ignition of the strapons. The RSO and everyone else said that two GE nicad batteries weren't going to light the copperheads in the strapons, but Ken knew better. He put an F25 in the core and a pair of D21's in the strapons. At a count of zero the F25 lifted the Viking smoothly off the pad and was followed shortly by the ignition of ... nothing. Rats! The parachute is ejected by the main motor so that wasn't a problem. When he picked up model he discovered three things. The shock cord had partially zippered the body tube, the landing cracked one fin tip (*&?!@ concrete runways!), and the strapons had lit after all. Apparently the ignition of the D21's had seamlessly overlapped the slow burnout of the F25.

Jim Christensen attempted to fly his Phantom 4000 on a Synerjet H136 to get his NAR I level certification. The flight went fine but no ejection. The postmortem revealed that the ejection charge had fired, the recovery system seemed loose even after the crash, so what went wrong? A previous Synerjet flight did the same thing. Ken was going to use a Synerjet H136 in his Phantom 4000 and decided to 'enhance' the stock Synerjet charge with some ejection charge material he harvested from reload kits (thanks for the idea, Bob K.). The flight went fine, just barely. Ken uses a captive wadding system consisting of a layer of fiberglass insulation topped by two layers of synthetic sponge all loosely tied together with heavy nylon fishing line and attached to the shock cord. The payload section came free, the chute came out, and the top layer of wadding moved far enough forward so that about a half inch stuck out of the body tube. Not much oomph to spare in that ejection charge, even after the enhancement. You might want to watch this with any Synerjet motors you may own.

Bob Wiersbe went for altitude with a G40 in a BT-55 based model, the rocket almost disappeared, easily clearing 3500 feet. Bob and Ken saw the chute come out and watched the model drift across the base and into a trailer park about 3/4 of a mile away. They guessed it was in the air between 4 and 5 minutes! Bob managed to lose the capsule from his Saturn V for the third time (Now what was the part number? Oh, yeah, 33110). He also had a very nice flight with a Synerjet H167 in his LOC Hi-Tech H45, with no ejection problems. Bob's first clustered rocket, "The Black Rocket" (named by Kyle), flew on a D12-7 and six airstarted B6-0's.

You never know who you'll run into at one of these launches. Bill Larry and crew from Wheaton came down and launched a couple of multistage rockets with D motors. Bill also flew his Aerotech IQSY Tomahawk on an F14. Bill's brother Brad and his friend Brennan are the most tenacious recovery crew I've ever seen, they just don't believe in losing rockets. We also met

a former member of the Glen Ellyn Rocket Club (the predecessor to NIRA), he and Bob Kaplow were reminiscing about the "old days" for quite a while.

Storm clouds and lightning moved in about 6:30pm, and people started to pack up. CIA members Greg Smith, John Page, and Chris Deem got quite a scare as they were packing up the launch equipment. Chris felt the fillings in his teeth start to vibrate, and a second or two later all their hair was standing on end, but moments later it passed. No one was hurt, but they finished packing and got out of there in a hurry! Not the time you want to be caught holding a 6 foot launch rod.

It was a good day of launching, in spite of the heat and long delays between racks. If you're looking to fly those models that need a waiver or lots of recovery room, this is a pretty good place to do it. The site is reasonable (the beans aren't too high yet, there's no corn, you just have to avoid the runways), and the CIA people are great. Hope to see you there!

The Finishing Touch

as told by ModelNet participants: John DeMar, Michael Hellmund, Jay Marsh, Paul J. Ste. Marie, Doug Pratt, Kevin Stumpe and Andrew D. Waddell

Last spring, a Modelnet newcomer asked about finishing techniques for model rockets and learned more than he'd bargained for. Here's some of the tips that were offered by the above listed "authors".

Filling Body Tubes:

For sport models and scale models, I use "Hobby Poxystuff" to fill tube seams and any other blemishes. Make sure you lightly sand all surfaces before applying. I thin the "stuff" just a little then use a toothpick to put some in the seams. Let it set thoroughly (3-4 hrs). Cut some 1" squares of medium and fine sandpaper (240 & 400 grit for example) and go to work removing all the filler that isn't in the seams. Be careful not to take too much off the surface of the bare tube. Repeat the process if some nicks are found in the seams.

It is easier to do this filling process without the fins attached to the rocket but it might be impossible in some designs. Also, I seal the ends on the tubes (couple of inches inside) with superglue; this keeps moisture from expanding the bare paper on the ends and gives it strength for shock cord and nosecone "snap-back".

At this point, some people use a thin coating epoxy to give the tube strength and a smooth finish. This is heavy, though, and is most often used on high-powered models. I haven't played with this method yet (you need lots of ventilation using all that epoxy!).

I'm afraid I am still considered a philistine, in that I do the body

tube seams with automotive spot putty (just thick primer). After using Model Magic (thinned a bit) on the fins, I use one coat of sanding sealer. Paints usually get at K-Mart, but I have been using Testors Model Master and Pactra acrylics in my airbrushes for fine work. Some have bad-mouthed the spot putty, but I really like it. I use a plastic squeegee to run it into the seam, so there isn't TOO much to sand off, and then I use a sanding sponge (hardware store type) to sand the tube.

The best filler stuff is Elmer's Professional Wood Grain Filler (with the orange top). It thins with water and is odorless.

Sealing Fins:

I use a few methods for sealing fins. I've used "sanding sealer" (dope with a filler) on balsa if weight is a concern. I've used thinned "Stuff" with good success with only one coat. On plywood fins, I use sandable primer that is compatible with the final paint.

Well, my favorite for filling balsa is two coats of Aerogloss Balsa Fillercoat sanded with 320 grit wet/dry paper, followed by 1-3 coats of Aerogloss Sanding Sealer sanded with 400 grit wet/dry paper. Ply just gets the sanding sealer, sanded with 320/400 grit. Next comes a couple coats of Krylon white primer, followed by Krylon color coats and clear over the decals if it's looking good.

I used to prefer Aerogloss dope for anything other than white, but that doesn't work with the now universal (@#^\$) plastic nose cones.

A quick and good way I eliminate sealing fins on smaller, non-professional-finish models is to use large self-adhesive label paper (4x6" sheets and/or 8x10" sheets). Sand the fin, round the leading edge, taper the trailing, brush all the sanding dust off. Then lay the fin on the adhesive side of the paper, pull the paper up and over the leading edge, then flat over the other side. Run your finger firmly over the edges, then X-acto away the excess. Seal the trailing edge with medium superglue. If you wish, you can seal the exposed edge of the fin as usual. Strengthens the fins, paints well, and takes about 3 minutes per fin! My favorite method.

With the 8x10", the adhesive doesn't seem to be aggressive enough, so I spray the fin with artist's spray mount or 3M permanent spray adhesive immediately before applying the paper.

Another way to achieve the same effect is to duplicate your process with silkspan or jap tissue and thinned clear dope. A couple coats of clear dope after you finish will seal it, and the results will be a lot lighter.

Fillets:

I use 5-minute epoxy (Pic from NCR). I tack the fins on with

CyA and make sure the fillet area is rough sanded. I do adjacent fillets of two fins while keeping the model horizontal until the epoxy sets. There doesn't seem to be anything better than your pinky to smooth out the fillet! I mix enough to do the two fillets at a time. After the epoxy sets fully on all the fillets, I sand out any blemishes and fill pits or cracks with 'stuff'.

I add about 1/8" fillets for most models and more if it's high power. It's more important to have the fins attached through the body tube to the motor mount for HP; I've seen ply fins attached to the outside sheer right off.

Priming/Painting

I use "#0000" steel wool to go over the whole model before applying the primer. Make sure the steel wool is free of oils; some cheap stuff isn't very clean. After that, go over the model with a lint-free soft cloth. Sometime I use a little isopropyl alcohol, especially to remove contaminants from plastic surfaces.

I find the "Krylon" primers and paints give good results. Two coats of primer and two light coats of paint work fine for me. If you want better results, such as on a scale model, use more coats of primer and sand generously between coats. After all the finishing touches and decals I use the Krylon "clear", it protects from moisture and gives a dull- semi-gloss finish.

For competition models, I use thinned clear dope and sand lightly. For some events, I leave the model unpainted or add color using permanent markers. Once I get an airbrush, I'm going to work on other techniques.

Something I do for putting a little lightweight color on open balsa, like gliders, is go to the fabric store and find a color of dye that I like. Mix a bit of it in some thinner and airbrush it onto the balsa. It dyes the wood and the thinner evaporates. Next to zero weight.

The times that I have done it, I haven't had any runs... I shoot it on bare, unfinished balsa, and it soaks right in and evaporates right out. I learned it YEARS ago from a model airplane mag (a WHAT!!!!???) and tried it the first time on an A-1 Nordic glider. I sprayed the bare spar and rib construction with a red mixture and then finished by covering it with white tissue and dope. The balsa innards really showed through and really looked sharp! I've since used it on B/G's just for the color, no finish other than the dye. I've been planning to try to get some day-glo dyes the next time the wife heads for the fabric store (I feel sorta dumb poking around fabric stores by my self!).

I use nothing but Krylon primer, paints and overcoats on my sport models. On competition models where weight is a concern, use materials that require no finishing at all such as Apogee tube and waferglass. The only finishing they require is wax. On gliders (yuk, gd&r), I jap tissue the balsa surfaces for strength which also lets me use thinner balsa (comes out about

the same weight though but has less frontal area so should have less drag). On any other models where weight is not a concern I never use balsa. Substitute bass or plywood for fins and other parts. It is MUCH stronger and finishes out better. Like others have said, I just lay the primer to it (usually 1 heavy coat is all that is needed), sand that out to a smooth surface and apply two coats of paint, then decals, finishing up with a gloss or dull coat Krylon overcoat. Other than letting the primer dry completely (the heavier the coat the longer it takes to dry - sometimes a week or so) a model can be finished in one day. BTW, I have never found a paint that resists runs like Krylon and dries so fast.

I realize that this opens a can of worms, already from a brief discussion with section members, I have as many techniques as their were people in the discussion. And in addition, different parts of the country have different problems. For instance, in Arizona, we have to worry about our paint drying before it hits the surface. One thing in particular you mentioned is using Krylon paints. I personally have had good luck with them but, our club pres. has had problems with the white in particular. Over a period of time, his rockets have taken on a decidedly yellow cast. Anyone else have this problem? How do you deal with it?

That's a good point about climate differences. I'm in upstate NY where it's either cold and snowy or hot and humid, never very dry. In the winter, I paint in my garage which is not heated... I spend as little time as possible outside with the model & paint as I can. It seems to work ok if I quickly get back inside and let it dry there. In the summer, I occasionally get small bubbles (caused by moisture they say). If I go over the model with ultra-fine steelwool then a dry soft cloth, the bubbles seldom show. I haven't had any painting experience in the dry dessert climate but I can imagine the paint must be dry before hitting the rocket!

On the subject of Krylon white, I've had the gloss white turn yellowish too. On my MegaSizz, where I covered it with clear overcoat, it's still fairly white but where I repaired it and didn't recover with clear, it's yellowing. The flat white covered with the clear coats looks a lot nicer than the gloss white, in my opinion. My Saturn V and 3ft SCUD were done that way. I thin the "stuff" with the hobby poxy thinner. This could be another method which is effected by dry weather (the thinner flashes off fairly quickly). I haven't tried other thinners but I know there are others that people have used. Maybe someone else can jump in with a suggestion.

I feel white paint that is exposed to the dirty world without having a THIN overcoat does yellow. I have some cream colored models now which were white at one time because I was lazy and didn't overcoat them. The ones that I over coated look almost as good as the day I finished them. Must have something to do with pollutants in the air reacting with the paint or embedding themselves. A paint surface is softer than an overcoat and must be more susceptible to attack. If you put overcoat on too thick it will yellow the surface underneath as

well because you have to look through it to see the painted surface. I put on just enough overcoat to do the job.

Sometimes you can "bleach" a model back white by putting in a window facing the North (yes that is what I said - facing the North). I can't explain why but the fabric on chairs or pictures will bleach out completely if left facing light coming from the North and it works on models too. Be sure to turn them occasionally and it does take a long time but I guess it is better than repainting them. If you don't want decals or other colors to "bleach" then cover them with masking tape or such to prevent light from hitting them.

Alway Returns or Scale Modeling Dreams II details provided by Kevin McKiou

Peter Alway's newest book, *Rockets of the World: A Modeler's Guide*, will be printed in September. The book features 380 pages of rocket scale data. It will contain 200+ versions of 133 rockets. Rockets from 14 countries and Europe are featured. To top off Pete's excellent drawings and extensive research, 170 photos are included.

Rockets of the World is available in hardcover and paperback. The hardcover version goes for \$35.00 plus \$2.50 shipping and handling. Softcover (spiral bound) costs \$28.00 plus \$2.50 shipping and handling. Advance orders through August 15 will receive an Apollo 7 photo as well! Your orders can be taken by Peter Alway, P. O. Box 3709, Ann Arbor, MI 48106-3709. Don't miss out on this excellent addition to your model rocket library. Pete's first book is already turning into something of a collector's item.

April Contest Results

Finally! The results you've been waiting for! B Ping Pong Ball Duration Results (time in seconds):

JUNIOR

| | |
|----------------|-------|
| Matt Price | 12.87 |
| Eric Burmester | 11.43 |
| Lionel Slouber | 9.81 |

SENIOR

| | |
|----------------------|-------|
| Steve Koszuta | 25.64 |
| Ken Hutchinson | 13.23 |
| Jonathan Charbonneau | 9.49 |
| Tim Marcy | 8.59 |
| Bill Thiel | 7.45 |

Heard on the Street

Rumors and Such, with Apologies to the Wall Street Journal

Just Married - George Riebesehl and Sandra MacIntire were happily wed at 3:30 pm Saturday, July 24. NIRA was represented by Kevin and Kim McKiou, Bunny and Barb Bundick, and Bob and Judy Kaplow. Ben Roberto participated as a Groomsman. A reception and buffet dinner with open bar followed the wedding. A DJ presided over the reception and a great time was had by all. Dancing was optional. The week following the wedding George and Sandi could be found relaxing on the deck of a Royal Caribbean cruise ship and wandering through the straw markets of Nassau. Best wishes for a long and happy marriage!

Welcome to the Club - NIRA congratulates the Chicago Bulls, who joined NIRA as Chicago area "three-peters" by defeating the Phoenix Suns in the NBA Finals. NIRA's three-peat occurred as the 1985-1987 National Section Champions. Bunny sent off a congratulatory letter, but members are welcome to celebrate in their own way.

Fully Employed - A hearty NIRA congratulations to Ben Roberto who, after several months as a contracted engineer, landed a permanent job in Libertyville.

Can't Call Home - A Proton rocket malfunction stranded a Gorizont communications satellite launched by the CIS on May 27. The rocket's second stage did not perform as planned and left the satellite far short of its intended orbit. Investigation centers on either a propellant leak or pressurization problem in Proton's second stage.

Hitting the Brakes - NASA engineers are pleased with Venus radar mapping Magellan's progress at circularizing its orbit. NASA agreed to extend the Magellan mission to attempt an experiment in aerobraking. The satellite's apogee as been reduced from 8,500 kilometers to 7,900 kilometers after only 10 days of the test. Within the next 71 days, controllers will finish the circularization of the orbit and conduct more tests.

Over Half Way There - McDonald Douglas engineers successfully tested the DC-X test vehicle at 65% thrust on June 2. After running a test at 80% thrust, the vehicle will be moved from the testing area at White Sands to the launch pad. Flight testing later this year will send the 1/3 scale prototype to 20,000 feet. The vehicle will then return and make a controlled landing using its engines' thrust.

NIRA Quote of the Month: "Well the guy at the door said 'Alcohol, Tobacco and Firearms', we just assumed it was more supplies" (from Paul Campbell via Internet.)

July Club Launch

By Lawrence Bercini

The wipers beat a furious counterpoint to the softly playing melodies of Vivaldi. The world is dim and featureless, shrouded in a wash of water. The only way I know I'm on Hwy 290 is when one of the familiar exits signs materializes out of the savage rain. But wait...fade to black...

Two and a half hours earlier:

It's 2:00, and for the first time in the history of my affiliation with NIRA, I have arrived on time for a club launch. Stranger yet, I'm the only one there and...(Rod Serling's voice tones over the narration)...THE PARK IS DESERTED EXCEPT FOR THE SOLITARY FIGURE OF A TALL BEARDED MAN. How very strange, the park is full of cars, but there are no people. Just because it's 93° and humid enough to grow orchids on asphalt, why aren't they all out here playing soccer or some other such socially acceptable form of physical violence?

Soon my angst subsided as the Sloubers appeared. Within moments, the Thiels and Husaks were setting up pads while Kleve strolled deep into the field and proceed to smack golf balls STRAIGHT AT US! (Thanks for the rush of adrenaline, Kleve!)

It didn't take long the pads to dot the entire length of the area and for many rockets to hit the air. In their typical fashion, the Thiels were the most prolific flyers. As near as I could keep count (in the absence of any flight cards) Bill edged Ed 14 flights to 13. My favorite stunt show of the day belonged to Ed. His Thermal Hawk, which otherwise looks normal, behaved like "Wrongway Peachfuzz": It would glide a bit, roll over, glide a bit more, turn slightly, roll over again, stall a bit then start the performance all over again. Very strange... Also worth noting was Ed's CATO. It flew according to plan but it has Ed puzzled: "Why do people seem to enjoy that rocket so much?" Bill, on the other had, stuck to more straight forward fare: Six-Fins-and-a-Payload, Nine-Gold-Fins-and-2-Payloads, One-Hundred-Eighty-Nose-Cones-and-a- Red-Body, etc. None of these faltered in any way until Bill went for the Three-Fins-and-a-Nose-Cone, which went awry, impacted in the parking lot and was run over by a car. Oh, the irony of it all! Not to be left out of the numbers racket, "Bullet" Bob Kaplow countered with his Bandit bash, Three Noses and a Fin. To put it in the words of another famous rocketeer, "Needs work."

Mr. Charbonneau was having a little trouble with his pad that day. Mr. Ed bested Jonathan during their Skinny Minnie drag race because of the moody controller. He was able to get off one of his more successful Superman/MegaSizz flights.

Sometime in the midst of the flying, a distant voice announces that lightning has been sighted and to clear out the pool ("Of

course!" This time it's the voice of Don Adams, "The old Park-your-car-and- go-swimming-trick!") People boiled out of the nearby building like ants on the way to a picnic. Not a bad deal, we had quite a crowd of spectators!

Yours truly was trying to make up for having missed MRFF the month before. Being risky, I went for the C's and D's...had to do a lot of walking as a result. I did manage to drop my 20 year old Bright Star into a pond. Bill Their fished it out (Molto grazie Signore Bill!). Another strange mishap seemed to befall my Pathfinder some time AFTER it landed: it lost a nose cone, a parachute and all four fins came off..(Rod Serling's voice again...)

Perhaps the most exciting flight of the day belonged to Greg Roman. Greg built a gliding Bomarc based off the plans from the Estes kit of the early 70's. Being the ad hoc RSO, I called a "heads up". In true form, she blasted into a perfect arc and impacted just after thrusting. Ron Husak had to do the old "duck and cover" routine to avoid becoming a landing pad. Moments later, the ejection charge in a mighty show of flatulence, fired the power pod across the prep area like a dart. It impacted in the middle of Lionel Slouber's chest in a frenzied attempt to squash the mosquito drawing adorning his T-shirt. Unharmd but stunned, Lionel quickly became a local hero. It was simultaneously frightening and hilarious!

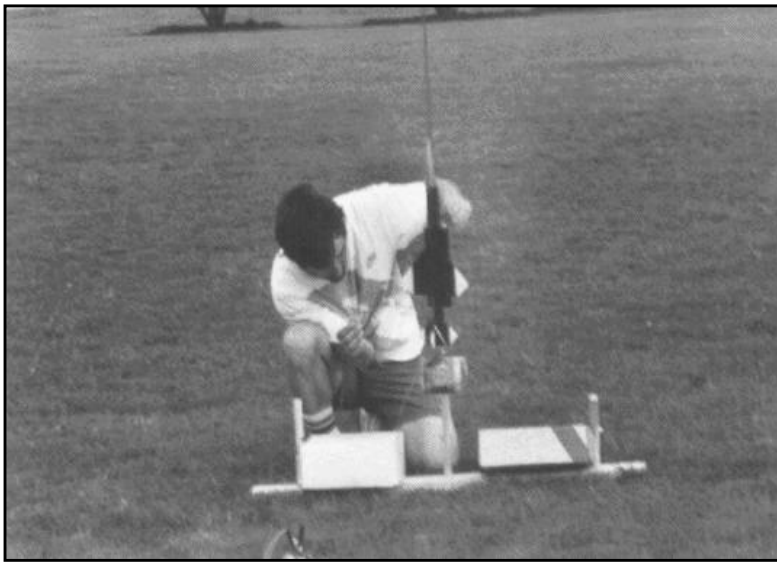
Other flights of note include Ron Husaks large and under-powered Toxic Avenger and Bob Wiersbe's 100% successful Mercury Atlas plastic model flight. Bill Larry and recovery crew (Brad Larry and Brennan Downes) boosted a Sandhawk, a Land Viper and blew the crowd away with an E30 Tomahawk flight. And those guys get them back every time...it just isn't fair...

Just about the time John Miller sent up his Bull Pup up to make flight #85, a bit of rain tapped on the top of my new range box. Within minutes we snatched up our belongings and fled to our cars. The heavens open and I settled back for a long, wet return to Chicago.

A Brief Letter from the Editor

I apologize for the late publication of The Leading Edge, there have been several problems with computer systems, scanners, and printers that delayed this issue. I am working to get the next issue out on time. Thanks for being patient!

Bob Wiersbe



Greg Roman sets up his "gliding" Bomarc.....while photographers run for cover.



Lionel Slouber is all giggles as he shows the Bomarc impact point.



For the upteenth time, Ed Thiel readies his topsy turvy Thermal Hawk.



Brennan Downes just moments before a beautiful flight.



Al Spencer and his Outtasite Alpha.

THE LEADING EDGE
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An Important Announcement!!

NIRA Celebrates it's 30th Annual Labor Day Launch!

Date: Monday, September 6, 1993

Place: Newton Park, Glen Ellyn

Time: 2pm - 5pm (be there by 1pm to help set up)

We need members to come out and help make this the best Labor Day launch to date! Your help is needed, so please plan to attend.

Contact Ken Hutchinson for more information.