THE LEADING EDGE

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

Volume 17, Number 3
May/June 1994

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.

June 3 - Regular Monthly Meeting. MRFF Planning Session.

July 1 - Regular Monthly Meeting. Bong Planning Session.

August 5 - Regular Monthly Meeting. Bong Planning Session.

OTHER ITEMS OF INTEREST

June 4 - Northern Illinois Modeler's Invitational, Holiday Inn, 3405 Algonquin Rd, Rolling Meadows. Contact Ed Nowak at (708) 913-5470 for more information.

July 16 - High Power Launch (9am - 6pm), Chanute Aviation Center, Chanute, IL. Contact Greg Smith (217) 352-9655.

July 23-28 - NARAM-36, Houston, TX. Contact Terry White, 5807 Bermuda Dunes, Houston, TX 77069-1805.

August 14 - Demo Launch at Fox Valley RC Airshow. Contact Bob Wiersbe (708) 690-5442 if you're interested in helping.

STAFF

Bob Wiersbe - Editing Addict
Mark Bundick - Shuttle Launch Addict
Lawrence Bercini - Shutter Addict

CONTRIBUTORS

Lawrence Bercini, Mark Bundick, Ric Gaff,
Ken Hutchinson, Cindy Ingrum, Bill Piva, Kevin Smith

Captain Kirk poses with Jenny and Lizzie Bundick at the Adler Planetarium during the March NIRA outing. The management would like to apologize for not listing the event in the newsletter, and we promise to keep you better informed of upcoming events in the future. This was due to an administrative oversight on our part, and will not be repeated. A full written confession by the offending individual is available for an undisclosed sum of money. Thank you.

On the cover - STS-59 (Endeavour) liftoff at dawn, with Jay Apt and the SIR satellite on board (story on Page 8). Photo by Karen Dillon.

1994 CLUB LAUNCH DATES

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

June 18, 19: **MRFF 94!** Pratts Wayne Woods, range open from 9am to 6pm on both days. Activities at local hotel on Saturday evening.

July 17: 25th Anniversary of the Apollo 11 flight, come out and fly a Saturn V (or two) to celebrate!

August 13: **NIRA HPR Launch** at Bong, Wisconsin. Keep watching the newsletter for more information! For directions and maps to the site, call Steve Koszuta (414) 481-6341.

August 21: Club Launch.

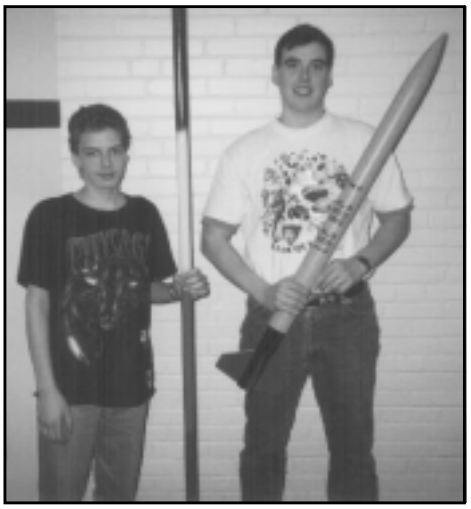
Sept 5: 31st Annual Labor Day Launch. Be there!

Your address label contains an item of vital information, your NIRA membership expiration date! Please check your expiration date and renew your NIRA membership before it expires. You will not receive any more newsletters after your expiration date has passed!

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, photos, other newsletters, and news items of interest should be sent to Bob Wiersbe, 1835 Shetland Drive, Wheaton, IL 60187 (or electronically via Internet to hrbob@ixstar.ih.att.com.) Photos will be returned, other material returned if requested. Send membership applications (dues: $3/year, including a six issue subscription to the Leading Edge) and 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 Sport Rocketry with proper credit given; all other uses require written permission of the Northern Illinois Rocketry Association. Tip #112 - Do Not Taunt Happy Fun Ball!

MODEL OF THE MONTH

Ron Husak holds with what looks like a Mean Machine (but knowing Ron, it's something else), and Steve Koszuta shows off his LOC ROC 4. Congratulations to the March winners!



Ric Gaff Photo

What's All This High Power Stuff Anyway?

by Ken Hutchinson

I wimped out. I confess. I'm standing on the broken concrete of an abandoned runway at the former Chanute Air Force base where the March high power launch of the Central Illinois Aerospace club is in progress. A J275 and a LOC Magnum are waiting in the truck. I COULD start the 1994 flying season in spectacular fashion ... I think I'll ease into it with a cluster of four C6's instead. Besides, the wind seems a little strong, don't you think?

The Black Adder flies and lands safely in my outstretched hands instead of on the cruel concrete. There is no denying it now, the wind has died almost to a calm. It is time to prep the Magnum.

I carefully assemble the J275 from a collection of sleeves and O rings and propellant grains. High power rocketry is increasingly a reloadable motor game because of cost. Fly a J275 twice and you save about $50 over the cost of two similar disposables. Each flight after that saves another $50. The casing hardware is substantial and each of the two propellant slugs in a J275 weighs as much as a Super Big Bertha with its D12. It takes about ten minutes to complete the motor. It doesn't pay to rush, an improperly assembled motor can destroy itself and the rocket you put it in. The closest humans will be in no danger however, the safety code requires us to stand 200 feet away.

The finished motor gets bolted into the Magnum. The bolts prevent the motor casing from kicking free when the parachute deployment charge fires. After all you can't achieve the reloadable motor cost savings if you lose the casing and you don't want the rocket and motor casing to free fall back to earth. High power rockets are larger and stronger than their Estes cousins. The cardboard and plastic parts are thicker, heavy aircraft plywood replaces balsa wood, slow cure epoxies replace white glue. Otherwise they aren't so very different from what you may be used to. An experienced Estes kit builder can easily assemble one of today's well engineered kits. Build and operate them according to the manufacturer's instructions and success is your likely reward.

All this was done under the influence of a slight adrenaline rush that makes my legs feel a little weak as I carry the completed rocket towards the check-in table. This is a certification flight, you see. Rocket motors with more than 120 Newton seconds of total impulse cannot be sold to the general public. Thus HPR fliers must be certified before they can purchase the larger motors. In the NAR a step by step process is used, to purchase H motors you must make a certification flight with a G motor, to purchase I motors you must certify with an H, and so on. Presently the NAR ladder stops at the K rung, in the future it may extend to O motors. A successful flight will earn me certification for K motors and tests always make me nervous.

The LCO, Greg Smith, tells me I will be the first customer for their new remote high power launch controller. The first launch attempt produces no results. Out to the pad to check the ignitor but look, the bright yellow heavy duty extension cord that runs between the LCO table and the remote pad has come apart at a joint. Back at the flight line, nerves build for another countdown, still nothing. "Helps if you arm the pad!" announces the LCO as he flips one of his switches and begins a third countdown. I'm trying hard to stay calm, smiling, accepting the gentle ribbing with a grace I don't really feel. "Maybe it doesn't" opines an onlooker as the third countdown reaches zero and still no joy. These big motors are strange beasts. Greg begins to turn in his chair to tell me to check the ignitor when a roar erupts, the fire has been lit after all, the boost is textbook perfect.

"... nine, ten ..." the parachute should be out by now but I know I am counting too fast "... eleven, twelve ..." and there it is. Sweet success. The Magnum floats down and lightly kisses, what else, the concrete. Slight damage to two fin tips. I carry the recovered rocket back through the warm congratulations of the crowd and begin to look for two senior NAR members to sign off on my certification form.

There is no denying that HPR is exciting and fun. Only a very few people would claim that it obsoletes its lower powered cousin, however. It is a great way to expand your rocketry horizons, or to accomplish a project that can't be done with lower power motors. It complements, but it does not replace the thrill of model rocketry competition, the look of joy on a child's face as a first Alpha leaps skyward, the lazy excess of a perfect summer afternoon 'wasted' with your friends at Community Park.

NAR S&T NEWS

NEW MOTOR CERTIFICATIONS
(Release 12)

The following motors have been certified by NAR Standards & Testing as of April 10, 1994 for general use as model rocket motors. They are all certified for contest use as of July 9, 1994.

All of the following are Aerotech reloadable motors, certified only with the indicated size casing and manufacturer supplied nozzles, end closures, delays, and propellant slugs:

Aerotech: 24mm x 70mm RMS 24/40 Casing:

F12-2J (43.2 N-Sec total impulse, 30.3 gm propellant mass).

F39-3T,6T,9T (50.0 N-Sec total impulse, 22.7 gm propellant mass).

AMENDMENT TO NAR S&T MOTOR DECERTIFICATIONS (Release 13)

The following motors will not lose contest certification on July 1, 1994 and remain certified for general use indefinitely. They were previously listed as being scheduled for contest and general use certification in a NAR S&T news release (#6) dated March 12 as they arrived very late for triennial recertification. They now retain certification.

Aerotech: E25-4,7; E45-4,8,12.

Note: The Aerotech E25-10 remains scheduled for contest decertification on July 1, 1994, but certified for general use for three years.

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

Jack Kane, Chairman

RetroRocket - NIRA in the Past

May/June 1984

Mark Schmit's spectacular photo of a Space Shuttle Launch was featured on the cover, while his article told us about all the fun of watching the 9th launch [Hmm - History repeats itself 10 years later. Ed.]. Larry Mika offered us a detailed construction article on the X-15 bird he'd designed and built.

Out Like a Lion (or April 1994 Club Launch)

by Bunny

A windy Community Park greeted NIRA flyers on April 17 to kick off the 1994 flying season. The breeze didn't hold down attendance. About 75 folks gathered to chat, and burn some motors. We had over 100 flights completed in around 2 hours or so.

Lawrence Bercini showed up early and got in lots of flying. He fell victim to the evil influences of the Thiels and ended up CHAD staging a lot of his stuff. A D12 and C6 combo really moved out his Alien Space Probe, but the biggest hit with the crowd was his Pyramid using, I think, twin C6's. Such wild behavior was well punished however, as a test flight of a "Pretty Boy" flexwing glider did a death spiral to the gleeful amusement of Ric Gaff and Bunny.

Jonathan Charbonneau had excellent flights on a wide variety of Estes kits. His Stinger flew well on B6-4's twice, as did a Skinny Mini on A10-3t's. A maiden flight of a V-3 on D12 power also pleased the owner and crowd.

Nate Anderson participated in the Patriot Parade with a mini version that flew nicely. His Warp II, converted to single stage last year when the lower stage engine mount failed, can now be reconverted to two stage flight. A landing in the lake separated the stages, and Nate is now interested in rebuilding. See? Every cloud (or lake) has a silver lining.....

Bill Piva wins the "bad luck" award for the launch. Nearly every flight card I reviewed had comments like "broken fin", "dinged two fins", etc. etc. None of this seemed to dampen his enjoyment of the launch, but it did seem unfair that he got all the fin problems! Bill tried a Zinger with B6-4 for NARTrek Duration, and his flight log included a THOY Hornet with an E15-4. More people should check out THOY's line of good kits.

Cindy Ingram won an Estes Omloid at last year's Labor Day Demo launch, and put in a good flight to kick off her rocket career. Bunny showed up with an XV-4, a rear engine canard BG with ejectable pod from a 1971 American Aircraft Modeler magazine plan. The glide started pretty steep, but pulled out to a respectable time. Jennifer Chaney continued her excellent and consistent flying with a Viking and Bandit, though she suffered her first cato with an A8-3 in the latter.

Bob Kaplow offered his usually mix of entertaining flights, starting with a marginally powered A10-3t Skywriter. He continued to tempt fate with a E15-P in his Happy Meal. Wowed the crowd by being very straight and high, even in the wind. One of the noisiest liftoffs came from his Graduator on an RMS D13-4, a flight which ejected right at peak.

Greg Roman has been bitten by the scale bug, if his flights are any indication. An Honest John with C6-5 was followed by a Patriot. Must have cared a lot about the latter as he substituted a rip-stop nylon chute for the one Estes had supplied. Greg also tried to finish out the 1993 flying season. His Defender with FSI D20-5 aboard had been prepped for November's launch, but never got off the pad. So Greg tried it here with core sample results.

A wave of clone kits hit our range, apparently independently of one another. Kevin Smith kitbashed a model into what he called the "Faux Arreaux". The D12-5 flight was perfect and recoverable on our field, something maybe not possible with the real Arreaux and E power. Mike Alterio also had an Arreaux II clone called "Arreaux II". Bunny wondered if he'd missed out on a yellow and black paint sale recently.

Now that Ken Hutchinson has a launch pad on steroids, he's getting good use out of all those capacitors. His Black Adder cluster made two flights, one on twin D13 RMS's and another on six A8-3's. Unfortunately his luck ran out on an Estes Impulse flight. The twin E15 powered flight had one cato out a major section of body tube. The remaining motor worked fine, but 6 seconds was too long a delay on only one working motor. OUCH!

The Slouber klan took up station at the far end of the line and fired for fun all afternoon. Kleve flew nice Nike Smoke and Honest John scale birds, Lionel used his original design, the "Thunderbolt", Rosella tried a Bailout with good results, and Steven closed with another original, the "Antari".

Those amazing flying Thiels kept skies full of rocket fodder. Ed chad staged his X15, a dubious choice for such action, but he got away with it anyway. His D12-C6 UFO reminded old timers of "Jedi" George Riebeshel's numerous efforts with the old Centuri UFO. A E25-4 powered Cheetah flight also was good for a few "wow! what's in that bird?" comments. Bill satisfied himself by trying repeatedly to get a photo of us with his Astrocam. The C6-7 and winds never seemed to cooperate. His Super Mosquito scale up did nicely, but the D12-5 powered Super Big Bertha didn't have sufficient oomph, and pranged on the roof of the high school.

Bob Wiersbe batted 1 for 2 in the scale department, good for the majors, but bad for rockets. His Mercury Redstone flew nicely, but the D12 catoed his Black Brant II and fried the innards. But Bob can rebuild. His "Mantra-2" was "half of a Custom Rocket's kit", and flew well.

April was an excellent start to the season, with good flights despite the wind. Hope to see you at our next launch window opening!

Ric Gaff photo.

Bob Kaplow's CATO on a 1/2A6-0 didn't even get off the rod before spilling its guts. Child's play for Jennifer Chaney to recover.

Lawrence Bercini photo.

"And the rockets red glare!
Black Brant's bursting in air!"

Photos from the April 1994 NIRA launch

Bill Thiel displays his unique 3-stage model. He has had trouble, he says, getting the second stage to function.

Lawrence returns from one of his many trips into “Lake Lawrence”. (Ric Gaff photo)

Brennan Downes goes out on a limb to steal a meal from a rocket eating tree. (Ric Gaff photo)

Kaplow & Klan Klutch Krayon Kontraption - Krowds Kringe

Well, this explains it all.....

Art Peterson works intently on his multi-hued bird.

Tom Pastrick, Cindy Ingrum and Bill Thiel play “My bird’s bigger than your bird!”

Photos by Lawrence “Act like you don’t see me” Bercini, except where noted.

Kevin Smith is the unfortunate victim of “Rocket Chuck” gone wrong.

Target Photography Competition

A Proposed NARAM ARC Event

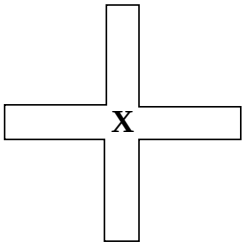
Address comments to:
Ted Mahler
Rt. 2 Box 63M4
Sherman, Texas 75090

Object:

To make an in-flight photograph of a ground target located a specified distance and direction from a point near the launch pad. This point, distance, and direction will depend on the flying field configuration and will be set by the TP (Target Photography) contest committee. Contestants may use any commercially available or homemade 110 flight camera. Any combination of A, B, C, or D engines may be used in the launch vehicle. as long as the total impulse remains D or lower.

Target Description:

An X constructed from two rectangles, each 2 X 16 feet crossing perpendicular at their centers. (Use two 4X8 sheets of plywood cut in half lengthwise then butted end to end, for each rectangle.)



Target coloring will be white with a black X, each leg 6 inches wide, painted across the 2 x 2 foot square made by the intersecting rectangles. Remaining area of the rectangles may be painted with the event name (You might want one name painted forwards and another backwards.) Supports under the target will make it level and hold the target approximately 1 to 2 feet above the ground.

Points: Highest score is 100 points.

Rules:

Each contestant will be issued one uniquely marked 110 film cartridge by the judge. Three images will be allowed, these may be three different flights or three images from the same flight. Whichever way is chosen, only the first three images will be judged. Film cartridges will then be returned and checked for the judges marking. TP committee will have the film processed overnight (all by the same vendor) and will then judge the prints. Highest scoring of the first three frames will be the official flight. Double prints will be made with one set being returned to the contestant and the other retained by the contest committee. Official results are based on the prints retained. TP judges decisions are final. An entry fee will be charged to cover film and processing.

Judgement Criteria:

Total event points; 100 based on 2 50 point categories:

* TARGET CENTERING: Max points = 50 Min points = 0

This is based on how far the center of the target is from the center of the print.

Centering points = 50 - (50 * DfC/DtE)

Where: DfC = Distance from Center. This is the distance of the center of the target image from the center of the print.

DtE = Distance to Edge. This is the distance from the center of the print to the farthest edge of the print.

* TARGET SIZE: Max points = 50

These points are based on target image size within the print. To receive any of these points the entire target image must be within the print.

Size points = 50 * (SoTI/MSoP)

Where SoTI = Size of Target Image. This is the length of the longest of the two rectangles that make up the target. Even though the actual target rectangles are equal in length, the rectangle images on the print may differ due to the angle from which the picture was taken.

MSoP = Minimum Size of Print. This is the size of the print measured across the shortest axis.

NOTE: Measurement units may be whatever are easiest to use as long as they are consistent.

Moosehart II

by Bob Wiersbe

On May 14th The Hobby-Works of Batavia hosted the 2nd Annual Moosehart Air and Water Show on the grounds at Moosehart. This year, NIRA was invited to demo rockets, joining RC and control line planes, kites, and RC boats.

NIRA members Mark Bundick, Ken Hutchinson, Bill Larry (and brother Brad), Michael Alterio (along with sons Tony and Vince), and myself were on hand to launch, load, and recover the dozens of models flown. [Thanks guys!]

The show opened at 10am with a roar! Bill Larry's Tomahawk took to the grey sky under the power of an Estes E15, surprising the many spectators who had gathered behind us. We followed that with a rack of five Patriots, powered by A, B, C, D, and E motors. The E15-7W powered bird really screamed, and drifted for what seemed like an hour before being lost in the direction of a lake.

The field was very small, not much bigger than 300' x 600', with trees all around and a lake to the north. But, due to NIRA experience, only 2 rockets would be lost to the trees (sorry, Lawrence!) and only 1 would drown in the lake (my 19 year old Shrike, sigh). Most of the credit goes to the Alterio Recovery Crew, these guys are pros at getting rockets out of trees! They must have recovered 6 or more from the branches of rocket eating trees.

Mark graciously took the first shift at the PA, and did his typical stupendous job. The rest of us were kept very busy prepping, loading, and recovering the models (or keeping track of which tree they were in). No prangs, and only 1 cato - Ken's Warp II with Bart Simpson inside (Bart was heard to comment - Bummer, Man!).

We did a pretty good job of mixing the motor types, given the small field and the wind direction (into the trees and towards the lake). You can't keep Bill from flying E's and F's, no matter what the field is like. Oddly enough, most of the models flown were scale models. Mike flew his V2 at least 3 times, and chipped in another Patriot, Bill flew a Tomahawk and Sandhawk (and lost the payload section when it separated), and I flew a Shuttle, Mercury-Redstone, Gemini-Titan, Nike-Apache, SCOUT, and several others.

After putting on a 50 minute show, we turned it over to the RC folks, then spent the next 2 hours getting ready to do it all over again. Many spectators hung around to ask questions and look at the models, and I know we rekindled interest in rocketry in several people.

Mark and Ken needed to leave before the

1pm show, but the Alterio's and Larry's stayed to help. We knew it would be a lot harder the second time around, since I'd have to MC and we were short 2 crewmembers. We got about 35-40 models prepped, and loaded the racks up with the first wave.

We opened the second show with a Super Big Bertha (or Broadsword, whatever it's called these days) on a D12, and the crowd loved it. We then did the Patriots again, minus the E15 model since it never returned. Bill kept the racks loaded, and the Alterio's were scrambling to recover them all (and they did get them all!).

For some unknown reason, we inadvertently moved up the power scale during the course of the show. Bill finished off his flights with an E15-7W in a Barracuda, and an E30-4T in a Cheetah. I decided to end the show on a high note, and put an F25-9W in my Mustang. The roar of that motor really wowed the crowd, and I got a real kick out of their reaction. After cruising to about 2000 feet, the X-form chute ejected (military surplus from American Science and Surplus in Geneva!) and the model landed less than 50 feet from the pad.

As we were packing up the equipment and getting rockets out of the trees, Tony Alterio walked up with one of my Patriots in his hand. He'd been out recovering other models and someone brought it up to him - it was the model I'd put the E15 motor in! I thought that it was gone for good, and was glad to get it back.

Jim Durow, owner of The Hobby-Works in Batavia and sponsor of the show, told me he was very impressed with the demo we put on. He commented that "..you know you're doing something right when you've got a crowd of spectators watching you, the RC pilots are watching you, and it's raining!"

Hobby Shop Spotlight: Pat's Hobbies & Crafts

by Bill Piva

Next time you're headed down the Tri-State Tollway, take the 95th Street exit east and head over to Pat's Hobbies & Crafts for a visit to the way hobby shops used to be. Not only will you be glad you ventured east of 294, but you will be surprised at the store's commitment to model rocketry in the southwest suburbs.

Pat's is a complete hobby store and is a throwback to an old time hobby store age when merchandise was stocked everywhere and the employees took time to give that extra effort. Manager Don Hendrick has taken that philosophy to integrate model rocketry into the stores' scheme, and not slight it like many hobby shops today.

My "guide" Maureen was gracious in giving me a tour of the rocketry area where I was met by an Aerotech Initiator. Quite a surprise to someone whose previous hobby store mega rockets were limited to the Big Bertha. I knew right then that things could only get better. The rockets are displayed peg board style in an "L" configuration and easily available for inspection. Pat's carries mostly Estes kits, but it was refreshing to find Flight Systems kits and two North Coast Rocketry kits amidst the display area.

Pat's is also a rocket collectors goldmine because they have some out of production kits available. Old Estes rockets such as Rascal, Gemini Titan, Eggspress and the Recruiter are waiting for some rocket collection guru to snatch them up. I also located a 70's era hand-held launch controller manufactured by MPC for only $6.49. Collectors please take heed, this has to be worth something or at least an interesting point of conversation at the next NIRA meeting.

Besides a wide range of kits, Pat's offers both rocket and engine bulk packs for that next building/launch session. Pat's also carries everything in accessories from engine mounts and body tubes to nylon chutes. I was also surprised to see a few packs of FSI 100's available.

I would highly recommend a visit to Pat's the next time you're in the Oak Lawn area. The store is nostalgic, the help is knowledgable, and the rocket selection is good. Plus the staff is willing to special order anything not in stock!

Pat's Hobbies & Crafts, Inc.
5730 W. 95th St. (2 blocks west of Central, north side of 95th)
Oak Lawn, IL 60453
(708) 424-6131
Hours: Mon, Thu, Fri 10am - 9pm
Tues, Wed 10am - 7pm
Saturday 10am - 6pm
Sunday 11am - 5pm

A Demo Well Done!

A Letter from a Satisfied Customer, forwarded by Lawrence Bercini

Mary Roberts
Estes Industries
1295 H Street
Penrose, CO 81240

Dear Mrs. Roberts,

On October 13, 1993 the Northern Illinois Rocketry Association, led by Lawrence Bercini, held a model rocket launch demonstration for the YMCA Indian Guides, Illinois Nation. The gentlemen that put on this show did a fantastic job and really "wowed" our members. It was so exciting to watch rocket after rocket blast off into the sky. I might add that Mr. Bercini did a very professional job with his presentation and impressed everyone with his demeanor and concern for the safety of all those present.

Our executive board was equally enamored with the performance. The following day they approved my recommendation that our organization purchase **333** starter sets for our members as Christmas presents.

In conclusion, I would like to thank your company for the 12 rockets and 1 starter set given away to our members. I would also like to assure you that the Northern Illinois Rocketry Association does a superb job in representing your products. The Indian Guides are indebted to these men for the fine show they gave our boys.

Sincerely,

Richard Kopeikin,
Indian Guides Nation Chief

MRFF 1994 IS COMING! DON'T MISS IT!

June 18 & 19 - Pratt's Wayne Woods, Wayne, IL

If you haven't gotten your MRFF Registration information yet, give Mark Bundick a call at (708) 293-9343.

California Dreaming
by Cindy Ingrum

On March 25, 1994, two intrepid NIRA members, Kevin Smith and Cindy Ingrum, made a long-awaited pilgrimage to Jet Propulsion Laboratory in Pasadena, California. Braving 65 degree weather, they came with high expectations. They were not disappointed. Their tour group included people from such exotic places as Argentina, France, England, and Cal State University, Fullerton. As a result of the tour, Kevin and Cindy are now in the running for "largest number of acronyms heard in one sitting." Said acronyms include, but are not limited to: SETI (Search for Extra-Terrestrial Intelligence); HRMS (High Resolution Microwave Survey); JATO (Jet Assisted Take-Off); ASEPS (Astronomical Study of Extrasolar Planetary Systems).

What is now known as JPL started in 1936 with a "suicide squad" conducting student experiments. During WWII, with the Pacific theater in mind, the focus was on jet assisted take-off, which cut take-off distance in half. From the forties until Sputnik (October of 1957), the emphasis was on guided missiles. Then in January of 1958 (a very good year, according to Kevin and Cindy), Explorer I was designed, built and launched. NASA was formed and Cal Tech contracted to work for NASA, to conduct robotic exploration of the solar system.

One of the highlights of the tour was a visit to the Space Flight Operations Facility, complete with a Mission Control area. Cindy was asked about SIR-C/X-SAR (Spaceborne Imaging Radar-C/X-Band

Inside the Mission Control area.

An ASP and the JPL Mobile Sounding Rocket Launcher/Van

Synthetic Aperture Radar). One of the professors she works with in the Biblical, Theological, and Archaeological Studies Department at Wheaton College, Dr. Jim Hoffmeier, is co-director (with Dr. Jonathan Van Lepp, a scholar at JPL) of one of the projects which was part of the STS-59 shuttle mission in April. By using the SIR, which can "see through" soil, Dr. Hoffmeier hopes to learn more about the remains of an ancient canal in Egypt and its possible implications regarding the exodus of the Israelites from Egypt.

If you have an opportunity to go to the Los Angeles area, this tour is a must! Also a must are reservations, so call ahead. If your tour group is small, and if you are very polite to the tour guide, he or she may agree to take you to the gift shop (usually off-limits to the public), where you can get your very own JPL shirts and license plate holders!

Dawn Patrol
(or The Launch of STS-59)
by Bunny

NAR members from all across the country gathered again at the Kennedy Space Center in early April, eagerly awaiting the launch of Space Shuttle Endeavour. While it would be the first flight for the Space Radar Laboratory tucked in the cargo bay, STS-59 marked Flight #3 for NAR member Jay Apt. Jay and the five other crew members, including his fellow STS-37 crewmember Linda Godwin, were scheduled for an 10 day mission to intensively radar map archaeological and ecological sites all around the planet.

The entire Bundick family, Barb, Lizzie, Jenny, yours truly and my father Emmett, started the journey by attending a private prelaunch reception at Space Camp. There we met NAR Secretary Chris Tavares and family, MIT alum and Deadlus design team member Bob Parks and Karen Dillon, and former NAR Trustee Bryant and Elaine Thompson. It was particularly nice to see Elaine up and about after undergoing extensive chemotherapy for cancer last year. Barb and I scanned Jay's scrapbook of pictures while the kids played about on the various Space Camp toys. We also left written words of encouragement in a notebook Jay'd left behind for everyone to sign. (My comment was "if you keep doing this over and over, eventually you'll get it right.....)

Friday morning dawned with some clouds, and the forecast was calling for only a 60% chance for launch. But out to the causeway we went, and settled into the pre-dawn darkness to wait. Six miles away, Endeavour was bathed in light, looking a bit like a big ornament next to a Christmas tree of lights on the supporting structures. My father, a 30+ year veteran of sounding rocket flying at Wallops Island, offered that the weather wasn't promising, and "they might not get this off".

While gazing at the bird through my binoculars, I heard a voice call out "I knew if I walked far enough down this causeway, I'd find somebody I knew." I turn and am greeted by a smiling Capt. Arthur Barber, USN, a former Chairman of NAR Standards and Testing. Trip's classes at the Army War College had ended early that week and he hopped a flight down for the launch. Having been out at sea the previous two times Jay flew, Trip took no chances this time around.

A huge cloud street settled over Pat 39A, and stayed put. After two and a half hours of waiting, the ceiling lifted to the required 8,000 feet but the crosswind component was too high. The launch team then bumped up against what was, for me, a new constraint; "crew on back time". Flight rules don't allow the crew to remain fixed in place in the bird more than about 2.5 hours before they must stand down. After having a brief outage on a radio circuit, they finally scrubbed the launch. Sadly, my father was right.

Dad had to head back to Virginia, and we lost our accommodations in Cocoa Beach.

The Bundick's drove across state to visit with Barb's dad in Sarasota, and then were faced with the difficult decision; would the weather be any better on Saturday? Chris Tavares, who stayed in Cocoa said yes, so an early morning it would be. By 2 AM, I had the car loaded with three sleeping Bundick's and hit the road. Despite the odds, I managed to find all the NAR folks save the Tavares' for the second day in a row. Weather was much better and the countdown ran smoothly.

The passage of time takes odds twists in a Shuttle countdown. Seems that it takes forever to get to T-5, then time speeds up. APU's get fired up, the final alignment of the guidance, the removal of the "beanie cap" topping of the LOX supply, and Endeavour finally gets serious about flying. At T-31 seconds, control passed to the Shuttle's on-board computers, and everyone around me takes a deep breath.

At two minutes before dawn, the show gets underway. Rising out of the billowing clouds surrounding Pat 39A, the intense light burst forth from the SRB's and STS-59 clears the tower. The first of many standard radio calls comes only 15 seconds into flight to confirm things are headed in the right direction: "Roll program, Houston. Roger, roll, Endeavour". Jenny says "it's really pretty, Daddy!"

Now trailing 500 foot long flames, the bird accelerates uprange, still brightening the morning. The vehicle, up till now in shadow before sunrise, leaps into dawn adding to the light quotient. Finally, the shock wave rolls over us. Lizzie, a well known opponent of HPR rockets due to the sound they make, says "Too noisy!" Endeavour is heedless to her and people on the causeway shouting and applauding and keeps on trucking. "Endeavour, Houston. Go at throttle up."

Two minutes, fifteen seconds and SRB sep. The spectacular light show is over for most, but I see three big fires burning in my 8 X binoculars. Yet another radio call, the classic NASA understatement "Endeavour, Houston. Performance is nominal". Slowly, the blips that are main engines merge into one. It grows steadily smaller, as more signals come back: "Endeavour, Houston. Two engine TAL (trans-Atlantic landing)". Then, "Endeavour, Houston. Negative return". Jay and company are headed somewhere other than Florida this morning.

Sound is quieter now save for the joy of the people around me. Barb says "Look at the contrail". A towering column under any conditions, now it looks like a tall thin thunderhead lit purple, white and orange by the advancing dawn. I've lost the bird now, 220 miles downrange, 46 miles high, and speeding to its 120 nautical mile orbit.

We congratulate one another and head out to breakfast. After a good meal and some good-byes, we go our separate ways. In 10.5 hours, the Bundick's criss-cross Florida, see the launch and get back safe and sound to finish up the rest of our vacation in quieter fashion. But we come back with new stories, some great experiences and the wonder of one of flight's most impressive and majestic sights. If you ever get the opportunity to see a launch, take advantage of it and enjoy!

SCOUT's Honor

NASA has scheduled the 118th and final flight of the Solid Controlled Orbital Utility Test (SCOUT) launch vehicle for Friday, May 6, from the Western Test Range, Vandenberg Air Force Base, Lompoc, Calif. The 10-minute launch window opens at 10:45 p.m. EDT.

SCOUT has been a reliable rocket for nearly 34 years, flying its first mission on July 1, 1960, and becoming one of NASA's most successful launch vehicles. SCOUT's reliability for the last 26 years has been 98.3 percent and, since 1976, its launch success rate has been 100 percent. According to project officials, this reliability can be traced to its use of standardized launch and manufacturing procedures and the incorporation of off-the-shelf technology.

Although it is the smallest NASA launch vehicle capable of orbiting satellites, SCOUT has been a real workhorse for the space agency. Due to its extensive contributions to the space program and the limited publicity it has received, SCOUT has been called, "the unsung hero of space."

The SCOUT program was managed from 1958 through Dec. 1990 by NASA's Langley Research Center, Hampton, Va. Program management was transferred to NASA's Goddard Space Flight Center, Greenbelt, Md., in Jan. 1991.

The last SCOUT will launch a Miniature Sensor Technology Integration (MSTI) satellite. The satellite, designated MSTI-2, will conduct tracking and Earth- observation experiments. Designed and built by Phillips Laboratory at Edwards Air Force Base, Calif., the MSTI program is in support of the Ballistic Missile Defense Organization's Theater Missile Defense Directive. A SCOUT launch vehicle launched the first MSTI satellite in Nov. 1992.

This launch vehicle had its beginnings as early as 1957. The U. S. needed a relatively inexpensive, quickly produced rocket to launch small research experiments, and Langley engineers were asked to design it. Their goal was to provide a launch vehicle capable of performing a variety of probe, re-entry and orbital missions with minimum preparation time.

The conception was complete in 1958, and Chance Vought Aircraft (now Loral Vought Systems) was placed under contract in March 1959 to build SCOUT vehicles. This was the beginning of a government/contractor relationship which has lasted more than 35 years.

SCOUT was America's first solid-fuel launch vehicle capable of orbiting a satellite. The standard SCOUT launch vehicle is a solid-propellant, four-stage booster system, approximately 75 feet (23 meters) long with a launch weight of 47,398 pounds (21,500 kilograms).

Unlike most of NASA's larger expendable rockets, the SCOUT is assembled and the payload is integrated and checked-out in the horizontal position prior to launch. SCOUT's first-stage motor was based on an earlier version of the Navy's Polaris missile motor. The second-stage motor was developed from the Army's Sergeant surface-to-surface missile, and the third- and fourth-stage motors were adapted by Langley from the Navy's Vanguard missile.

The first SCOUT was launched from Goddard's Wallops Flight Facility, Wallops Island, Va., on July 1, 1960. The rocket carried a 193-pound (88-kilogram) payload as a probe test. On February 16, 1961, Scout became the first solid-fuel rocket to place a payload into orbit. The vehicle carried a 96-pound (44- kilogram) NASA atmospheric physics payload into orbit without incident.

Two launch sites were added in subsequent years. One, at the Western Test Range at Vandenberg Air Force Base, was added in 1962. Another was built on Italy's unique

sea-based San Marco platform off the east coast of Kenya, Africa, the site of nine successful equatorial missions since 1967.

SCOUT capability grew dramatically over the years. Originally able to place a 131-pound (59-kilogram) payload in a nominal 345-mile (552-kilometer) circular orbit, SCOUT performance was improved, increasing its capability to put a 458- pound (208-kilogram) payload into the same orbit. The heaviest satellite ever placed in orbit by SCOUT was an Italian payload that weighed more than 600 pounds (270 kilograms) and was launched out of Africa. SCOUT increased its load- carrying capability 350 percent over that of the original vehicle with little increase in the size of its stages.

The SCOUT program has made possible important contributions to knowledge of space, not only for the U. S. but also for a number of foreign nations, including Italy, Great Britain, Germany, France, the Netherlands and the multi-national European Space Agency. These contributions have been in navigation, astronomy, geodesy, meteoroid environment, re-entry materials, biology, spacecraft technology and applications.

To commemorate SCOUT's contributions to the American space program, there is a SCOUT rocket on display in the Smithsonian Institution's National Air and Space Museum, Washington, D.C.

May 15 Club Launch

By Bunny

A healthy turnout of NIRA troops invaded Community Park only to be overwhelmed by the superior numbers of touch football, Little League and soccer players. The combination of the crowd and some wind made for tricky pad set up and flying. We managed one prang into a baseball game, which made for anxious moments, but I think we're OK. Just to be safe, Mike Jungclas and I started talking about (gulp!) finding a new field....

Winner of "to heck with the wind; let's fly lots of impulse anyway" was Art Peterson. He helped his grandkids Wes and Christine fly Aerotech Initiators on E28 reloads all afternoon. The roar always attracted attention, and his only mishap had a nosecone pop early, like right after burnout. Like the Knicks/Bulls series, no harm, no foul.

Bill Piva showed up with a Custom Rockets Land Viper, a kit rapidly becoming popular in the club. People like the cluster model's unique appearance and good performance. Bill flew a perfect flight on three B4's, then did some SD flying for NARTREK with his Zinger. Towards the end of the day, he applied his Skywinder in a drag race with Mike Alterio. The first round was difficult to tell who won, but Round #2 definitely went to Mike. Sorry, Bill.

Eric Burmester braved the winds and previous experience by risking his nicely done Estes Tomcat. This model is surprisingly inconsistent on NIRA's ranges. This one deployed early, then settled into a steep, "lawn dart" glide. None the worse for wear, I expect we'll see more of this bird at MRFF. Eric also flew his Antares and a Super Nova payloader that stripped, (the cricket payload status remained unknown at press time). His Sparrow, flown probably 20 times last year, returned sporting a new coat of paint for the '94 season.

Nate Anderson loaded his Stealth Fighter with some whirlly gigs that didn't, but he enjoyed the flight anyway. Having seen Eric's resulting Tomcat flight, Nate wisely chose to keep his Optima on the ground waiting for calmer weather. He settled for a large number of flights on Wizards, Astros, and Bandits in a variety of engine sizes. Both Eric and Nate added spice to the range with whoops and shouts for success and failure. We need more of their enthusiasm out there, members; follow their lead and whoop it up a bit!

Dave Price showed up early and helped set up the range. He proclaimed that his Starship Nova might "stick on the pad", but was probably not disappointed when it scooted skyward promptly. His Nerf Arrow, a Leading Edge plan from a couple of years ago attracted a fair number of comments from newcomers. On a sad note, Dave's "Curlers" a rocket made entirely from hair curlers for our "Bathroom Scale" event years ago fell victim to a cato. He redeemed himself by boosting a rebuilt wrecked Pegasus from our November launch with a home designed booster and twin C's. Last seen headed for Lombard, the model probably will not be missed.

Kleve Slouber's Quest Apollo made quite a nice flight. Kleve also showed up with a model he built from two Bandits mixed. Painted in yellow and black, he dubbed the bird an "Arreaux Jr.". It flew nicely, but shouldn't be confused with Mike Alterio's scratched built bird of the same name but slightly different design. Lionel Slouber's original designed was named the Lighting Bolt and reminded me of the old Estes Skyhook. He had a nice flight on A8-5 power.

A refugee from cyberspace, Anthony Cekay made contact with us in an unusual way. Posting a request on America Online, Jim Cook of the CMASS section sent him Bunny's way via Internet. After receiving the mailed info, Anthony came out to the launch well equipped. His Maniac did well on C6-3's, as did an America. His final flight was a nice light blue Optima off Ken Hutchinson's maxi pad that deployed the chute at peak.

Mike, Tony and Vince Alterio had spent Saturday helping out at the Batavia demo, but obviously didn't get enough rocket flying. Their Lamprey, another Custom Rocket's kit, was perfectly placed in the wind on a C6. Repeated flights of the Estes Condor didn't do so well; see me at MRFF for some trimming techniques, guys (wink). Mike's excellent V-2 in camouflage continued to fly well, and must have almost 15 flights on it by now. The most novel "flight" however went to a stock Bandit (when was the last time a NIRA member flew one of those STOCK???). The model ignited, but didn't move an inch. Post "flight" analysis showed that the engine hook managed to hang up on the Alterio's homemade pad.

Ceaser Danilewsky was one of our RCHTA show attendees. His America and Mark had excellent flight. Due to the wind, he declined to risk his fully loaded three stage Commanche; smart move, Ceaser. Bunny asked him to add some fin area to an original design cluster model, so we hope we'll see that one fly soon.

Bill Gates didn't let the wind stop him. His Mark really scooted on B's. It took some doing by a couple of dedicated members, but his nicely built Phoenix finally flew off Ken's pad for a picture perfect flight despite the breeze.

John Barrett had signed up as a member almost a year ago, but due to work (trauma head at Cook County Hospital), he wasn't able to attend a launch until now. He had a fleet of fine birds ready to go. Kits included a Helichopper, MRC 2X2, Super Big Bertha, Sentinel, and a neat Big Bertha done up

in "basic black". John also had a sport scale model of a German anti-ship missile that resembled the US Bullpup. Scaled in about BT-80 size, his first flight went uprange, but recovered successfully. A second attempt, with no apparent changes in motor or model reversed directions and flew distinctly downwind. Can't wait to see it again at MRFF.

Ex-NIRA president Lawrence Bercini, like George Bush, continues to enjoy his "retirement" from active rocket "politics". His first flight risked the original Centuri Flying Saucer, prompting many newcomers to ask "what's that?" while the old timers just sighed with envy. Lawrence also flew the entire Centuri "Thunder" series: the Thunder Hawk, Fire Hawk and Thunder Roc. The Thunder Roc lived up to its name on D12 power and dashed off into Cook County, only to be returned later. He also had good results from his S.W.A.T., NASP, Alien Explorer, and ESS Raven. Lawrence closed with something pretty fishy, converting a small green plastic fish for flight. While this particular conversion needed a sinker or two more up front, I think he's hooked on oddrocs anyway despite a less than perfect flight.

Ken Hutchinson, another veteran from our Batavia demo adventure, saved the day for several folks by allowing the generous use of his large and very stable in the wind launch pad. He started somewhat small with a new Estes Maniac. On a C6-5, surprisingly it appeared to have neutral stability. Ken confessed to converting the upper section to payload space. While this might have moved the CG rearward some, remember this bird's designed for E's! Ken's faithful cluster design, the Black Adder, might have made its last flight on two C6-7's and a C6-5. On recovery all six BT-20 engine tubes were found to have partially sheared along the spiral seams. A steady diet of C6's, D13's, and hard landings were more than the old girl could take. Ken's final fight celebrated recent improvements in the reload shipping situation by using an RMS D13 in a Deep Space Transport. It really screamed (good news!), but gave the pro shop manager fits when Ken walked, with permission, onto the driving range to effect the recovery (bad news). Hey! There's a reload out there worth at least a good three iron and we ain't leaving it!

A good launch that really warmed up everyone for MRFF where we've got a waiver, raffle, and a BIG field all to ourselves. I can't wait!

Heard On The Street

Rumors and such, with apologies to the Wall Street Journal

Final Flight - NIRA condolences to Bob and Judy Kaplow on the death of Bob's dad. Mort passed away May 13 at age 79 due to an inoperable brain tumor. In addition to his work for the Boy Scouts during Bullet's childhood, Mort also served as assistant director at the Adler Planetarium for a time.

A bad day for Arianespace... Jan 24, all was normal until 60 seconds into the third-stage burn of the Ariane carrying Turksat 1 and Eutelsat 2F5. Then temperatures on one of the LOX-pump bearings started to climb, and 20 seconds later the bearing seized and the pump self-destructed. Splash. Minor temperature rises in the bearings have been seen before, but never before this drastic. Ariane had flown 26 flawless missions since the last failure four years ago.

Northern Exposure - NIRA members have made guest appearances in several magazines lately. Nichole Eastman's picture graced the front cover of the April issue of Sport Rocketry. Kevin McKiou, Ben Roberto, and George Riebesehl were mentioned in the Soaring column of Radio Control Modeler (RCM).

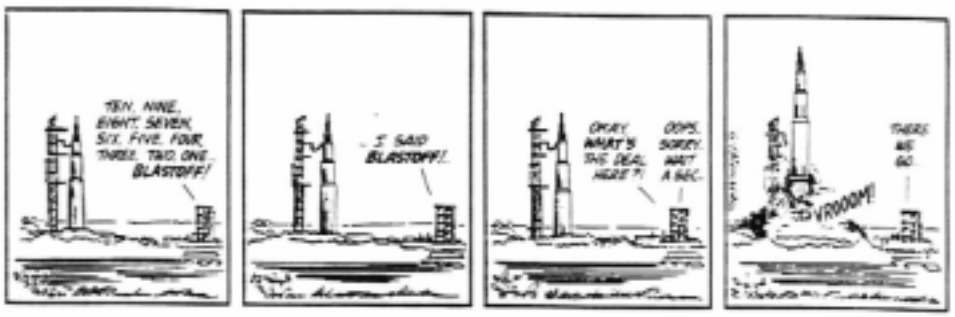
Clinton Jilts Clementine - The recent Clementine moon mapping mission has been given short shrift by the Clinton Administration. Administered by the Star Wars research program, Clementine's 55 man team designed, tested and successfully launched the probe from scratch in only 22 months at a cost of $55 million. Industry observers have hailed the project as an example of "quicker, better, cheaper" space probe development. The Clinton administration has however not promoted the program because of its Star Wars ties. The mission may be at an end regardless of political debates. Software being tested for a proposed asteroid fly-by inadvertently drained all of Clementine's hydrazine fuel, leaving the spacecraft tumbling out of control.

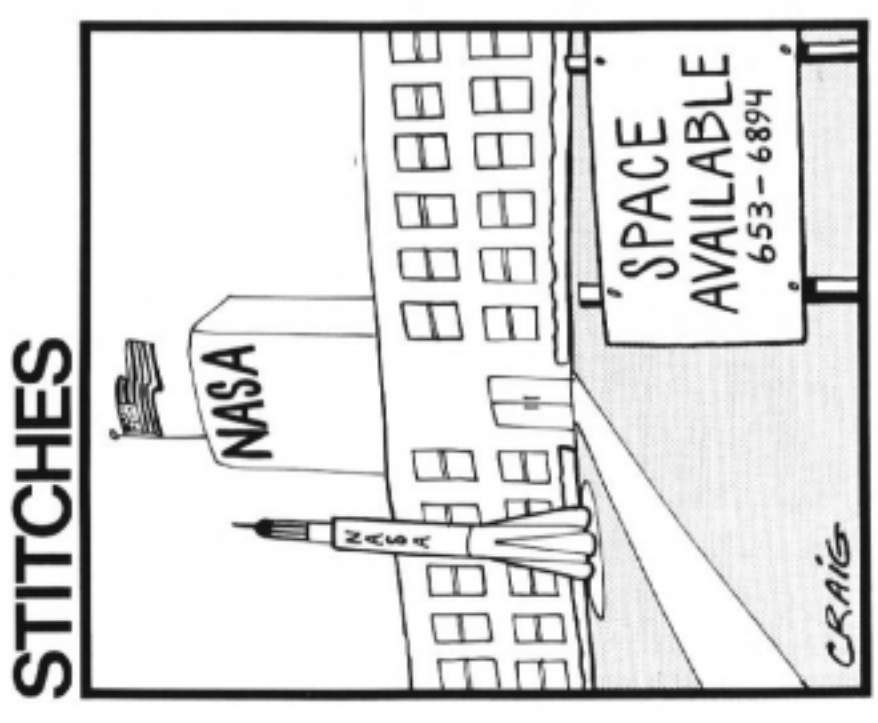
Gilder Gimmee - Aspiring RCRG pilots and fans who are struggling with a lack of model designs despair no longer! Kevin McKiou, NIRA member and ace member of the US RC Rocket Glider team, will be happy to provide you with plans to his Knightstar 5. Send business sized self-addressed envelope with two $.29 stamps on it and $2 to cover his repro cost to: Kevin McKiou, 6 South 211 Cohasset Road, Naperville, IL 60540. You'll receive plans, templates and building tips. (Knightstar 6 plans coming soon!)

In Stitches - A speedy NIRA recovery to Karen Wiersbe, Bob's wife, after recent surgery at Central DuPage Hospital.

Cleared for Takeoff - The Ballistic Missile Defense Organization (BMDO), usually referred to as the "Star Wars" organization, came up with $5.1 million in funding to continue the DC-X flight program. The money will allow three to five more test flights in June. Plans call for tests of the vehicle's ability to "translate" to a nose down attitude, then return to its nose up position for a landing.

Welcome to the Club - Thomas Webb, Jr., Jeffrey Gahris, Image Magicians, Mark Sieving, William Larry, Matt Herzog, Dudley Meyer, and Joe Cacioppo are all new NIRA members. Welcome!





THE LEADING EDGE
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