THE OFFICIAL JOURNAL OF THE NORTHERN ILLINOIS ROCKET ASSOCIATION (NIRA) Volume 25, Number 5
September/October 2002

THE LEADING EDGE

Club News and Notes

October 12th Scout Launch – Cal Jestice has organized a scout launch on Saturday, October 12th at our East Branch launch site. While the launch is primarily for the 4 packs of Scouts, NIRA members are invited to attend to assist the scouts and to fly some of their own rockets.

The plan is to start setting up at 11 am and be ready to fly by 11:30. The scouts will only be doing one or two launches each so there should be plenty of time for you to fly.

The current plan is to have the club rack system set up for the scouts and other people with small rockets to use. If you want to launch larger rockets, please try to bring your own pad and launch rods/rails. Although the scouts are flying rockets, seeing larger and/or unusual rockets fly is a good way to interest them in continuing on in rocketry (and it's fun, too).

If you need more information on this launch, please email Cal at cal_jestice@msn.com.

New President needed – At the August monthly meeting, Rick Gaff, current NIRA president, announced that he will not be running for president again. Rick has been the club president for the past several years and feels that it is time for someone else to take the helm.

This has been Rick's second stint at being NIRA's president. He has also been the editor of the Leading Edge as well as assisting the club in many other capacities in the 20+ years he's been with the club. Rick deserves everyone's thanks for his many years of service.

Club Elections – Rick's announcement brings up another topic, club elections. Elections are held at the January meeting immediately after any last minute nominations are presented. All current club members are eligible to run for office and vote for the officers.

The elected offices and the current office holders are:

President – Rick Gaff
Vice President – Cole Arntzen
Secretary/Treasurer – Ken Hutchinson
RSO – David Wallis

At this time, only Rick has announced that he won't be running for office again.

If you'd like to run for one of the offices, nominations will be taken at the November, December and January meetings. The duties of the officers are in the club bylaws, available on-line at the club's website: http://www.NIRA-rocketry.org.

New Newsletter Editor needed – Also at the August meeting, I announced that I am planning on stepping down as editor of the Leading Edge. At this time, the last issue I put together will be the May/June 2003 issue. This will give the next editor a bit of a running start since the club will be in prime launch season and it is also the beginning of the contest year for the NAR's LAC Trophy for the best section newsletter.

I've been fortunate enough to be involved with winning the LAC Trophy two of the years I've been editor (the first time was along with Bob Wiersbe, the previous editor). Newsletters are more a reflection of their contributors then their editor so I think the awards to belong to NIRA's members rather than to me.

If you'd like to be the next editor, or want to find out more information about what it takes to be the editor, please let me know. Although I'm planning on doing 4 more issues, I'd be willing to turn it over sooner if the next editor wants to start earlier.

Field Rule Reminder – Just a quick reminder, the DuPage Forest Preserve allows only a single car to drive out past the parking lot at East Branch and that is limited to dropping off/picking up the range equipment.

The rangers have let us know that there have been other vehicles seen out in this area. Please don't drive your car out there, even on what seem to be vehicle paths - this jeopardizes our use of the East Branch site (and possibly all DuPage Forest Preserve sites).

August Model of the Month contest –
Chuck Swindler - scratch built 3-engine cluster rocket (Adult Winner)
Martin Schrader - Sky Pilot (scratch)
Rob Pettey - PML Ariel

September Model of the Month contest –
Cody Pinchot - Custom Dynamic Courier (Youth Winner)
Martin Schrader - 2 stage "Just Plain Rocket" with "Really Elaborate Booster." (Adult Winner)
Ken Goodwin - Aerotech Mirage
John Kouns - Quest Penetrator

THE LEADING EDGE

Volume 25, Number 5
September/October 2002

THE LEADING EDGE is published bimonthly by and for members of the Northern Illinois Rocketry Association (NIRA), NAR Section #117, and is dedicated to the idea that Sport Rocketry is FUN!

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Photos will be returned, other material returned upon requested.

Send membership applications (dues: $6 per youth, $8 per adult, $12 per family, including a six issue subscription to the Leading Edge), non-member subscriptions ($10 per six issues), and change of address notifications to:
Ken Hutchinson
82 Talcott Avenue
Crystal Lake, IL 60014-4541

Web site: http://www.NIRA-rocketry,org

Email list: http://groups.yahoo.com/group/NIRA

InfoLine: (630) 830-1587

CLUB MEETING DATES

All meetings start at 7:30 pm. Bring a model for 'Model of the Month.' We always need volunteers for pre-meeting lectures, contact Rick Gaff if you want to schedule a date. The location is usually the Glen Ellyn Civic Center, 535 Duane Street (check the board in the lobby for the room number).

October 4

November 1

December 6

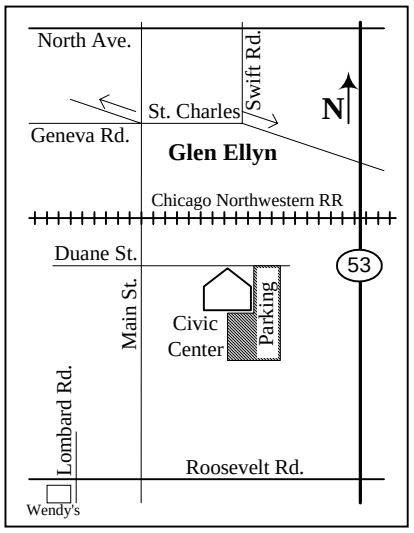
January 3, 2003

February 7

March 7

April 4

May 2



CLUB LAUNCH DATES

Launches are BYOL (bring your own launcher). Call the NIRA infoline for pre-launch information: 630-830-1587.

As the map shows, our new launch field is the East Branch Forest Preserve but the arrangement may not be permanent! **Please** call/check the infoline/website before coming!

September 15 - East Branch Forest Preserve

October 20 - East Branch Forest Preserve

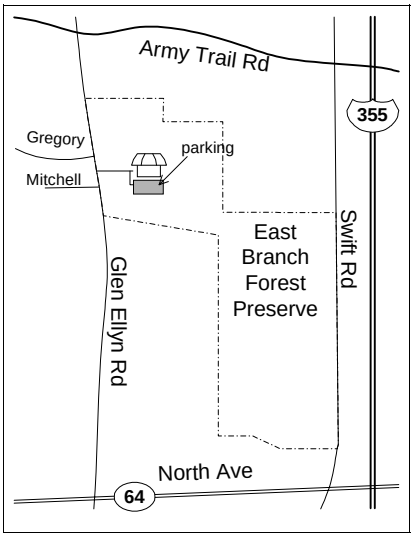
November 17 - East Branch Forest Preserve

March 16, 2003 - East Branch Forest Preserve

April 20, 2003 - East Branch Forest Preserve

May 18, 2003 - East Branch Forest Preserve

June 14-15, 2003 - Midwest Regional Fun Fly



Model of the Month Winners! (Jeff Pleimling photos)

August – Chuck Swindler was the Adult winner with his scratch built 3-engine cluster rocket (which he hadn't named yet).

September – Cody Pinchot won in Youth with his Dynamic Courier from Custom while Martin Schrader won in Adult with a 2 stage "Just Plain Rocket" and "Really Elaborate Booster."

Greetings Mr. President, or "NIRA Goes to NARAM 44"

By Mark "Bunny" Bundick

This year's National Model Rocket Championships camped out in McGregor, TX. It must not have been a bad spot because President Bush was vacationing there as the same time. Aside from one brief visit by the Secret Service to check things out (the agent was totally professional, by the way), no presidential interruptions were experienced by the 160+ registered flyers.

Weather was hot, hot, hot, and flyers quickly took to heart advice to stay hydrated. The good byproduct of heat was very low winds all week. The fields around the launch site didn't make recovery too easy (the sorghum to the south was particularly no fun to traverse), but at least you didn't have to go too far. Thermal activity was pretty plentiful, but not booming.

Sport range flying on the opening weekend was relatively subdued. Many of the local had their needs for AP burning satisfied by several local events earlier in the year and LDRS three weeks earlier. Dave Schafer, the NAR's L3 Committee Chair, displayed his LDRS X-30 model and flew a smaller prototype to a nice round of applause. NARTS Chairman Bill Spadafora did multiple flights of his digital pen camera; flown unmodified, it turned out a decent 80 shot sequence for about $50 or so. The biggest attention was unfortunately devoted to Pennsylvania's Chris Taylor and his "Grrr" Level 1 attempt. A space shuttle shaped glider designed for twin H motors, it didn't have enough speed to work properly, but didn't get high enough to make a decent prang either. Needs LOTS of work….

Chris Taylor's Grrr - before and after… (Mark Bundick photos)

Evening activities spanned the Manufacturer's Forum, the NAR Town Hall and Association Meeting, the Cannon Scholarship Fund Benefit Auction (almost $1,400 raised), an excellent BBQ social on Wednesday and R&D report presentations. Oh, and the hotel pool got a good workout, too.

Competition-wise, Ken and Bob snagged a 1st in B Boost glide and a 3rd in HD. Bunny snuck in a 3rd in BG as well. The bulk of the trophies went to members of the top competition sections. Launch Crue in southern IN took their 5th section title, with the determined folks from WHOOSH in Wisconsin finishing a close second. Less than 4% difference in total points separated the two clubs.

No site has been determined for next year's NARAM, but if a week's worth of rocketry sounds like a fun vacation, keep an eye out for a NARAM site announcement, and then start making those plans!

NIRA's home on the field for the week. You really needed the shade! (Mark Bundick photos)

Another NARAM comes to an end. The banquet was held at the local high school, a NARAM first. (Mark Bundick photo)

My Lady Hawk

by John Boren

At the May club launch "Mini MRFF" I brought out my 150% up scaled model of Dr. John Kallend's Lady Hawk RC Rocket Plane. Unfortunately the high winds of the day prevented me from doing its first test flight. Well I've flown it twice now and I still have a couple more test flights to go before I try my motor of choice. Additional test flights will be needed because of a building error on my part. Both of the elevons are warped. This prevents the control surfaces from being able to be set neutral to each other in a true sense. The first test flight was a hand launch to see how well the balance point and control trim, were set. I ended up adding about four clicks of up trim on the transmitter. I'd chosen an F-39 Aerotech reload for the first flight. After the count down my helper pushed the button. Before I could react the rocket plane pulled up hard and was flying inverted. I rolled the plane up right and then proceeded to climb for altitude with the rockets remaining forward momentum. What happened next came as a real treat. The plane has such a low wing loading and high lift airfoil that it is a pleasure to fly. It's a real floater. I don't think I'll be thermally this thing any time soon, but as a Delta wing plane it handles real nice and doesn't come in like our Nations Space Shuttle.

For the second flight I thought I would try a motor with a little less kick during takeoff. I purchased a couple of Aerotech 29mm F14's years ago for a X-1 Rocket plane I was building so I thought this long burn motor might just do the trick. Wow, what a change this motor was. Slow motion best describes the takeoff. The model pitched up just like last time but with the slow acceleration, corrections were easily made. The glide following the boost was again very nice. The F14 motor would have been a poor choice for the X1 so I'm glad I flew it in the Lady Hawk. I do believe the F14 will make a great motor for the air start motor option once I install the onboard ignition electronics.

So what's next for the Lady Hawk? First I believe I will construct a new set of elevons. I also believe the model is a little nose heavy, so I will install a burnt out motor in the second motor tube for tail weight. The next couple launches will more then likely be with the F39 reload. Once all of the launch bugs are worked out I'll try my motor of choice, an Aerotech G35.

August Launch Report in Photos
photos by David Perry

No one ever did a launch report for the August launch, but David Perry took some great photos.

They say a picture is worth a thousand words, so this is one of the longer launch reports we've had recently...

A two-stage rocket at lift-off. The sustainer didn't light, but didn't suffer any damage.

John Boren's Lady Hawk RC Rocket Plane waits on the pad. See Page 3 for more info.

A Quartet of Lift-off photos. Some people have said that you can't get good photos of lift-offs with a digital camera - David has proven them wrong.

David didn't get all of the rocket, but did capture an impressive exhaust plume.

They don't just fly by themselves, somebody has to do the prep work.

Another smoke plume photo. Taking lift-off photos isn't an exact science..

Chicago Hobby Show 2002 report
by Bob Kaplow (NAR 18L)

The show was relocated upstairs this year, and at least by my impression wasn't as big as in the past.

Once again NIRA did the Make-it Take-it, and build about 450 Quest Tracers. With only one day of public show this year, we still built all the kits we had. Lots of volunteers, led by Mike Jungclas made this another success.

Most notable were the no-shows. Aerotech just had a sign that said something like sorry, we're not here, we're busy getting our production back on line. Custom was also a no-show. And the new Canadian company with the rocket powered airplanes had packed up and left before the public day, leaving an empty booth behind :-(And of course, no Estes for the second year in a row...

Quest almost didn't make it; Their both is still locked up somewhere in the back of a Consolidated Freight truck. They (CF) filed for bankruptcy while carrying the booth to the show, and

Quest's improvised Micro Maxx display...

the truck can't be gotten to to reclaim the booth and other merchandise. But Quest had a nice booth anyway. On display were all of their new Quick Kits, which are already in the stores. Also new, some just shipping in the past week were half a dozen kits; some with familiar looks. An Aerobee HI that reminded me of the original MMI rocket. A short fat red rocket similar to the Lil Ivan. A model reminiscent of the Taurus. And a futuristic space plane that made my mind think "SHROX". The Shuttle glider was there, but is still a couple weeks away. Other new stuff coming: Micro Maxx scale models of the X-15 and Little Joe II. And apparently rumors of any new motors have been delayed until next spring by the German floods that destroyed some raw materials.


Some of the kits that Quest was showing off, including the cool looking 'Super Eagle'

The only other rocket company exhibiting was BMS, which in addition to their line of nose cones and such had Edmonds, Saturn Press "robots with ray guns", and Vincia kits on display. I hear retailers really liked Rob's stuff! Things sound good for the philosopher king of gliders.

Bill Saindon showing off new kits as well as other interesting stuff at the BMS booth

Nothing else new really jumped out at me this year. Of course, I had much less time to see the show.

[Editor's note: Bob obviously ddn't have time to look at the plastic models…

Polar Lights had a whole bunch of new kits on display. Prime among these were two Enterprise kits - the NCC-1701 and the NX-01. The NCC-1701 comes with parts to make either the ship from the original series or one from either of the pilots (yes, all three were slightly different). They showed several Batman kits, including a 1/24 scale kit of Batman and Robin on motorcycles, complete with a trailer for the bikes (inspired by the comic book, not TV or movies). This is the first of many superhero related kits that include the Batboat and Batcycle. Their figure line will expand with the release of the Incredible Hulk and Spiderman.


A prototype of Polar Lights NCC-1701 due out in the middle of 2003.

In mid-2003, Polar Lights will release a large snap kit of Homer Simpson's "Car for the Common Man" to go along with their Jetson's car and Mystery Machine van.]

Polar Light's NX-01


Homer's car from Polar Lights

Aerotech: Utah Facility Nears Completion
from www.aerotech-rocketry.com

AeroTech is pleased to provide the following update on the status of its new propellant and rocket motor manufacturing facility in Cedar City Utah.

As of Friday, September 6 the Utah facility was nearly 90% complete. The electrical system, fire suppression and climate control equipment is completely installed and tested. The exterior AP storage bunker is still awaiting roof and door installation. Minor details such as installation of interior door handles and some final painting remain to be accomplished. Other areas of the building are in various stages of completion but would not hinder the commencement of initial production.

The anticipated construction schedule has been delayed a number of times due to difficulties in receiving insurance proceeds in a timely manner. AeroTech has also been forced to temporarily reduce staffing to ease the drain on its resources and to enable completion of the new motor facility as soon as possible. AeroTech is currently awaiting another insurance payment that should enable enough progress to partially occupy the building sometime next week.

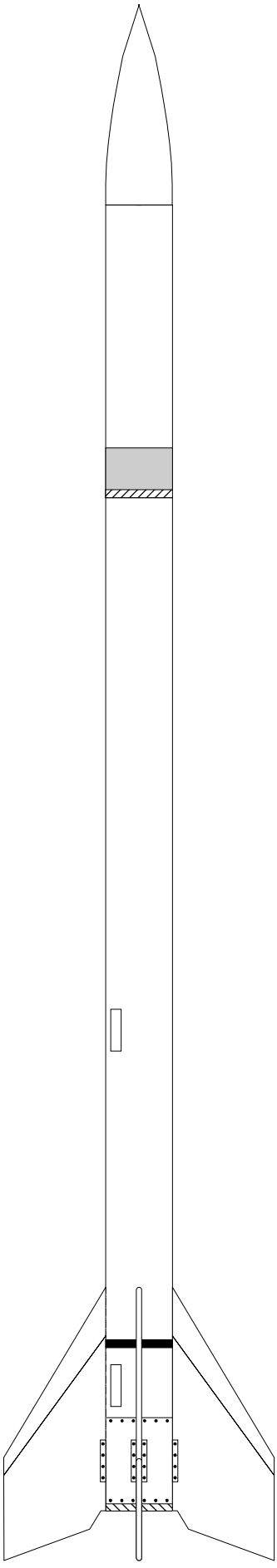

Aerotech's new propellant and motor site. (Aerotech photo)

Contract manufacturing at Ellis Mountain Rocket Works has been invaluable to AeroTech's recovery but has not been able to keep up with demand. To help close the gap in production while awaiting the certificate of occupancy in Utah, AeroTech employees Robert Rosenfield and Allen Paradis have traveled to Jacksonville, Texas to assist Bob Ellis with production there. Unfortunately, product shipments are anticipated to continue to lag behind schedule until the Utah facility is fully operational.

AeroTech appreciates its customers' patience as it continues to look forward to realizing its goal of resuming full production at the earliest opportunity, and filling all backorders in the shortest time possible thereafter.

SANDIA-SANDHAWK

Approximate 1/8 Scale Sport Model for 29mm Motors
Plan 020199, Designed by Mark Kotolski (NAR 35707, TRA 3609)



Parts List:

A. LOC PNC-152 Nose cone
B. LOC BT-1.52 x 7" Payload Tube
C. LOC BT-1.52 x 24.75" Body Tube
D. LOC CR-1.52-1.14 Centering Ring (2 needed)
E. LOC BC-1.52 Bulkhead Coupler
F. LOC MMT-1.14 x 6" Motor Tube
G. Launch Lugs, 1/4" x 1" (2 needed)
H. 1/8" Plywood Finstock
I. Cable Shock Cord Mount
J. 3/8" x 10' Elastic Shock Cord
K. 18" Nylon Parachute

Specifications:

Length	40 7/8"
Diameter	1.6"
Weight	13.6 oz
CP	25 13/16" from base of nose cone

Recommended Motors:

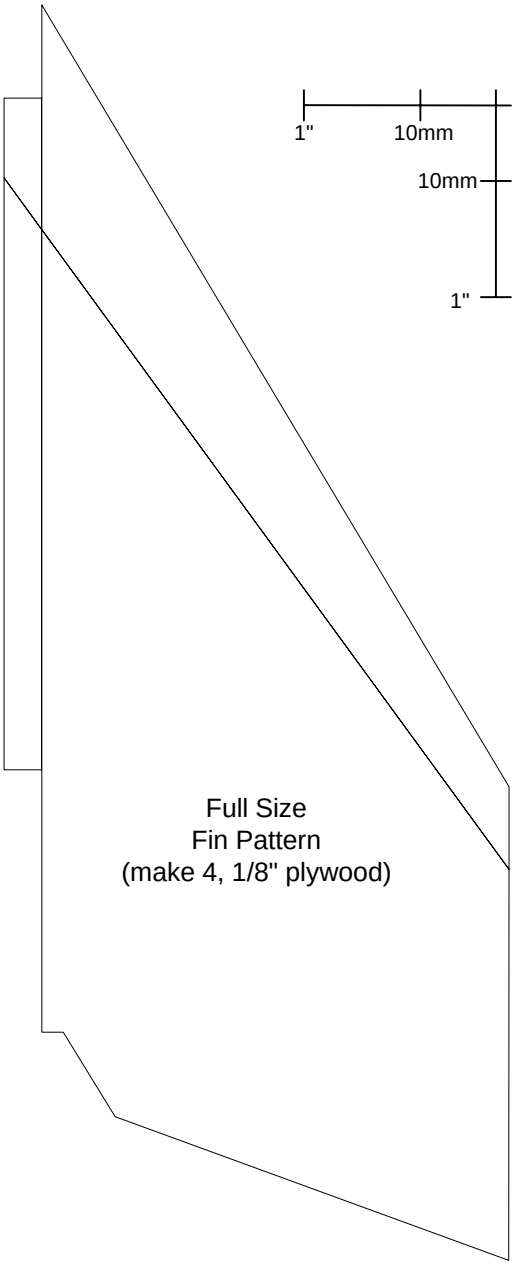
E16-4	E23-5	F20-7	F25-9	F40-7
F50-9	G40-10	G64-10	G80-10	

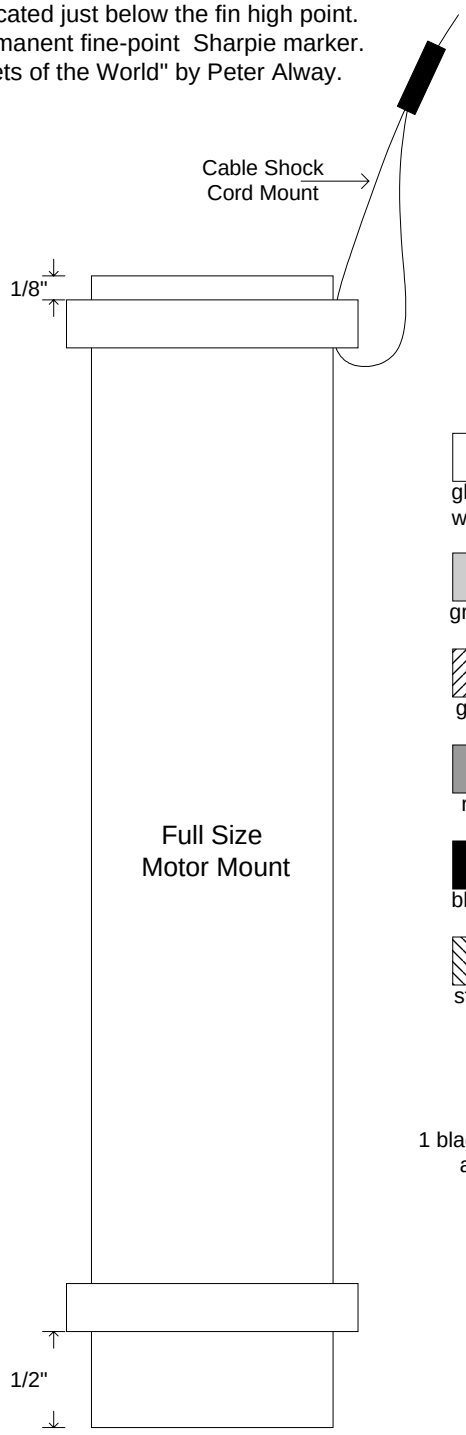
Notes/Instructions:

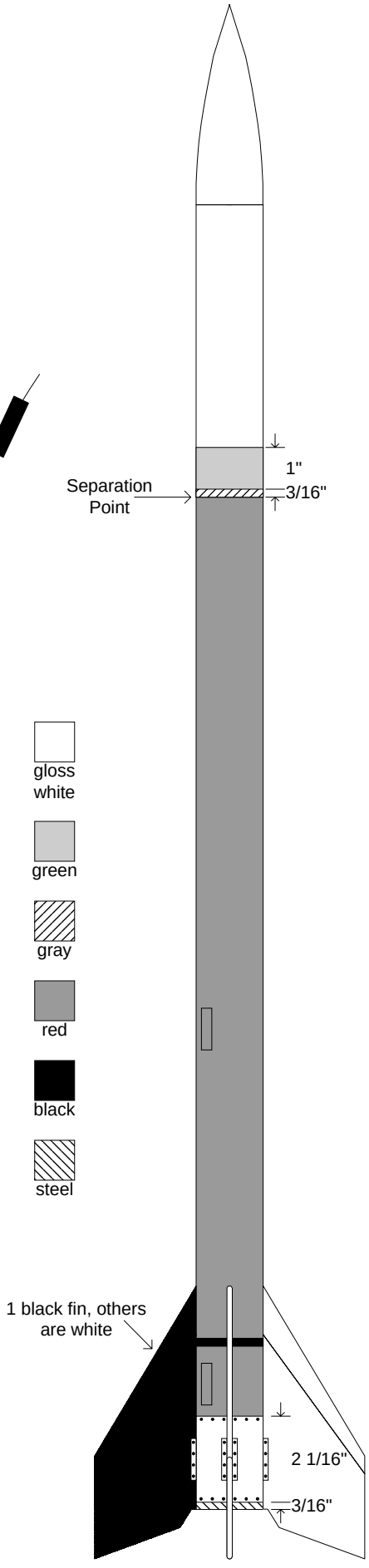
- Assemble the motor mount as shown in the diagram. Build in the cable shock cord mount by attaching the cable to the upper centering ring before epoxying it in place. The length of the cable should not extend past the end of the body tube when installed.
- Assemble the bulkhead coupler as per LOC instructions. Epoxy this into the 7" payload tube.
- Friction fit the nose cone to the payload tube.
- Mark the main body tube with four fin lines. Mark out the fin lines for the fin slots. The slots are 1/8" wide and 3.5" long. The rear of the slots are 1 3/8" from the end of the tube. Cut the fin slots with a sharp blade.
- Epoxy the motor mount into place. The end of the tube should be even with the end of the body tube.
- Draw a line centered betwen two fin slots for the launch lugs, about 15" long.
- Apply epoxy to the fin root tab and set the fins into their slots. Be sure all of the fins are straight.
- Apply external epoxy fillets to the fin/tube joints.
- Epoxy one of the launch lugs to the line you drew so that the bottom of the lug is 2.5" from the motor end of the body tube. Epoxy the second lug 11" up the line from the first lug. Ensure that both of the lugs line up with each other. Apply epoxy fillets to both lugs for strength.
- Tie the elastic shock cord to the cable mount. Attach the other end to the eyebolt on the payload section.
- Attach the parachute to the eyebolt on the payload section also.
- Construction is now complete.

Finishing and Details:

- Seal and sand the fins using the products and methods of your choice.
- Give the entire model a good initial finish of flat white and let dry.
- Spray paint the entire payload section gloss white and let dry.
- The band on the bottom of the payload section gray and 3/16" wide.
- The green band is 1" wide and was painted with Testors Metallic Jade paint.
- Mask off all the fins so they will not be painted. Spray the entire main airframe red, or red-orange. When dry, remove the masking from the fin **left** of the launch lug (when viewed with the lug directly in front of you).
- Mask off the body tube around the left fin as described above, and paint this fin black.
- The three remaining fins will remain white.
- The bottom of the tube between the fins has a 3/16" silver (steel) band.
- Above the silver and is a 2 1/16" section of white. There is also a 1/8" x 1" strip on each fin and tube area to simulate the attachment plates.
- The simulated fasteners are gold.
- There is a 1/8" wide black band between the fins located just below the fin high point.
- The high point on the fins was simulated with a permanent fine-point Sharpie marker.
- If more details are desired, refer to the book "Rockets of the World" by Peter Alway.







Space Launch Report for July-August 2002
by Tim Johnson

Seven unmanned rockets powered into space during July-August, 2002. They orbited one NASA spacecraft, six commercial satellites, and three military payloads.

Ariane 5 and Proton K each flew twice. Delta 2 and Kosmos-3M flew once. But Lockheed Martin's Atlas V attracted the most attention with a completely successful inaugural liftoff from Cape Canaveral on August 21.

Atlas V Inaugural
On August 21, the first Atlas V successfully carried 3,905 kg Hot Bird 6 into geosynchronous transfer orbit (GTO) from rebuilt Cape Canaveral Space Launch Complex (SLC) 41. The rocket, serial AV-001, was a 401 model with no strap-on solid rocket motors. It used a 3.81 x 32.46 meter structurally stable common core booster (CCB) powered by a throttled, twin thrust chamber Russian RD-180 LOX/kerosene engine that produced 3.8 MN (390,000 kgf) thrust at liftoff. The second stage was a 3.05 x 12.68 meter single-engine Centaur, flown for the first time on Atlas 3B earlier this year. It was powered by a single 99.2 kN (10,113 kgf) LOX/LH2 RL10A-4-2 engine. A 4.2 meter diameter payload fairing topped the rocket.

The core booster, developed for the U.S. Air Force Evolved Expendable Launch Vehicle (EELV) program, is the first all-new U.S. expendable launch vehicle since Saturn 501 launched Apollo 4 35 years ago. The stage is a clean-sheet design with little resemblance to ICBM-based Atlas and Titan stages.

The first Atlas V during a successful lift-off from the Cape (Lockheed Martin photo)

The 334,546 kg, 58.3 meter-tall rocket rose slowly from its rail-mobile launch platform, taking a 10 seconds to clear the launch platform umbilical tower. During the four-minute first stage burn, the efficient RD-180 consumed 284,453 kg of propellant. Centaur then burned for about 11 minutes to put AV-001 into a parking orbit. After a 9-minute coast to the equator, Centaur re-ignited for a 4-minute burn that pushed the stage and payload into GTO.

Atlas V is designed to roll out from the SLC 41 Vertical Integration Facility (VIF) to the launch pad less than 24 hours before launch. It is the off-site checkout of flight stages in the Atlas Spaceflight Operations Center (ASOC), not the "clean pad" itself, that speeds launch pad turnaround.

The Ariane 5G "City of Charleroi" rolling out to pad ELA 3. (Arianespace photo)

Arianespace
Kourou maintained its 2002 world's busiest space port status into August as Arianespace launched two Ariane 5G rockets from ELA 3. L512/V153, named "City of Charleroi," put 4,100 kg Stellat-5 and 1,620 kg N-Star C into GTO on July 5. L513/V155 put 2,720 kg Atlantic Bird 1 and 2,000 kg MSG 1 into GTO on August 28. V155 was the ninth Arianespace mission of 2002 and the third Ariane 5.

Proton
Krunichev's Proton flew twice from Baikonur. A Proton-K/DM5 used two fourth stage burns to put 2,600 kg Kosmos 2392, a military observation satellite, into a 1500 x 1836 km x 64.4 degree orbit from Area 81 Pad 24 on July 25. A Proton-K/DM3 boosted 4,658 kg Echostar 8 into GTO from Area 81 Pad 23 on August 22 for International Launch Services. The Block DM3 fourth stage performed three burns on this flight. It was the 25th consecutive Proton success.

Contour
Delta 292, a 7425 model with four strap-on solid rocket motors and a Star 48B third stage, launched NASA's Comet Nucleus Tour (Contour) spacecraft from Cape Canaveral SLC 17A on July 3. Contour, designed to fly past several comets during its 6-year mission, was initially injected into an elliptical 200 x 106,689 km x 29.7 deg phasing orbit. On August 15 Contour's Star 30 solid motor ignited at perigee to push it into solar orbit, but something went wrong near the end of the burn and Contour was never heard from again. Telescopes spotted several fragments heading into deep space on Contour's planned trajectory.

Kosmos-3M
On July 8, a Kosmos 3M carried Kosmos 2390 and 2391 into 1500 km x 82.5 deg orbits from Plestesk, Russia. The rocket's hypergolic second stage re-ignited at first apogee to circularize the orbit. The military mission of the satellite pair was unknown.

Space News
NASA grounded its space shuttle fleet for repair of cracked orbiter propellant flow lines and of cracked bearing sleeves on two crawler transporters. The 37-year-old octal-caterpillar transporters shoulder the massive mobile launch platforms between VAB and launch pads.

NASA's TDRS-I is crawling its way toward geosynchronous orbit. Launched March 8 by an Atlas 2A, TDRS-I stalled in GTO when one of its two fuel tanks failed to pressurize, preventing fuel flow to the engine. Boeing/Hughes engineers found a way to "back" pressurizing gas into the bad tank from the good tank through the propellant feed line in small increments. The process is slow, but seems to be working.

*(**Space Launch Report** continued on page 9)*

First flight Delta IV unveiled during July RF testing at LC 37B. (Boeing photo)

2002 Make-It Take-It
text and photos by Jeff Pleimling

For the second year in a row, the International Model and Hobby Expo (formerly known as the RCHTA show) was held in early September. Until this year, the hobby show always had the weekend open to the public after a week of being open only to retailers and distributors. This year they cut the number of public days down to one - Sunday, September 8th.

The hobby show also includes Make-It Take-It booths, places where anyone can go and build something sponsored by one of the vendors at the show. As it has done for many years, NIRA ran the Rocket Make-It Take-It booth with Quest generously donating the Viper kits that were built at the show. Showing off his excellent organizing skills and years of experience, Mike Jungclas once again led the NIRA effort.

As with last years show, Quest supplied us with their Viper kits - an excellent choice for the quick building time needed for the hobby show. Because of the shortened show and the smaller turnout from last year, Quest supplied us with about 450 kits to build.

Dane Boles of Quest (center) talking with Judy Kaplow and Mick Junglas

NIRA has helped to build over a thousand kits in a weekend at prior hobby shows, but between having only a one-day show and last years lower turnout we couldn't tell if we'd have too many kits or if we'd run out by lunch.

Our booth was sandwiched with several other Make-It Take-It booths at the back of the show. Unfortunately, we quickly discovered that the layout of the booth meant that it would be inconvenient, if not impossible, to use two of the table we were given. As in years past, however, we were able to work around this annoyance.

It usually takes a little while for people to find their way back to the booth - but small groups let us get used to the layout.

The show was scheduled to open to the public at 10:00, but they opened the doors just after 9:30 due to the crowd waiting outside. This seems to happen every year so Mike already had everything organized and waiting to go. It usually takes a while for the crowd to filter back to where we're located, but this year we had very few people for about the first hour. At this point I was starting to think that we'd have several boxes of kits left over.

At about 11:15, however, the pace really picked up and we had a constant flow of kids and parents making rockets for the rest of the day.

We actually built the last rocket about an hour before the show closed. By this point the crowd of people had cleared out and we only had to send away a couple of disappointed people. During cleanup we calculated that we built about 435 kits with around 15 being used for spare parts.

Even with a single day, NIRA had plenty of members turn out to help introduce kids (and parents) into our hobby. Thanks to everyone for making this another successful event!

Congratulations Are In Order
Message from the NAR President
(from www.nar.org)

The 2001-2002 competition season came to end this month at NARAM-44 in Waco, Texas. Thanks to Scott Hunsicker, Contest Director, and his team from the DARS Section, who ran an excellent Championships!

Our 2002 National Champions are as follows:

A Division (under 14)

Nat. Champion	Mary Wolf	12,841 points
Res. Champion	Sarah Wolf	11,199 points
3rd Place	Kindra Bittle	9,305 points
4th Place	Kris Bittle	8,502 points

B Division (14-18)

Nat. Champion	Katy Buckley	9,917 points
Res. Champion	Jonathan Stenvall	9,864 points
3rd Place	Matt Leveron	9,201 points
4th Place	Alex Brouccoleri	6,260 points

C Division (over 18)

Nat. Champion	Chad Ring	10,476 points
Res. Champion	Steve Murphy	8,575 points
3rd Place	John Buckley	6,765 points
4th Place	Rod Schafer	6,662 points

Team Division

Nat. Champion	Chedder 1++	10,180 points
Res. Champion	The Good, Bad and the Ugly	8,682 points
3rd Place	Bumbling Brothers Flying Circus	7,950 points
4th Place	Meta Stable	7,082 points

Sections

Nat. Champion	Laünch Crüe	62,116 points
Res. Champion	WOOSH	60,132 points
3rd Place	NARHAMS	48,662 points
4th Place	CRASH	32,653 points

Special Awards

LAC Newsletter Award (for the outstanding newsletter published in 2001-2002 by an NAR section)

COSROCS, Greg Elder, Editor

Honorable Mentions to the NIRA, SOJARS, NARHAMS, PSC, and ROCI Sections

Gregorek Memorial Craftsmanship Award (for outstanding craftsmanship in an unannounced A Division event)

Sarah Wolf

NAR Service Awards

NAR President's Award (for outstanding volunteer service in the past year as seen by the NAR President)

Mark Morley, AR, for his work on the NAR Educator CD-ROM

G. Harry Stine Lifetime Achievement Award (for outstanding service to the Association over an extended period)

J. Patrick Miller (former NAR President)

Section of the Year

CATO #581, Noank CT

Congratulations to all winners!

Mark B. Bundick, President
National Association of Rocketry

*(**Space Launch Report** continued from page 8)*

NASA's Aqua spacecraft, launched May 4 by a Delta 2, is fully functional after overcoming some early problems.

Testing of Boeing's first EELV, a Delta IVM+ (4,2) model with two strap-on solid boosters, progressed at Canaveral's SLC 37B. Initial LOX tanking occurred August 1. The first Wet Dress Rehearsal (WDR) took place on August 26. A second WDR, planned for mid-September, would end with a Flight Readiness Firing (FRF) of the RS-68 LOX/LH2 core stage engine. Launch is scheduled for early October.

Atlas V is now in business, but it will take Lockheed Martin several years to fly off its inventory of six Atlas 2AS, seven Atlas 3, five Titan 4B, and three Titan 23G rockets.

Confused Stages – Stage 27
by Jonathan Charbonneau

Tom builds a rocket that is designed to fly best on a D3-7w engine and flies it on this engine. Syed builds the same rocket and flies it on a D21-7t engine on the same field and on the same day. Tom's rocket nearly 'cruise missiles' and crashes while Syed's rocket flies nearly straight, easily rivaling Tom's rocket. Tom, frustrated, cries, "What gives? I used the recommended engine and my rocket crashed but Syed used an engine of a different type and gets a flawless flight."

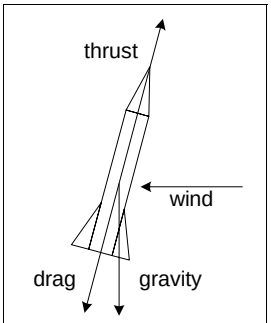


Figure 1: Powered flight

Can you figure out what caused the above anomaly? Think about it for a minute before reading further but bear in mind that both of the above parties have built identical rockets the same way correctly.

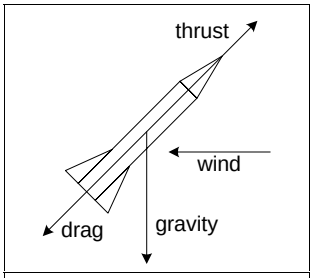


Figure 2: Just before burnout

Did you say, "Blame it on the wind."? If so, you've hit the nail on the head. Wind and weathercocking is the subject of this stage.

Weathercocking is the tendency of a rocket to turn its nose into the wind. The stronger the wind, the more sharply the rocket weathercocks. One of the best ways to minimize this effect is to fly on calm days. No wind, no weathercocking. This isn't always possible, though. The next best thing is to use a high thrust engine, as Syed has done above.

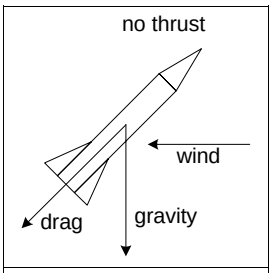


Figure 3: Coasting Flight

The high thrust part of the reason, but the main reason high thrust engines work better then long burn engines on windy days, even in rockets specially designed to fly best on long burn engines, is the fact that they have short burns.

To understand why this is, a 'crash' or shall I say 'prang' course on physics is in order. Some rocketeers believe weathercocking occurs only in powered flight. That's a myth, it occurs during coasting flight too, but it's the weathercocking that takes place during powered flight that markedly affects the rocket's flight.

In powered flight, there are three main forces acting on the rocket: gravity, drag and thrust. Weathercocking has no effect on gravity, because gravity always acts down. It does not affect drag either, because drag always acts against the direction of the rocket's motion relative to the air. Thrust, on the other hand, is affected by weathercocking because its line of action is dependent upon the rockets orientation. As the rocket weathercocks, the direction of the engine's thrust changes, becoming less vertical and more horizontal. It is only the vertical component of thrust (thrust • cos Ø) that contributes toward the rocket's altitude. The horizontal component (thrust • sin Ø) is wasted. See drawings.

A high thrust engine provides more speed at launch. This causes the rocket to arc on a larger radius as it weathercocks. The short burn of a high thrust engine causes powered flight to end before the rocket can weathercock too much, keeping most of the thrust and impulse vertical.

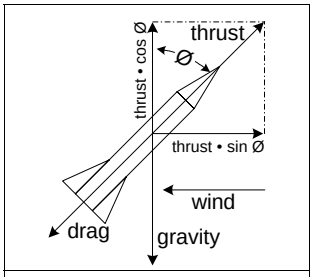


Figure 4: Thrust Components

In coasting flight, the rocket still weathercocks, but because there's no thrust, it has little effect on the rocket's flight. Big public firework displays consist not of rockets as popularly believed. They use shells so that their flight is all coasting flight. It is easier to account for the wind this way.

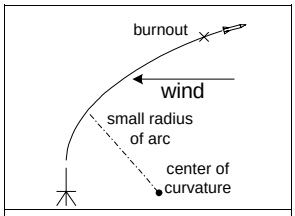


Figure 5: Long burn engine

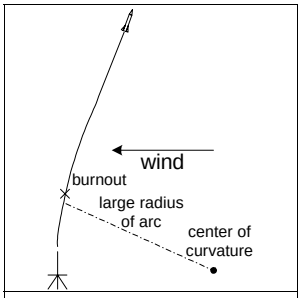


Figure 6: High thrust engine

FlisKits, Inc. Grand Opening!
ROL newswire - www.rocketonline.com

FlisKits, Inc., is the newest addition of model rocket kit manufacturers to hit the market with a small but growing fleet of model rocket kits. Based in southern New Hampshire, FlisKits specializes in model rocket kits, accessories and supplies.

Jim Flis (President and founder) says "We want to present a company and product that brings back tot his hobby that sense of wonder and excitement that all of us older rocketeers remember from our youth," refereeing to their use of basic raw materials such as balsa nose cones, blank balsawood sheets and provided fin patterns, requiring the use of basic tools and lessons learned from earlier model rocket building experiences.

Jim Flis, notes that "our slogan is 'aim for the sky and try not to miss!'. It is a reminder that our hobby is simply FUN and we hope that your experience at FlisKits, and with our products, is the same."

Opening on September 16th, FlisKits presents a small but variety packed collection of kits with new kits ready for fall release. At the time of this release, FlisKits has 9 kits that will be available on their September 16th opening date, with 3 more kits slated for release within the first week of operation.

"We would like to be able to announce new releases (kits, accessories and supplies) every 4-6 weeks, if we are able," says Jim.

FlisKits was founded by Jim Flis and Brian McCarthy, both of New Hampshire. Jim has been involved in model rocketry since 1963 with Brian joining our ranks in 1969. Jim and Brian met when Jim founded the Goddard Society model rocket club. They, and others from the Goddard Society became regular attendees of the Pearl River MODROC conventions in New York with Jim designing and kiting the anniversary kits in the later years and both Jim and Brian offering their expertise in their lectures, classes and demonstrations. The Goddard Society, with Jim's lead, went on to found and co-host the New England Model Rocket Convention (NEMROC) in the 80s and early 90s, again designing and kiting anniversary kits for all attendees. All of Jim's designs have been well received at these conventions and make up a part of the initial offerings by FlisKits, Inc.

FlisKits also wish to announce their unique product announcement strategy. "The first 100 of each kit manufactured by FlisKits will be numbered 1 through 100 and the kits numbered "01", the first of each, ever manufactured, will be put up for auction on eBay to help announce them," Jim explains. For additional details of this offer, you can visit the FlisKits web site at http://fliskits.com/

Currently, FlisKits only accepts mail orders, but hopes to have an operational e-store opening on their web site soon. Jim and Brian are hopeful for the future of this new company as well as the health of the hobby. Jim emphasizes "We want to hear from rocketeers. We want to know what they want in a model rocket company and kit and look forward to receiving feedback and suggestions about our product, company and web site."

[editors note: they have recently added an online shopping cart that uses paypal payments]

Welcome to the Club!

Jacob Acevedo, John S. Gronski, Kurt, Karen, Aaron and Matthew Gunther, Matt Miller, Charles and Janice Swindler, Roderick White and James Zacher have all joined NIRA in the past few months. Welcome to the club!

(If I somehow missed your name, please let me know!)

For Sale

For Sale: 12v (2x6V) 10AH Panasonic Gel Cell. Used in a computer UPS since 1998, in excellent condition. $10 donation to the NAR legal fund. See Bob Kaplow. (about 10 sets available)

For Sale: the last of the Peter Olivola collection. No reasonable (or unreasonable?) offer refused! See Bob Kaplow.

NAR 2003 National Events

NARCON-2003 - NAR's National Convention. March 21-23, San Diego CA.

NSL-2003 - Three-day National Sport Launch. May 24-26 in Clarks Summit PA.

NARAM-45 - Week-long competition meet. Date and location to be announced.

The NAR is pleased to announce that its annual National Convention (NARCON) for 2003 will be held in San Diego, CA, March 21-23, 2003. Sponsoring section is DART, and the event directors will be Mike Jerauld and Joanna Woerner. Mike can be reached at mjerauld@tns.net. A website will be opened soon with more details.

Trip Barber,
NAR National Events Committee Chair

I am very pleased to announce that the North Eastern Pennsylvania Rocketry Association (NEPRA), NAR section 614 will be hosting the NAR 2003 National Sport Launch. It is imperative that you book hotel rooms early. This is a very popular tourist destination during holiday weekends and Memorial Day is no exception.

We have a great field with a 10,000 ft waiver and 28 pads for your launching pleasure.

For more information, go to www.nepra.com/nsl

Drake" Doc" Damerau,
President NEPRA, NAR Section 614

NAR Standards &Testing News

R82 Motor Desertification 11 July 2002

The following motors, while not contest certified, will be decertified for general use three years from July 1, 2002 (i.e. July 1, 2005) due to a cessation of production by their manufacturer (Kosdon East).

Kosdon:
- G40-P
- G75-7
- H70-P
- H135-11
- I120-P
- I130-5
- I145-7
- I150-6
- I170-11
- J230-8
- J275-6.5
- K350-9
- K450-12
- K700-18
- K777-11

Jim Cook, Secretary for
NAR Standards & Testing

Jack Kane, Chairman

R83 Motor Desertification Policy Change 14 July 2002

Effective immediately, NAR general use certifications for model rocket motors and high power rocket motors will expire at the end of the calendar yet (December 31). Contest use certifications will continue to expire at the end of the NAR contest year (June 30). There is no need to tie these two dates together. This change allows rocketeers the entire last flying season to consume remaining stocks of motors being decertified for general use.

A revised table of motors currently scheduled to be decertified for general use follows below. (Note: Motors currently thought to be on production hiatus or not yet released are not yet included in this table.)

Decertified as of December 31, 2002

Aerotech:
- D15-8; E11-4; E16-10; E18-10; E28-8; F39-3T
- F25-4,6,9 ("Classic" propellant only)
- G40-5,7,10 ("Classic" propellant only)

Decertified as of December 31, 2003

Estes:
- A10-0T
- Quest:
- B6-0,2,6
- C6-7

Decertified as of December 31, 2004

Estes:
- F62-4,6,9
- G70-5,7,10

Decertified as of December 31, 2005

Apogee:
- 1/4A2-2,4
- 1/2A2-2,4,6
- A2-0,3,5,7
- B2-0,3,5,7,9

Estes:
- C5-3

Kosdon:
- G40-P; G75-7; H70-P
- H135-11
- I120-P; I130-5; I145-7; I150-6; I170-11
- J230-8; J275-6.5
- K350-9; K450-12; K700-18; K777-11

Rocketvision:
- E15-4,7
- F32-5,10,15
- F72-5,10,15
- G55-5,10,15

Jim Cook, Secretary for
NAR Standards & Testing

Jack Kane, Chairman

R84 New Motor Certifications 29 Aug 2002

The following motors have been certified by NAR Standards & Testing for general use as high power rocket motors effective August 25, 2002. They will not be certified for NAR contest use as they are not model rocket motors.

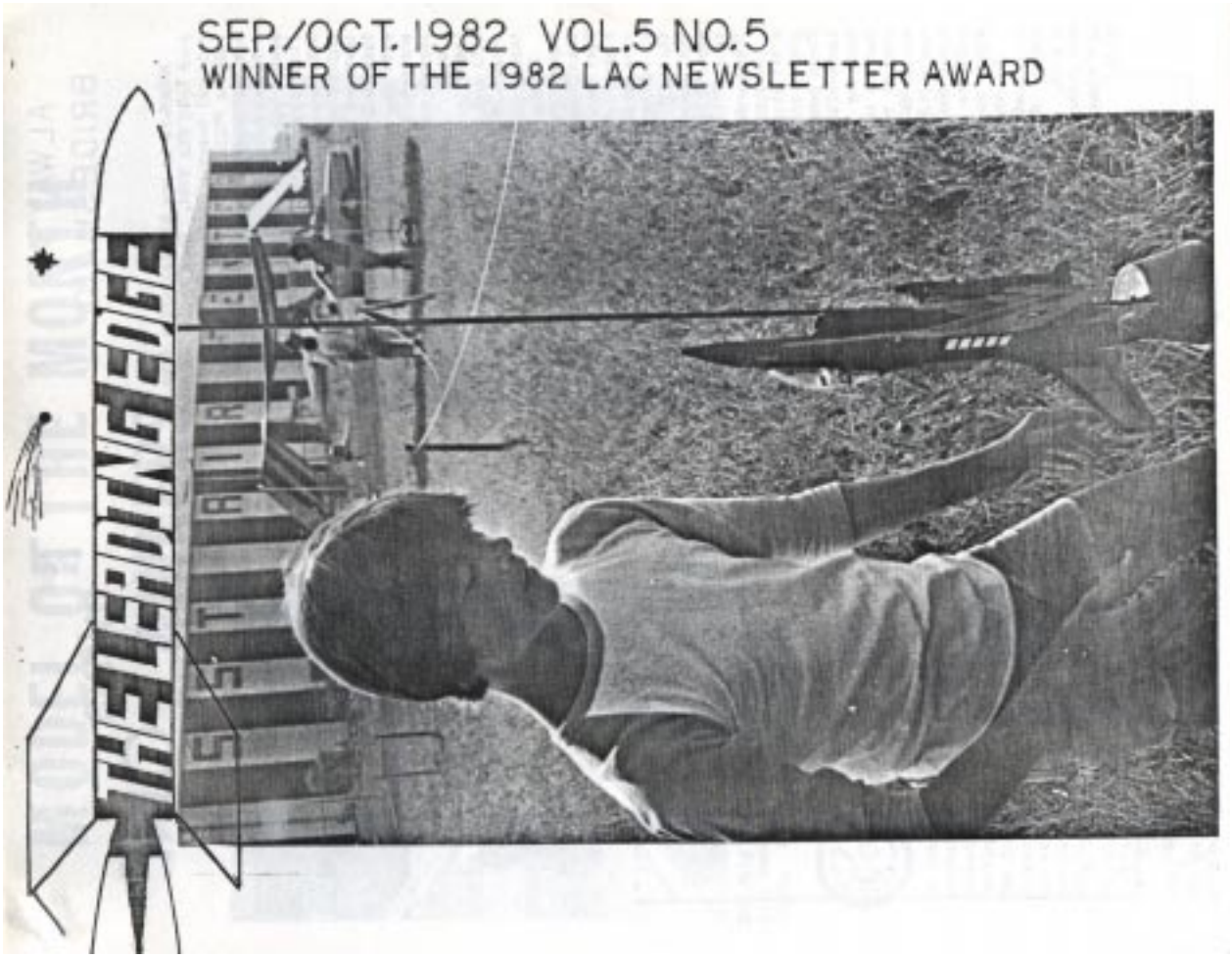
The following are reloadable motors, certified only with the indicated size casings and manufacturer supplied nozzles, end closures, delays (or smoke devices), and propellant slugs.

Animal Motor Works:
- 54mm x 326mm:
  - J450ST-P (1070 Ns total impulse, 533.1 grams propellant mass)
- 54mm x 492mm:
  - K950ST-P (1860 Ns total impulse, 887.4 grams propellant mass)
- 75mm x 497mm:
  - L777WW-P-SM (3140 Ns total impulse, 1762.3 grams propellant mass)

Propellant Key:
- GG = Green Gorilla
- ST = Super Tiger
- WW = White Wolf
- SM = Produces 10 to 15 seconds of smoke after burnout
- P = Plugged Motor

Jim Cook, Secretary for
NAR Standards & Testing

Jack Kane, Chairman



September/October 1982 - It's the 25th year of the Leading Edge and this is the front page of the issue from 20 years ago. The photo is of Kevin "Killer" Kuczek preparing his first place Plastic Model Conversion rocket at NARAM-24.

THE LEADING EDGE

Jeff Pleimling, Editor
245 Superior Circle
Bartlett, IL 60103-2029

This may be your last newsletter! Check your label for the expiration date.
If it says Membership Expired or Membership Expiring this will be your last newsletter!