

THE LEADING EDGE



NEWSLETTER OF THE
NORTHERN ILLINOIS ROCKETRY ASSOCIATION
1985, 1986 AND 1987
NAR NATIONAL SECTION CHAMPIONS

VOLUME 10, NUMBER 6

T MINUS ONE

MONTHLY MEETING

November 6, 1987, at the Glen Ellyn Civic Center, 7:30 PM. We will learn all about launch systems from Ric Gaff.

NIRA VISITS THE FAR SIDE

"THE FAR SIDE OF SCIENCE" exhibit will be on display all month at the Shedd Aquarium. NIRA is planning a visit to see this on **Saturday, November 7th**. We will meet at 2:00 pm. at the Aquarium, and then proceed to the Planetarium at our leisure. Admission to the aquarium is \$2. The Planetarium is free, but the sky shows are \$2.50. Both the Aquarium and the Planetarium are located along the Chicago lake-front, off Lake Shore Drive at the Field Museum. Contact Bob Kaplow at 934-1160 for details.

SPORT LAUNCHES

November is our last chance to fly before winter closes in. Make sure you come to the last two sport launches:

November 8, 1987
November 22, 1987

UPCOMING MONTHLY MEETINGS

December 4, 1987
January 8, 1987

At the December meeting we will kit-bash. In January Doug McMillan will speak about scaling kits. In February Bob Kaplow will speak about hi-tech construction materials.

SPECIAL CONTEST

Flight convert this character and bring it to the January meeting and you will win a special prize from the editor of the Leading Edge. (See the Pumpkin Man plans for hints on construction techniques.)



FOR SALE

Mueller 34C Micro Clips

**** Solid Copper ****

8 for \$1.00! Less than what our favorite big rocket company charges for two of lesser quality. About the same price as your local electronics store charges for junk. Include an SASE (1 oz. per set, any excess postage returned), to address below.

Collector's Engines for Sale

(NOT FOR FLYING)

Estes engines in unopened mailing tubes. These are late 60's to early 70's vintage with Astron ignitors.

1/4A 3-2	3/\$3.00
1/4A 3-2S	3/\$3.00
1/4A 3-4	3/\$3.00
A8-5	3/\$3.25
B3.-7	3/\$3.50

A few other sizes are available.

Composite Dynamics Pro-Jets; loose motors, no ignitors.

E20-4, 7, 10	\$4.00 each
F40-6, 9, 15	\$6.00 each
F45-4, 8, 12	\$7.00 each

Quantities limited! Engine shipping charges and insurance not included. Make checks payable to Bob Kaplow. To order clips or for shipping info on engines write: KGB Aerospace, 1628 Waterford Lane, Palatine TWP, IL 60074.

MODEL OF THE MONTH



Model of the Month Winners for October are Don Linder with his Geosat and Tim Marcy and his Centuri Jayhawk. Congratulations guys!

COVER PHOTO
Don "the Taller" Linder with his Estes Geosat at the Labor Day Launch.

THE LEADING EDGE

is published bi-monthly by and for members of the Northern Illinois Rocketry Association, NIRA, NAR Section #117, and is dedicated to the idea that Model Rocketry is FUN! Membership dues are \$3.00 per year and include a six issue subscription to the Leading Edge. Non-member subscriptions are available for \$5.00 per six issues. All membership applications and subscriptions should be sent to Bob Kaplow, 1628 Waterford Lane, Palatine, IL 60074. Articles, plans, other newsletters, and news items of interest should be sent to Barb Bundick, Editor, 1523 Cleveland Street, Evanston, IL 60202. Any material in the Leading Edge may be reprinted if proper credit is given.

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NEMROC-3

BY
BOB KAPLOW

On Saturday, October 10th, I found myself in a suburb of Boston attending the New England Model Rocket Convention, NEMROC-3. NEMROC was run by the Goddard Society and CMASS, and started as a replacement for the now-defunct MITCON (MIT Convention). Since that time, it has grown in a direction quite different from the MIT convention. While MIT stressed advanced model rocketry, NEMROC is aimed square at the average hobby member. There were construction sessions, a hands-on glider trimming workshop by George Purcell, a computer workshop, and many other interesting sessions.

Due to the cost of using the school that the convention was held at, all sessions were held on Saturday. Due to the late start, and some redundant sessions, this did limit the number of different topics that could be presented. Sunday was scheduled to be the launch, but the morning started with a light rain that never let up. Since this was Columbus Day weekend, Monday was the alternate launch date, complete with better weather, but I was not able to stay for that.

After the convention, all the New England rocketeers gathered for what was to

be the first annual regional meeting. They planned many of the activities that will be held in the region over the next year, including NEMROC-4 and a possible future NARAM. (Rumor has it they have access to a sod farm! Keep posted for further details. - Barb.)

It was an enjoyable weekend for me, as several members of both NAR sections work for my employer, DEC, and it was a chance for me to meet many of the people that I knew only as names in the DEC computer network. It also gives something for NIRA to shoot for when we host our own convention next year.

NIRA AT 4-H

BY
LAWRENCE
BERCINI

NIRA sent representatives to the 4-H Fair in Barrington, IL for the purpose of judging the youngsters' modeling efforts. Ric Gaff, assisted by the Pee Bees had the pleasure to select the "best" from among some 30 models in static and flying categories. The

modelers, ranging in age from 8 to 13 showed surprising amounts of imagination and skill. Some models which seemed questionable before flying actually performed quite well. The winner in the static modeling sculpted a beautiful pine block race car, while the winner in

the flying rocket category had a clean home-design with beautiful flight characteristics. In addition, our own Don "the Taller" Linder was selected as a representative to the state fair by virtue of the fine job he did building and Estes Geo Sat.

THAR SHE BLOWS

BY
BUNNY

Ten determined competitors met at Chanute AFB October 17 and 18 for ETR-17. The weather was windy and cold and cut both flight performance and enthusiasm. The Linder family came out a big winner, however; they swept both A/B and C Divisions.

Saturday saw only two events flown due to a brisk breeze and some very overcast skies.

Predicted Duration found many folks adjusting previously flown models' predictions and being no better off for it. Andy Linder scored a remarkable 2.1% error to lead everyone. In C Division, the Iron Banana team of Tim Marcy and Andy Apel won with a 30.2% error. If you weren't there to face the wind and the cold, don't laugh.

Frank McMullen showed how he managed to be the highest placing American in Streamer Duration at the latest World Championships by winning B SD with two excellent flights totaling 219 seconds. Two items of note here. Frank used binoculars to recover both his flights even though the wind took them over a mile downrange. That US Team experience sure does improve for your recovery skills! Secondly, Frank used peeled BT-20 tubes on his models to get the descent weight down LOW. His A SD models weighed only 2.2 grams! Separations plagued the rest of the contestants.

After freezing through these two events, the troops retired for the night hoping for better weather on Sunday. They got clear skies, but no relief from the wind.

1/2A Helicopter Duration saw only one notable flight. Don Linder put up a 51 second flight to lead the C Division troops. He flew a modified Rose-a-roc. After some experimentation, Don seems to have his HD skills coming on strong now. Andy Linder won in A with one good flight of 39 seconds.

1/2A PD led to some long chases across the Chanute runways. Standard designs, three fins and a piece of BT-5 tube prevailed. Mylar chutes were nearly universal. Why doesn't anyone use that cheap plastic I like so much? Iron Banana had the best time, 243 seconds total.

In A RG, there was a real dogfight between Frank McMullen and Don Linder. Don flew his elliptical slidewing to a 15 second victory over Frank's slide pod conversion of the Estes Dragonfly, 138 to 123 seconds.

B Payload saw another case of the A Division winner knocking the socks off his C Division foes. Philip Travis made his trip from Iowa worth it by posting a 203 meter score. It was a good flight under normal circumstances and a great flight given the weather.

The A Divisioners snuck off with yet another win over the old guys in C Eggloft Altitude. It's not quite what you think. Everyone but Dan Travis landed on the runway and broke their eggs. Since he was the only one to successfully return an egg, Dan's 164 meters took top honors.

Space System ended the meet. (All of the models were well built. It was fun judging this one.-- Barb) The flying showed where you have to win this event, in the field. Chump Change's **Little Joe II** complete with launcher had a 3 point static lead over Don Linder's **Mercury Redstone**. All was lost, however, as Bunny missed the landing area and had a no close on his altitude score. Those two mistakes allowed Don to win and Iron Banana's Estes **D-Region** to sneak into second. If you can build a complex model well, fly it over 300 meters and land in the recovery area, you'll win at NARAM-30.

Overall winners were Don C. Linder in A, with 1368 points, and Don L. Linder in C, with 1488 points. NIRA scooped up 6,068 points at our first meet of the year, much better than last year's Shooting Star total. We continue to maintain good contact with the Air Force bureaucracy, so look forward to MWRC next year at Chanute, May 21-22, 1988. See you there!

TITAN MUSEUM

BY
DON "THE ELDER"
LINDER

The Titan Missile Museum is located about 15 miles south of Tucson, Arizona near Green Valley. This is one of 18 complexes that were in the Tucson area, supported by Davis Monthan Air Force Base. Two other clusters of 18 complexes were at McConnell AFB, Kansas, and Little Rock, Arkansas. These were active from 1963 to 1984, at which time they were all deactivated and the missiles and warheads were removed.

This complex is the only one that will be preserved; all the other 53 will be salvaged and destroyed. This one is being saved as a museum and as tribute to the service of the men and women who operated them.

All complexes were identical, comprising the Titan Missile in its silo, a control room, generator and climate control, and quarters for the around the clock crew. All of the facility is underground, housed in steel and thick concrete, hardened against a near miss, to assure the capability of making a retaliatory second strike, thus removing the incentive of a first strike by an aggressor.

The tour starts with a video tape relating some of the history of the Titan Missile. Each person then dons a hard hat and is led out of the visitor center

to the surface area for an inspection of the communication antennae, the sonar security system the rocket engines (removed from the missile before it was installed in the silo), a duplicate reentry vehicle, and the massive concrete cover of the underground silo.

This door is blocked half-open and half-closed. The reentry vehicle (nose cone) has a one foot square hole cut in the side, and the fuel tank has a similar hole. These measures presumably can be seen by satellite reconnaissance, and satisfy the other side that this missile does not count in the quotas established by the SALT Treaty. A low dome of plastic windows has been constructed over the half-open silo and the Titan Missile (serial number 10) can be viewed. Missile number 10 was never fueled, having been taken directly off the assembly line to be used in training.

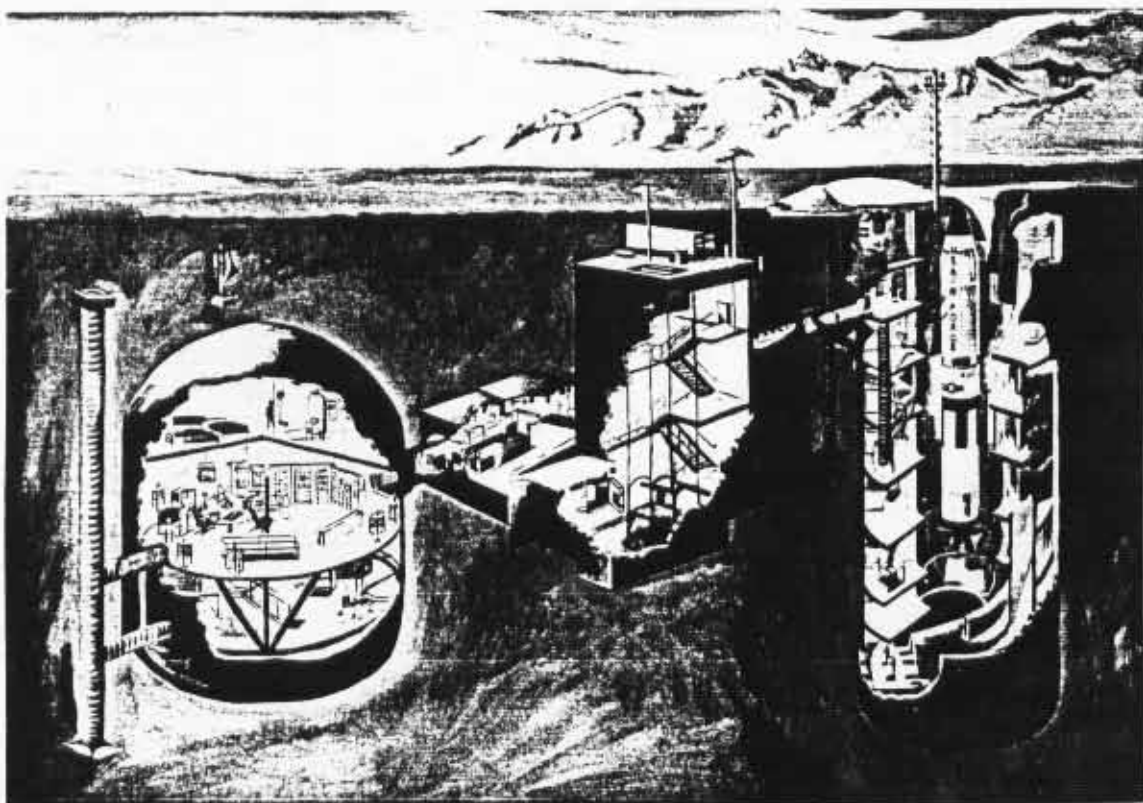
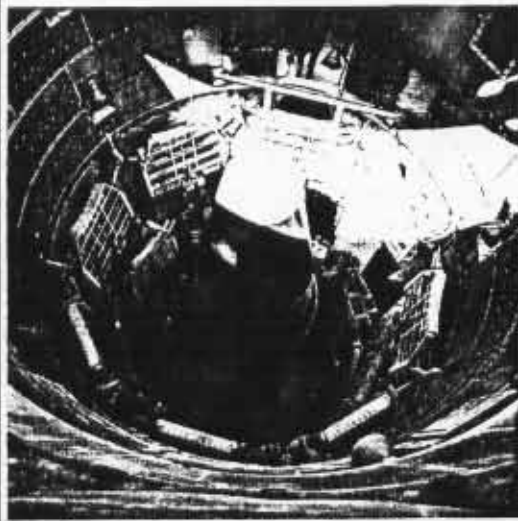
The tour then proceeds underground via the security entrance which requires several codes and recognition by the crew of anyone seeking entry. The security of the Titan complex was never breached. The crew quarters, control room, and generating and air conditioning are on the

top, middle, and bottom levels of one structure. A long tunnel connects this area to the missile silo which has nine levels. The control room is much like that of a very small generating plant or other industrial control room. The decor is concrete, grey paint, pipes, and conduits. There were panels with dials, chart recorders, switches and controls. Most of it dealt with the electric generation, heating, air conditioning and communications. In case of emergency, the complex was able to be independent for a 30 day period.

From the control room we passed through the tunnel that was about seven feet wide and just over six feet high except in places (remember the hard hats). At the silo, you walk round on the third level and can see the missile through a window. Looking up at an angle through the window, the nose of the missile and the blue sky are visible.

The tour concludes by returning through the tunnel and climbing the 110 steps to the surface. The museum is staffed primarily by volunteers. The visitor center is a wooden structure which is to be replaced by a more permanent building as funds are generated.

Titan Missile Museum



COMPNEWS

NEWS FROM THE
DEC COMPUTER NETWORK
COURTESY OF BOB KAPLOW

From: R. C. Pilz
Re: A Commercial Launch

A private company, E-Prime Aerospace Inc., expects to launch a payload for the Air Force some time in November. E-Prime is a launch services company located in Titusville, Florida. This will be their first rocket. This will be the first commercial launch from Cape Canaveral. The rocket will be called LOFT-1. I do not know what kind of rocket it is yet, but it is manufactured or tested near Huntsville, Alabama. It is great that someone outside of NASA or the military (even if the payload is for the military) is now participating in space. The usual expected delays are here - you guessed it, red tape! If and when this launch takes place and is successful, you will hear of the schedule for further launches.

That makes me happy - I can see most of the launches from my house in Casselberry, just Northeast of Orlando. The best ones are at night. Even the "top secret" military launches are "leaked out" to the TV and radio stations a couple of hours before the launch. I guess this is so we know when we see a bright flash from the East, we know it is a launch and not something unexpected.

R. C. Pilz

From: (Mark Johnson)
Re: A Commercial Launch

The LOFT-1 vehicle is being built up by several different groups:

- Univ. of Alabama/Huntsville Aero-Engineering

- An amateur radio group with 10 channels of assorted telemetry relaying acceleration, velocity, altitude, and other flight parameters using the 28, 146, and 420 MHz amateur bands

- North Coast Rocketry, a supplier of parts to 'advanced rocketry' users (outgrowth of high power model rockets in the last 5 years) They are building the flight vehicle itself.

- Vulcan Systems, Inc., a supplier of solid rocket motors located in Colorado Springs, will be supplying the motor, which will have a thrust of 5000 nt (just over 1000 lb) for 5 seconds.

- A high school in the suburban Atlanta area is providing a small biological experiment.

The LOFT-1 vehicle will be approximately twelve feet long, six inches in diameter, weigh eighty-five pounds at takeoff, and is expected to reach approximately seventeen thousand feet. The vehicle will be recovered by two large parachutes,

and will be aimed to splash down in the Atlantic Ocean.

I know this sounds small - it is. Nonetheless, it is the first attempt at flying a civilian vehicle at the Canaveral Air Force Station, and all the coordination efforts by the various groups are just as extensive as if they were launching something much bigger. To wit, the launch was originally scheduled for October 15, but the AF did not get its end of the paperwork completed, thus the delay into November.

If anyone wants it, I can supply exact telemetry frequencies and other exact data about the vehicle. I have a copy of their press release.

My source for all information is reliable as it is the builder of the biological experiment package. All components have been ground tested as of October 10, and a duplicate flight vehicle was successfully flown in Colorado in late September.

Mark Johnson

From: Gary Hughes
Re: A Commercial Launch

At 25,000 N-sec, that makes it a small N class motor (well small compared to the maximum possible N of 40,960 N-sec).

Gary Hughes

PUMPKIN MAN

By: MR STRATO

PARTS LIST

- 1 plastic pumpkin (or easter egg, or any other suitable head)
- 1 BT-20 (cut to 3 7/8")
- 1 BT-60 (cut to 3 1/2")
- sheet styrene (2 arms and 2 legs)
- 1/16" balsa
- clear plastic fin material
- clay (nose weight)
- epoxy
- 2 8" parachutes (1 for head, 1 for body)
- 1 expended engine casing (cut 1/2" length for "nose shoulder", 1/4" engine block)

holes in pumpkin to allow passage of launch rod

clear fin (attached to BT-20)

balsa support

arms and legs (attached to BT-60)

REAR VIEW

ROOT EDGE

ROOT EDGE

fin (make 2 from clear plastic)

cut slot in BT-60 for fin

support (make 2 from balsa)

ALL PATTERNS ARE FULL SIZE

TREK NAR'S LAMENT

"A PAW
CIVIL W
by LAWR
BERCINI

"There! That should do you," Erica commented as she tied the last bandage. She stood and studied her feverish patient. Trek Nar, clothed once again in his silver and gold jumpsuit, lay quietly on the floor of the cargo hold. In the dim blue light of the ship, Trek's bronze skin appeared an eerie metallic grey. Piled next to him lay the remains of his tattered shirt which Erica had deftly shredded for emergency first aid.

"You poor jerk," she thought to herself. "You don't know how close you came to being killed when that P'ystn torus strafed the city!" Almost as if he'd heard her thoughts, Trek moaned and shifted his weight away from his seared shoulder. This sent several rivulets of perspiration across his chest, each sparkling crystal blue in the strange light.

She felt a new wave of nausea well up in her throat. "God!" she cried aloud. "I hate hyperspace travel!" She stumbled to a cargo bin to relieve herself. "With all the work the Progeni have done on me, you'd think they'd have taken care of this problem!"

Eventually she resumed her chore of walking backwards around the cargo hold. Trek had explained once that this practice fools her sense of balance into missing the feeling of free fall that hyperspace travel causes. He had said it was

a lot like closing your eyes when riding a ferris wheel. Erica chuckled in spite of herself while remembering Trek's archaic reference. Trek had a fondness for antiquities and it did not matter to him that she had never seen a ferris wheel, much less know what it was like to ride one.

"Sister Golden Hair! . ." Erica froze. She felt the tightness in her throat. This time, however it was not the nausea, but fear that filled her. Not only had Trek spoken his first real words in three days, but oh, what he said! Her mind raced. She remembered what happened five years ago and how that one phrase symbolized their relationship. But so much had happened since then -- and was still happening. How could she get him to understand?

She crouched next to Trek and gently wiped his head with an extra bandage. Trek's eyes fluttered open. "Oh Erica," he sighed, his voice coarse yet plaintive.

She slid her hand across his face, clamping it firmly across his lips. He tried to rise but Erica pressed him down again.

Taking several deep breaths she began: "OK, Trek, you're going to listen to me and listen good! I know you, you have a worse temper than my great grandfather Harland! But love, we are

in deep trouble and I have very little time to argue with you! Besides, if I hadn't been taking care of you for three days you'd be the dead one now!"

Trek's eyes narrowed with disbelief. "Look around Trek," she commanded. We're in the cargo hold of a P'ystn Startorus and we're light years from earth by now." Trek tried to swivel his head away from her hand. "Dammit Trek! We're really in trouble and we don't have time to fight!"

Erica snapped his head up so she could press her eyes close to his. "Trek, remember five years ago when we were operating those Flanigan pods at the asteroid mineral deposit? We uncovered the isotope vein? We all died! At least everyone . . . including me . . ." her voice cracked. "Everybody but you! Have you ever asked yourself why? We were guinea pigs, that's why!"

Erica continued. "You know the basic situation. On Progenia V there are two races of sentient beings. The Progeni are light years ahead of us in intelligence but are unable to perform simple functions because of their fragile bodies. They depend on the P'ystns to perform manual tasks. Until seven years ago they had a perfect symbiotic relationship. Now the P'ystn are fragmented, engaged in civil war. The

NARAM PICS

COURTESY OF JOYCE GUZIK

Trek Nar's Lament -- cont.

"Beta P'ystns wish to separate from the Progeni; the Gamma P'ystns want to maintain the status quo. With the help of one renegade Progen, the Beta P'ystns developed the "Cycle" weapon. They used it on us on asteroid G-9."

She half chuckled. "It gave them a real pain in the proboscises to find that you were immune to their 'master' weapon! It took five years for the Betas to better the Gammas and get you back."

"But Trek," she sighed, "the Progeni stand to lose everything in this war. I am . . . alive . . . today because of them." Again Erica's voice faltered. "I was sent to find you and get you far, far away from the P'ystns. But they have us now! I've failed! Oh God! I've failed!"

(What will happen next? Will Erica and Trek escape the P'ystns? Who captured them, the Betas or the Gammas? Who should Trek be siding with, anyway? For the answers to these, and many other questions, contact me, the Editor of this great newsletter, to let me know if you wish to write the next chapter.)



The whole NIRA crowd at NARAM-29 awards banquet (L to R) Alan Jones, Tom Beach (with Robomuffy) Joyce Guzik, Bob Kaplow, Andy Apel, Ric Gaff, Tim Marcy, Don "the Elder" Linder, Don "the Taller" Linder, (in front) Sheila "dinosaur of power" and Andy Linder.



Joyce Guzik with Nira mascot Sheila "dinosaur of power" in background is Tom Beach with Robomuffy, world's flying robot cheerleader "fer sure"



ATTENTION EARTH CREATURES!

WHENEVER WE VISIT
YOUR GALAXY, WE
BUY OUR ROCKET
SUPPLIES AT THE
GLEN ELLYN TOY AND
CARD SHOP.

SO DON'T BELIEVE
THE AIR FORCE -

WE DO TOO EXIST!



Bob Kaplow
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