THE LEADING EDGE

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

Volume 22, Number 2 March/April 1999

Club News

April Date Change – Since the first Friday of April is Good Friday, the Glen Ellyn Civic Center is closed. Because of this, our normal April meeting will be held April 9th.

Field Rules – One of the hot topics at both the February and March meetings was the revised field rules for this year. After much discussion, Bob Kaplow, our RSO, came up with the final changes and they are printed on page 3. Please review them since this is how our range will operate this year.

A flyer version of the rules will also be printed so that it can be distributed to newcomers at the range.

First Launch – The first NIRA launch of the 1999 season is scheduled for April 18th. In conjunction with our regular sports launch, the COSMOS-2 contest will be held.

High Power Launch – Another topic of discussion at both meetings was about NIRA holding a High Power launch, hopefully at the sod farm in Harvard.

Suggested dates are May 15th and/or Labor Day Weekend (1 or 2 days). Bob Kaplow is checking with the sod farmer about field availability.

Vice President Resigns – on Friday, March 19th, John Guzik sent an email to the NIRA mailing list to let us know that the Guzik's are moving to San Diego. Since he doesn't think that he'll be able to adequately perform as NIRA Vice President from there, he also tendered his resignation.

Our loss, however, is DARTS gain. Although they still plan on being NIRA members, they've decided that it's a bit far to come for launches.

The matter of finding a new Vice President will be discussed at the April meeting.

COSMOS-2
by Adam Elliott

COSMOS-2 will be held at the regular club launch on April 18, 1999. Again your friendly contest director Adam Elliott will be hosting a little competition for our club. This will be a Local competition this year, which means anybody in the area, club members or not, can participate. NAR membership is not required, but strongly encouraged. The entry fee is $2 and will begin at 12 noon.

The following events will be held:

- 1/2A Helicopter Duration
- 1/4A SuperRoc Duration
- Set Altitude 110 meters

The first, 1/2A Helicopter Duration is probably the most challenging. It has a weight factor of 19. You must make a gizmo of a rocket that goes up straight and descends like a helicopter. That is, it must autogyrate around its vertical axis. It must use a 1/2A class motor, and can not separate into multiple, unattached pieces. The rotor or deployed surfaces must be rigid and not made of film or other flexible materials. Deployment is usually accomplished with burn strings or pistons.

1/4A SuperRoc Duration should be lots of fun. It has a weighting factor of 13. The idea is to launch a really long rocket safely and neatly. It can't bend, crimp, fold, etc. Your model must be at least 25cm long. The longer it is, the more points you get, up to 50cm. Please note it is measured from the tip of the nose to the back of the motor. You must use a 1/4A class motor and again the model cannot separate into multiple, unattached pieces. Any recovery method may be used as long as it descends in a safe manner. Please use no hardwood doweling or shafts as they will not be allowed.

In both of the duration events you are allowed two official flights. You must make a return after at least one of your official, qualified flights. All models must be single staged too.

Set Altitude is where you try to achieve a given altitude. In this case it is 110 meters. Since we will be tracking to ejection, the person who achieves the closest ejection to 110 meters is declared the winner. Any motor combination may be used up to 160 Ns. Tracking powder is a huge benefit in this event.

The weight factor is 8, and you are allowed only one official flight. Tracking problems will not be the fault of the contestant. Any re-flights must be made with the same model and the same motor type. Including delay.

No motors in any event may be kicked or fall to the ground by themselves. Each contestant must build his own models, that is, no family models will be allowed. Any models fully assembled in kit form will be allowed. All models should have your name or NAR number clearly printed on them. All models and motors will have to pass inspection before they will be allowed to fly.

There will be a contest range set up separate from the sport range and all contest flights must be made from there. Flight characteristics will be in the opinion of the judges. A tower and pad for everybody to use will be available. 12 noon sharp is when it starts. Be there or be square! Come one come all! It's where the points are!

Editor's Notes

This is issue 2AB (After Bob) and, since there weren't any complaints about the last issue, I guess I did a good job.

Now that I have a bit of a feel for the effort needed, I've started making a few changes to the layout – mainly to make it easier for me to layout with the software I'm using. Please let me know your thoughts on the Leading Edge, its my mission to give you the newsletter you want.

As always, I'm depending on NIRA members (and non-members) for the real heart of the Leading Edge – the fantastic articles! I've been very pleased by the number and quality of articles that I've received so far – please continue!

THE LEADING EDGE

Volume 22, Number 2
March/April 1999

NIRA Officers

President – Ric Gaff
Vice President – John Guzik
Secretary/Treasurer – Ken Hutchinson
RSO – Bob Kaplow

Leading Edge Staff

Editor – Jeff Pleimling
Production – Ric Gaff

This Issues Contributors

Mark 'Bunny' Bundick, Adam Elliott, Ric Gaff, Tim Johnson, Bob Kaplow, Mark Kotolski, Rick Kramer, Martin L. Schrader

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Jeff Pleimling
c/o The Leading Edge
245 Superior Circle
Bartlett, IL 60103-2029

or emailed to jap@interaccess.com.
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Ken Hutchinson
84 Jefferson Lane
Cary, IL 60013.

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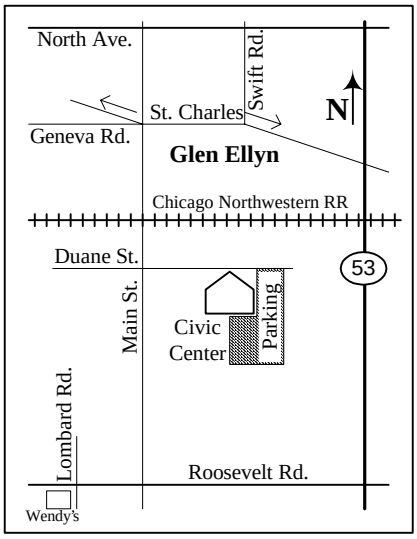
http://nira.chicago.il.us/

CLUB MEETING DATES

All meetings start at 7:30 PM, with the pre-meeting lecture starting at 7:00 PM. Bring a model for 'Model of the Month.' We always need volunteers for the pre-meeting lecture, contact Ric Gaff if you want to schedule a date. The location is the Glen Ellyn Civic Center, 535 Duane Street (usually the 3rd floor, but check the board in the lobby).

April 9 (2nd Fri!) – Parachutes (Tom Pastrick).
May 7 – Selecting Balsa (Bob Kaplow).
June 4 – Prang Film (Ric Gaff).
July 2
August 6
September 3
October 1
November 5
December 3



CLUB LAUNCH DATES

Launches are BYOL (bring your own launcher). The location for our 1999 launches is the Greene Valley Forest Preserve (see map at right). Call the NIRA hotline for pre-launch information: 630-483-2468 (this is a new hotline number).

April 18 – Regular club launch.

May 16 – Regular club launch.

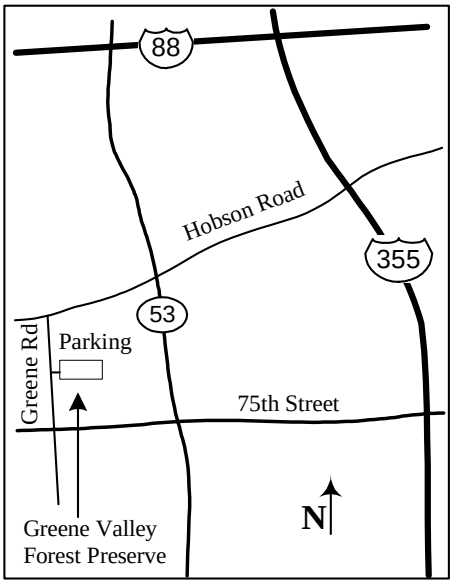
June 19-20 – Midwest Regional Fun Fly (at Bong State Park, WI).

July 18 – Regular club launch.

August 15 – Regular club launch.

September 19 – Regular club launch.

October 17 – Regular club launch.



Model of the Month Winners! (from left to right, photos by Ric Gaff)

February – Emil Bartholet won in Adult with his second MRC Trailblazer, Scott Goodwin won for Youth with his scratch built "Mars Transport." It's a paper plate, 4 Dixie cups, 2 medicine bottles, a spent D-engine casing and a plastic parachute.

March – Emil Bartholet won in Adult with his almost scratch built Shotput (the recruit boosters are from his first, pranged, MRC Trailblazer). This is the third win in three month for Emil, what is he going to bring next month? No youth entries this month.

1999 NIRA Field Rules

1. Motor, Mass, and Altitude Limits
All activities must comply with the NAR Model Rocket Safety Code(s) at all times. Only actual tested, NAR certified motors may be used at any NIRA launch.

Subject to RSO approval, there are no additional limits on motor or model size other than the Safety Code. Altitude limit for all flights shall be 3000' unless cleared with the RSO at least 48 hours before the launch. FAA 101.22 Notification will normally be in effect allowing G motors and 1500 gram models.

The RSO is responsible for contacting the FAA before each launch to give them the standard information and to issue the NOTAM.

The RSO will curtail any flights that have the likelihood of landing outside the field boundaries. This may impact even smaller models, depending on the wind direction.

2. Launch Coordinator
The Launch Coordinator will set up the range layout in advance and assign pad lanes to members as they arrive. No pads are to be set up between lanes, or beyond either end of the twelve pad row. Double up on pad numbers if necessary: odd pads are at 15' mark, and even pads are at the 30' mark. Only one launch control is to be set up per pad location. Launch systems must comply with the safety code:

- Adequate length cable (15|30' or more)
- removable safety interlock
- spring return launch switch
- sufficient guidance
- rod above eye level or capped
- adequate blast deflector
- pad stability

When there are more launch systems than spaces we will use the best equipment available. Those unwilling to share their equipment with visitors will mark their pad sign with a red slash and be assigned to a far end of the range. ***Always*** ask the pad owners permission, especially before adjusting someone else's pad.

3. No "complex model" flights without preflight safety check.
All models over 453 grams, over a D motor, using blackjacks or other large low thrust motors, containing reloads, multiple motors (staged or clustered), any active electronics (electronic ejection, staging, RC, etc.), or ready to fly plastic or experimental untried design require examination by the RSO before going to the pad for flight. Where required by the safety code, the launch system cable must be at least 30' or more as appropriate. The RSO will initial the "complex" box to verify this check.

The RSO will be wearing a red safety vest marked RSO.

4. Simple Flight Cards
Flier must fill in a flight card with their name, model, motor, pad number, and box for the RSO to initial after inspection of a "complex" rocket (definition above). Space is available for any additional comments. These forms will be available in pads from the RSO, LCO, or coordinator.

When ready to fly, deliver the filled out card to the LCO to enter the launch queue.

PLEASE do not bring your flight card to the LCO until your model is ready to be flown. In the event of a misfire, get your card back from the LCO before fixing the problem. The LCO should only have cards of models ready to fly!

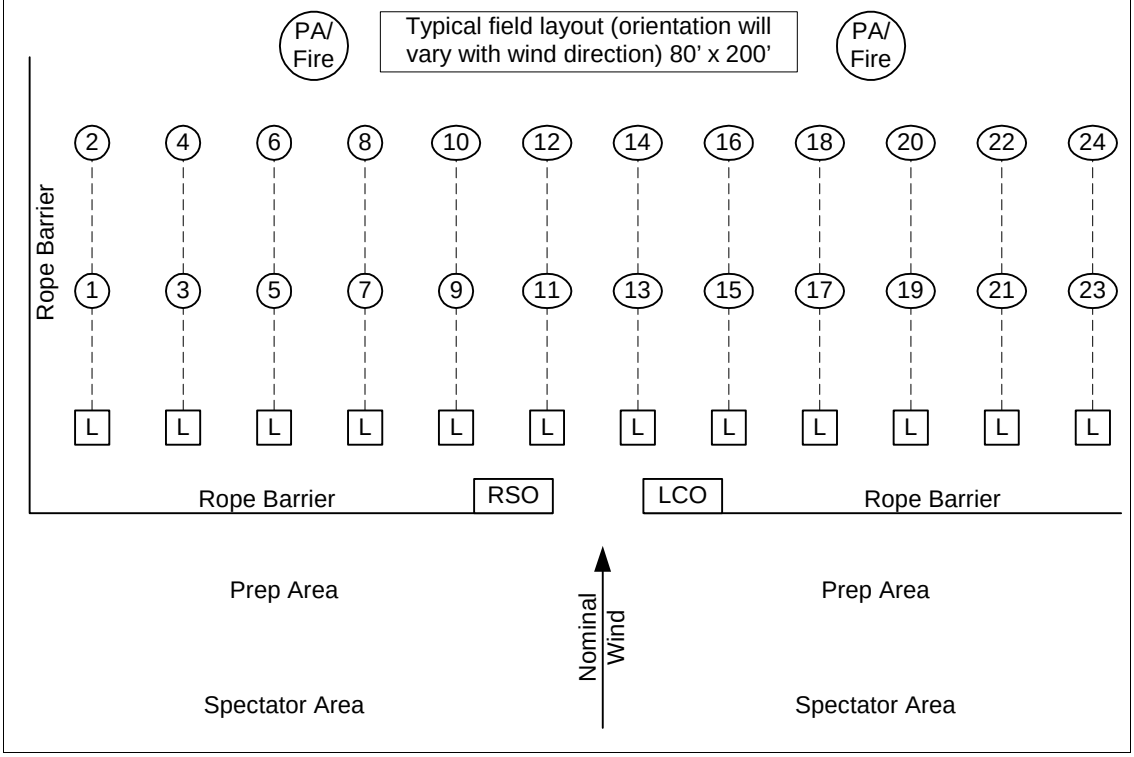
5. All flights must be announced by LCO.
The LCO will take the flight card from modeler. Complex models must already have RSO approval. The LCO will give a countdown thru PA system. After flight, LCO to mark card with flight number (or check mark to indicate flown). The LCO will call heads up and warn spectators (and be sure they respond) in the case of any flight failure. LCO to also hold modeler at controller in the event of a misfire.

The LCO will be wearing a red safety vest marked LCO.

6. Flight line to separate spectators, prep area from launchers
A physical barrier will be set up to separate the flight line from the prep and spectator area, and the field entrance. The only things past the flight line are to be launch systems 10' past the flight line, wires stretched out to their limits, pads, the RSO and/or LCO, and those people actively setting models on the pads, preparing for flight, or recovering flown models. No one should run through the prep area or across the pad wires. Use the 10' aisle as a path to the RSO/LOC. Please do not step over wires or rockets and equipment. People should not cluster in one place.

7. Recovery of flown models.
No one is allowed to chase after models without the permission of the owner of the model. Common courtesy says that it is OK to return someone else's model if you find it while chasing yours. ***Please*** look around before picking up someone else's model, in case there are broken pieces in the area.

Reminder: we need to watch kids running around. We've had a couple models stepped on recently, and many near misses. Parents need to be responsible for their kids.



8. Protect the field.
Please do not fly until the range is set up and open. Our permit requires that we have fire extinguishers at Greene Valley before flying. They will be placed under the PA speakers. Police the area after you launch. Take home whatever you bring. This included empty motor casings, ignitor remains, plugs, rocket parts, food packages and other debris. Use a fire blanket under your pad. We need to leave the field the way we found it or we won't be invited back.

Anyone repeatedly violating any of these rules or the RSO/LCO's instructions will be asked by the RSO/LCO to leave the field.

Rev. 10-Mar-1999 - RGK

The Selection and Feeding of a Range Box

by Bob Kaplow (NAR 18L)

Over my thirty five years in this hobby, I've gone thru several range boxes of various sizes and styles. NIRA's new field requires lugging all your rocket supplies a considerable distance. This has resulted in a change in my personal philosophy from "bring everything you might possibly need" to "bring only what you will need". I've decided to not bring any repair equipment or other extra stuff; there's always next month to fly the rocket if something is broken. This required replacing my humongous range boxes with something much smaller. It also led me on the search for the perfect range box.

There is no one ideal range box that will suit everyone. It depends mostly on how much stuff you need to carry, which in turn depends on what kind of rocket flying you do. There are many choices, and within several categories, many different sizes to choose from, one of which is bound to work for you.

There are many choices and styles for the box itself. My first range box was a simple one tray metal (it was that long ago) fishing tackle box. I still have it. Plastic is certainly lighter than metal, and these days is just about as durable. Later, I got a mid sized three tray box, a large six tray hip box, and then a large three tray box. I'm now considering one of the large drawer boxes, perhaps as a tool box for garage and MRFF use.

While one and two tray tackle boxes are available, we tend to have so many little things that more small compartments are usually more useful than a few larger spaces. So instead of considering a one or two tray box, I'd recommend a three tray box of similar capacity. The standard tool box with a dividerless tray on top and a big space underneath isn't very suited to our needs, again because we tend to have lots of small things, but some regular tool boxes, either metal or plastic, have compartments or trays that are usable as range boxes.

Hip boxes two sets of trays, one on each side of the box. This is an better for larger boxes because when opened half the stuff is on either side of the center well. The advantage here is they are better balanced and thus don't tip back like the more conventional tray boxes do. They tend to have more compartments of smaller size than a 3 tray box of the same size. Compartment size becomes an issue when you move up to HPR, and need to store a 48" nylon parachute. It's less of a problem for smaller models, where you need to store an 18" Mylar parachute.

Newer to the market are boxes with many drawers in the front, and a storage space in the top. The top space will hold the smaller boxes mentioned later, and other large items like a launch system. Some replace the pull out drawers with interchangeable large organizer boxes, again allowing for customization for contest and sport launching. Also available are double sided boxes that have small compartments on one side, and larger space on the other side or underneath. The smallest of these boxes fits in your pocket, the largest holds almost anything you could need on the range.

Often the boxes designed for fishing tackle don't quite have the size spaces needed for rocket tools and stuff. I've often hacked them with my rotary tool, removing one or more dividers to leave a bigger space. Many new boxes have adjustable dividers making this job much easier. Look for them if possible. If movable dividers come loose, secure them with a dot of hot melt glue.

Label each compartment so you will remember where things belong. I run a strip of masking tape across the front of each tray, and then write the bin contents on the tape with a felt tip marker. And I use foil backed name and address stickers to identify everything from boxes to rockets as being mine, in case they ever get lost or forgotten.

Many times a range box is so big because things that we use come in large containers. I'll repackage them into smaller containers. A small amount of glue, talc, tracking powder,

(Continued on page 5)

February Building Session

At the December meeting, Steve Smith generously (foolishly?) offered NIRA his basement for the February 21st building session. More notable is that Steve survived telling his wife Kimberly, who was pregnant and expecting their first child in early January!

Nathan became the newest addition to NIRA (and the Smith family) on January 7th – plenty of time to get the basement ready for his first building session.

John Guzik and Mark 'Bunny' Bundick take a break from their official duties to work on rockets. Can they do that?

Our hosts – Kimberly, Steve and Nathan Smith. Evidently we weren't too loud.

Rick Kramer working on his Estes Star Destroyer. His review is on page 5.

Even though it's called a 'building session,' there is always plenty of people standing around talking about rockets.

It wouldn't be an official NIRA building session without a backyard launch...

(Continued from page 4)

WD40, etc. can be kept in a small squeeze bottle instead of a big bottle. I buy miniature doll house spools at craft stores, and rewind shroud line or Kevlar onto these spools for the range box. Clear 35mm film cans make nice containers for things like lead shot, small screws, leftover reload ejection charge, and other messy little items. I was unable to find small rolls of masking tape, so I made my own, winding 1/2" tape on to scrap Apogee micro motor body tubes.

The clear plastic organizers are an excellent way to keep lots of related small items in a range box. The boxes range from pocket sized to a small briefcase, with 4 to 24 or more compartments. Some have fixed compartments, others can be customized to fit any need, Some of the larger tackle boxes are designed to hold several of these in place.

As part of the simplification strategy, I've come up with several levels of what is needed on the range, and where it is needed:

1) Immediate access: a very small pocket sized box that you carry everywhere, especially to the launch pad. This box has spare igniters of assorted types, igniter plugs, miniature multi function tool (Leatherman, Swiss army knife, pocket knife, or nail clipper), a small file, razor blade, thread, alligator clip, clothespin, small rubber bands, straight pin, a tiny roll of 1/2" masking tape, pen or pencil, and other stuff needed at the pad. Attached to it with a velcro cable tie is half a scotch brite pad for cleaning dirty rods. The velcro tie is for holding clip leads at the pad. I'm even working to build in a small continuity checker as well, as soon as I can track down a source for the micro piezo buzzers.

All of this fits into a Plano 3214 (clear) or 3414 (amber) Micro Magnum box that I've slightly modified, and fits in a shirt or pants pocket. While not so critical at a NIRA launch, where my range box is only 40' from my pad, at a large sport launch it can be a LONG walk back for a new igniter without this box.

I had been using a larger Plano 3213 to hold this stuff, but it didn't fit in my pocket, and was awkward dangling from my belt. The smaller box holds enough stuff and is more comfortable to carry around all day.

In addition to this small pocket sized box, years ago I borrowed a tip from Ric Gaff. I keep an old metal shower curtain ring with a roll of masking tape on my belt all the time. Nothing is as handy on the rocket field as masking tape.

2) The small range box: The stuff I need just about all the time, plus space for several extra motors and other expendables. In it is a small pair of ChannelLock and ViseGrip pliers, pen & pencil, pocket knife, masking tape, small scissors, wadding, screwdriver, tweezers, igniters, igniter plugs, chutes, streamers, towlettes, clothespin, hemostat, and even space for a 29/40-120 reload casing.

For me, all of this fits into a Plano 3215 Mini Magnum Sidekick box. If you don't need quite as much space, you might consider the 3516 Phantom JR. More space can be found in the smaller two sided storage boxes.

The surprising thing I found was that after going thru all my big boxes to find the absolute necessities, I thought I'd have to cram stuff into this smaller box. In reality I couldn't figure out what else to add to fill it up! We really do carry too much junk to the field with us.

Along with this I've had a pad side box for many years now. I use a SIG field tote box, which is nothing more than a cardboard box divided into 4 compartments with a handle. I did monokote the outside of the box to make it moisture resistant. Something like a Rubbermaid kitchen tote would also work well for this function. My launch system, relay box, gel cell and/or nicad batteries, stainless steel wool, blast deflectors, pad pivot, velcro cable ties, clothespins, pad spikes, etc. all go in this box. This is all stuff I don't need at a large organized launch, where the sponsor club provides and maintains the pads.

3) The big range box: Something I can now leave home for a monthly club launch, but will still take to big sport launches and NARAMs. This is the one I've used for several years now. It contains assorted pliers, wire cutters, scissors, screwdrivers, wrenches, files, motor extractor, a cordless rotary tool and power screwdriver, plus a spare battery and assorted bits for the two, spare rocket parts, including shock cords, screw eyes, shroud lines, launch lugs and more; chutes and streamers, assorted glue for repairs, a first aid kit, miniature binoculars, flashlight, pens, pencils, markers, several kinds of tape, igniters of all sorts, a knitting needle, postal scale, ruler, clip whips, lead shot, trash bag, WD40, talc, buzzers, insect repellent, sunblock, reload casings, reload cleaning tools, Kaplow Klips, a compass, and way too much other stuff.

In order to organize it all, I use the small Plano organizer boxes inside the big box. Among them are:

- Spare parts
- Reload casings & Kaplow Klips
- Adapters and Spacers
- Contest chutes and streamers
- Igniters (solar, Tigertail, Astron, MRC, etc)
- Bits for cordless screwdriver and rotary tool
- Igniter plugs
- Delay kits for reloads
- Electronics
- First aid kit

This is convenient because I can select the boxes I expect to need for the trip at hand, and leave the others behind. At a sport launch I'm not likely to need competition chutes. At a contest I don't need the reloads and delay kits.

(Continued on page 6)

Estes "Star Destroyer"
by Rick Kramer

About a year ago I received an email message from Rick Gaff advertising a half price close-out of the Estes Star Destroyer kit at Toys R' US. I was not interested at the time so I continued making and flying tube finned rockets ad nauseum.

After moving to Bloomington-Normal, I was checking out the motor prices at Toys R' US and happened to see a few of these kits still at half price. After reading the box and noting that the Star Destroyer flies on D-12-3 motors, I quickly snatched one up and brought it to assemble at Steve Smith's Building Session.

Estes "Star Destroyer" Specifications:
Length: 33.6 inches (with Flight Probe)
Diameter: 1 inches
Width: 8.2 inches
Weight: 7.1 ounces
Stages: 1
Motor Mount: 24 mm
Recovery: 2 18 inch plastic parachute
Recommended Motors: D12-3
Retail List Price: $31.49

The Star Destroyer is actually two model rockets in one box. One is the plastic kit that assembles into a scale appearing "Star Wars" Star Destroyer. The Second is the ever-ominous Estes Flight probe which interchanges with the scale nose for flight. The flight probe has a heavily weighted (4 pieces of clay) nose cone and is 34 inches long. I was surprised to see model airplane rubber being used for the shock cord (Shades of the 70's.)

Also it came with two pre-assembled parachutes. There is an impressive set of peel and stick decals provided to decorate the model.

If you are an expert at dry brushing or stain washes, you can turn this model into an outstanding display piece due to the amount of details molded into the plastic. I have not flown this model yet as poor weather conditions in C.I.A. Land have canceled our last three launches.

I am also toying with the idea of making a tube finned base for the flight probe and flying it without the plastic model. I simply have to find the right diameter tubing for the probe to slip in and lock on to.

All in all, a well molded kit (very little flash) with excellent details and a separate scale nose and thrust ring for use as a display model.

(Continued from page 5)

4) The rocket box. Can't forget to bring the rockets! That's what the hobby is all about. As a kid, I used a large (well, it seemed large to a 12 year old) cardboard box. It would hold my largest rocket, the Big Bertha. Now I use either one of the Rubbermaid footlockers (I added wheels to mine, but the wheels are really to small for the Greene Valley terrain), or if I don't need quite so much space, one of the Rubbermaid Roughtote or Wrap N Craft boxes. In here goes the SIG box with the launch pad and accessories, the small range box (#2 above), and a days supply of rockets, motors, wadding, snacks, and stuff.

For longer trips especially with large models, I've found that a standard car top carrier makes an ideal model box. Even when loaded full with rockets, it is light enough that two people can lift it on or off the car. I load mine up at home, then strap it to the top of the car. At the rocket field, I take it down, and open it up. On reasonably secure fields like Muncie, I've left it under my tent all week, and not put it back on the car until it's time for the trip home.

Here is a list of the different Plano boxes available in various categories that would make good choices for range boxes. They are listed in each category by increasing size with size referenced in liters, and where available, the lowest price I've found for the box.

Drawers: 5757/854 (32l $15) 1233 (41l $30) 1234 (42l $25) 872 (50l $38) 758/858 (54l $22) 759N/7592 (60l $40) 797 (63l) 873 (63l $29)

Hip Roof: 8606 (30l $15) 9606 (45l $28)

Miniature: 3214 (.3 $3) 3213 (.8l $4) 3713 (.9l) 3598 (1l $4) 3516 (1.7l $5) 3215 (4l $10) 3520 (8l)

Organizers: 3448 (.2l $2) 3449 (.4l $2) 3450 (.8l $2) 3500 (.9l $2) 3600 (2l $4) 3701 (3l $4) 3700 (4l $4) 3730 (7l $5)

Three tray: 2300 (13l) 6303 (15l $12) 3300 (19l $9) 5803 (19l $18) 6803 (27l $15) 7803 (27l)

Two Sided or Over and Under: 1126 (7l $10) 1148/549 (9l $9) 1119 (10l $15) 551 (13l $25) 3832 (13l) 1258 (25l $19) 5257 (27l $20) 1259 (36l)

You can find more details on many of these at http://www.planomolding.com

Rubbermaid boxes:

Footlockers: 2154 (74l) 4154 (94l) 2458 (125l) 4155 (132l)

Roughtote: 2213 (11l) 2214 (38l) 2212 (53l) 2215 (68l) 2450 (83l) 2461 (106l) 2547 (151l) 2463 (170l) 2550 (189l)

Wrap N Craft: 2128/2159 (40l) 2129 (60l) 2141 (72l)

You can find more details on many of these at http://www.rubbermaid.com

Edmonds Aerospace "Ecee" Rocket Glider Kit

by The Very Right Hon. Judge Martin L. Schrader, esq. (Tripoli 6769, NAR 73796)

No doubt about it, Rob Edmonds sure knows how to design good rockets. The Ecee is just another example of his fine work. This kit is a collection of quality pre-cut components and accurate, complete instructions. Once assembled, the Ecee provides graceful, pleasant-to-watch flights with almost no prep time and a very quick flight turn-around. NASA would be proud.

The Ecee is a rear-engine rocket glider, meaning the engine stays with the glider after recovery has deployed. The layout is that of a large rear wing with a small forward canard. As an aside – Rob Edmonds has obviously borrowed from the Rutan school of aircraft stabilization. The Ecee is in the same category of non-stalling aircraft as the Veri-EZ pushers. Anyway, deployment is triggered through a piston at the forward end of the engine mount tube. This piston pushes a lever connected to the canard wing's flap. This causes the nose of the glider to pitch up, and the Ecee glides back down.

The instructions are aimed at a fairly young crowd -- probably in the 12-15 year range. That's all right, though, since all the information one needs to assemble the rocket is contained there. The instructions are liberally illustrated, complete with a component layout for identifying the parts and plenty of detail close-ups. An experienced rocket glider builder could assemble the Ecee without these instructions because the design is so simple and obvious.

Materials are of top grade. The balsa in my kits is fairly dense with a consistent grain. The wood is quite rigid, too -- this turned out to be significant later on. All of the balsa parts are laser cut to a fairly high degree of precision. The tape strip used for the canard flap hinge is the perfect size for that job. The recovery deployment piston fits just right for the amount of friction needed. The only part requiring gross shaping is the nose cap, and that's because the cap is shaped to taste by the assembler. Even that is covered in the instructions.

I assembled my first unit using white glue on a wax paper stage. I was a little bit concerned about the proper alignment of the wings, the strake, and the airframe side panels. There was no need for concern, since the Ecee is pretty much self-aligning during assembly. I used a little bit of 400 grit to trim some of the wood at the joints in order to get a perfect (like, airtight) fit.

I built my second one using CA. (Glue choice makes no difference, since this kit goes together easily and with almost no Murphy room for errors.) This unit was staged on some tinted Mylar party streamer stuff. I was a lot less concerned with the accuracy of assembly on the second unit, and it went together pretty durn quick. Actually, my second Ecee has a bunch of modifications I've put in there just to try ideas out. (I'll report more on that later.)

Edmonds Aerospace "Ecee" Specifications:
Length: 18 inches
Wingspan: 13.5 inches
Weight: 40 grams
Stages: 1
Motor Mount: 13 mm
Recommended Motors: 1/2A3-2T, A3-4T
Retail List Price: $12.95

Repairs go together easily and accurately. Even after a nose-destroying prang the Ecee can be put back into flightworthiness with a minimum of effort. Mine had a perfect first flight followed by disaster. I failed to reset the recovery deployment piston, resulting in a flight consisting of a large arc. The Ecee augered straight into the ground under full thrust. Needless to say, this resulted in significant damage. However, the components still had enough rigidity that I was able to realign the airframe, wings, canard flap, and rudders. (I took the time to add some airfoil to the wings and such, but this made no significant difference.)

The repaired Ecee glided just fine. I was afraid I would have to do some serious trim work, but I did nothing! In fact, both of mine glide fine with or without an expended engine in the back. This thing seems to be totally self-correcting.

I can heartily recommend the Ecee for anyone wanting to add a fun, graceful aircraft to your inventory of sport flyers. The Ecee builds quickly and easily, has little room for errors in assembly, and requires almost no effort at all to trim it for flight or prep it on the flight line. This thing is way too cool, and I expect to build plenty of them in the future.

NIAC

#092695B

Designed by: Mark Kotolski
NAR 35707
TRA 3609

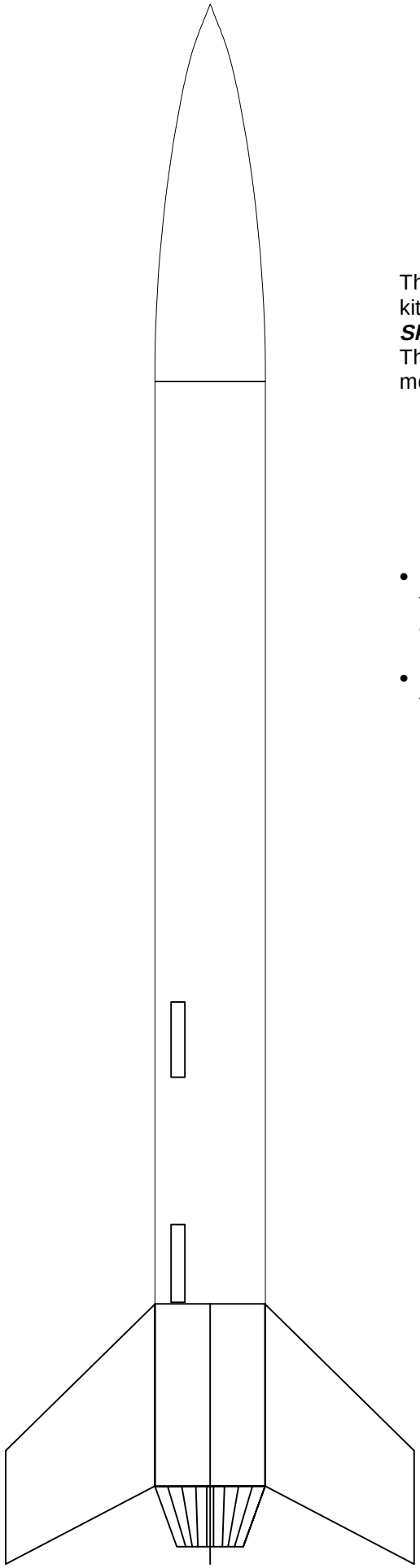
Parts List

- PNC-56 (M)
- BT-56 x 14” (M)
- 1/4” Shock Cord (M)
- 12” Parachute (M)
- Fin Unit (S)
- 2 pieces 1/8” x 1” launch lugs

(M) – ***Maniac*** Kit
(S) – ***Skywinder*** Kit

Recommended Motors

- B6-4
- C5-3
- C6-3
- D21-5T
- E35-7T



This model is the result of an after-the-fact kit-bash. The remains of a lawn darted ***Skywinder*** and an E15 cato in a ***Maniac***. The result is a great flying sport or demo model.

- Place a launch lug at the body tube/ fin unit joint, place the 2nd lug 3” above the 1st one.
- Use epoxy to assemble the body tube to the fin unit

Space Launch Report for January/February 1999
by Tim Johnson

World space launch activity got off to a slow start in 1999, with only ten launches during the year's first two months. Four launches orbited a total of six unmanned scientific payloads. Five other launches put nine communication satellites into earth orbit. One manned launch sent three cosmonauts to the Russian Mir space station.

Although the overall flight count was low, several interesting payloads were sent into space during the period. Delta 265, a 7425 model topped by a Thiokol Star 48 solid fuel third stage, sent NASA's 573.7 kilogram Mars Polar Lander/Deep Space 2 subsurface probe package toward the Red Planet from Cape Canaveral Space Launch Complex (SLC)17B on January 3. The spacecraft should arrive at Mars on December 3, 1999.

Delta 266, a 7426 model with a Star 37FM third stage, launched NASA's 385 kg Stardust spacecraft on an intriguing seven year, three-solar orbit journey from the Cape's SLC 17A on February 7. After two solar orbits and one Earth swingby, Stardust is expected to pass within 100 miles of Comet Wild-2 on January 2, 2004, collecting dust particles in the process. Stardust will then return to Earth, dropping the sample off in a small probe that will reenter the atmosphere at 28,000 mph and parachute into a Utah desert on January 15, 2006! Mark your calendar!

Delta 267, a 2.5 stage 7920 model, boosted the USAF ARGOS space test program satellite and two subsatellites into sun synchronous low earth orbit on February 23 from Vandenberg AFB SLC 2W. This Delta suffered more scrubs (ten) than any previous Delta 2, including a last-second abort on January 28 caused by a faulty vernier motor fuel valve. This was the 80th Delta 2 launch and the 78th success.

On February 9, the inaugural Starsem Soyuz-U/Ikar put four Globalstar cellular telephone communication satellites, a payload totaling 7050 kg, into low earth orbit from Baikonur Cosmodrome, Kazakstan. Starsem, which stands for "Space Technology Alliance based on SEMyorka (R-7) vehicles", is a joint Russian-European venture. Participants include Aerospatiale, Arianespace, TsSKB-Progress, and the Russian Space Agency. The launch used a standard 2.5 stage Soyuz launcher topped by a TsSKB Ikar third stage. An Aerospatiale dispenser carried the satellites. The Soyuz booster burns LOX/kerosene in all stages, but Ikar's 16 D61 main and 16 vernier engines burn UDMH/N2O4. Starsem is expected to launch at least three more Globalstar four-satellite payloads during the year. After February 9, Globalstar had 12 of its planned 52-satellite constellation in orbit. The company lost 12 satellites in a Zenit-2 failure last September.

Stardust launch on Delta266 (NASA/JPL/Caltech photo)

Another Soyuz-U orbited Soyuz TM-29 with the Mir-27 crew on February 20. Launched were Russian Viktor Afanasyev, Frenchman Jean-Pierre Heiguere, and Slovakian Ivan Bella. They docked with Mir two days later, joining Gennady Padalka and Sergei Avdeyev. On February 28, Bella and Padalka returned to earth on Soyuz TM-28, which had been docked to Mir for several months. The three remaining crewman may well be Mir's last. Barring new funding, the 13-year old station will be deorbited later this year.

Athena 1 with Taiwan's first satellite (Lockheed Martin photo)

Also launched during January/February were a Lockheed Martin Athena 1 with Taiwan's ROCSAT 1 low earth orbit scisat on January 27 from Canaveral SLC 46, an International Launch Services (ILS) Proton-K/DM3 on February 15 with Telstar 6 from Baikonur LC 81, an ILS Atlas 2AS (AC-152) on February 16 with JCSAT 6 from Canaveral SLC 36A, an Arianespace Ariane 44L (V116/L485) on February 26 with Arabsat 3A and Skynet 4E from Kourou ELA2, and a Proton-K/DM-2 on February 28 with a Raduga-1 milcomsat from Baikonur. The latter four missions went to geosynchronous orbits. Both Atlas-Centaur and Ariane 4 had 43-launch "winning streaks" at the end of February.

14AL-99 NAR Regional

Event: 14AL-99 NAR regional competition (one for Al Nienast)

Site: Bong State Recreation Area, Wisconsin

Date: June 5-6, 1999

Time: Launch head usually open from 10-5

Host Chapter: WOOSH (NAR Section #558)

Events:

- Sport Scale
- Open Spot Landing
- Random Duration
- A Streamer Duration
- B Rocket Glide
- C Payload

The 14AL competition commemorates the late Al Nienast, two time NAR National Champion from Tomah, Wisconsin. This launch is two weeks before our MRFF launch.

Apogee releases Delta III kit!

Colorado Springs, CO, USA (ROL Newswire) Apogee Components, Inc. has begun shipping the 1/107 scale model of the Delta III Space Launch Vehicle. This is a skill level 5 kit - which is designed to be a challenge to a modeler's construction abilities.

At a little over 14 inches tall, the model features 12 body tubes, 10 plastic nose cones, six small & three large canted nozzles, a plastic transition section, plastic corrugation wrap, lots of small pieces, and a plastic main engine display nozzle with matching display stand. The kit also comes with colorful water transfer decals, and a 18 inch diameter plastic parachute.

Plus, the kit ships with a Delta Rocket history sheet, and scale data and documentation!

This kit can be built as either a desktop display model, or a real "flying model rocket" by attaching the die-cut balsa fins. When in rocket mode, the kit uses 18mm diameter motors.

If you've been feeling that there is a lack of challenging rocket kits to build, you'll love this model! It is a real joy to build as well as extremely fun to fly.

For more information about this rocket, or any other of the fantastic products from Apogee Components, Inc., please visit our web site, or send $4 for a catalog. For fastest delivery of this rocket, please place your order by using the online ordering system of the Apogee Components' web site.

For further information:
Tim Van Milligan
Apogee Components, Inc.
1431 Territory Trail
Colorado Springs, CO 80919-3323
Tel: 719-548-5075
web site: http://www.ApogeeRockets.com
email: tvm@ApogeeRockets.com

Joint Statement on February 4, 1999 Meeting with ATF

Mark Bundick, NAR President
Bruce Kelly, TRA President
Pat Miller, NFPA Committee on Pyrotechnics
Mike Platt, HPRMADA

Our thanks to Teresa Ficaretta, Tom Hogue, Bill, O'Brien, Roy Parker, Mark Waller, and Jim Zammillo of the ATF, with particular thanks to Mark who arranged the meeting.

Overview: The ATF has little latitude in the law to provide regulatory relief to the HPR hobby. They are charged by the Congress via the National Firearms Act and the Explosives Act to insure that regulated materials are not used in pathological ways, or diverted from licensed users of these materials. Changes in regulation of materials must be based on assurance that any relaxation poses no greater risks than existing limits relative to pathological use or diversion. It is on that charge that ATF is bound and on which they are proceeding to draft the revised regulations.

1. AP Propellant Issues - AP propellant mixtures cannot be removed from the annual list of explosives. The enabling legislation behind this annual list says "any chemical mixture which may be explosive.…". The ATF has no latitude to exclude low or inefficient explosive mixtures, or items which, when used as intended don't detonate. The Congressional mandate as written in the law requires regulation of both low and high explosives. They pointed out to us that many of the items on the annual list are lousy explosives, but they have no room to change the list without legislative relief from Congress.

2. Propellant Weight Limits - ATF is committed to the 62.5 gram limit because they believe that limit represents a risk threshold of what can be safely used and stored by the general public without license. Their obligations under the law are to regulate any quantity of items on the annual list, but by regulation, they exempt selected quantities that don't represent any threat of misuse or increase public safety risks. Since CPSC established this threshold for general, over the counter sale, they believe this definition meets their statutory needs.

If we wish to change this limit to something higher, we will need to demonstrate to ATF that increased exempt limits represent no increase in potential for misuse, or increased public safety risks. NAR and TRA are carrying on a discussion to determine what sorts of data or test can be used to argue for an increased limit.

It was clear that as things stand currently, any motor with assembled weight over 62.5 grams is to become a regulated device. This has been a consistent ATF position since the 1996 Huntsville NFPA meeting.

Also, while the language is yet to be finalized on this limit, we pointed out that a suggested wording could leave single use G motors as unregulated, but reloadable G's as regulated. ATF does not want that to happen, but we were unable to come up with a complete paragraph that accomplished leaving reloadable G's unregulated. TRA and NAR will produce suggested wording for ATF use within two weeks.

3. Destructive Device Determination - We discovered that rules relevant to rocketry are actually embodied in two pieces of legislation, the Explosives Act, which we knew about and the National Firearms Act (NFA), which we did not. Under NFA, any rocket with more than 4 ounces of propellant can be considered a destructive device. ATF counsel strongly suggested we formally petition the Explosives Technology Branch (ETB) for an exemption, provided under the law, for sport rockets. Counsel indicated obtaining such an exemption should not be difficult, but we should do this to further protect our hobby. NAR and TRA will work to draft, complete and file such a letter with ETB within the next two weeks.

4. Criminal Use - ATF data indicated 442 cases where rocket materials were used in an "incident", a case where property damage, injury or death occurred. We expect to obtain a detailed compilation of these incidents, which the ATF was willing to share with us. They contrasted that number to 140 incident reports involving dynamite over the same ten year period. ATF believes the magnitude of rocket related incidents requires them to act. We suggested that 442 incidents over the volume of material used, literally in the millions, showed a much less serious problem, but they were not swayed by that argument. TRA and NAR will review the documentation when it's supplied, or, if necessary, file a Freedom of Information Act (FOIA) Request to obtain it.

5. Garage Storage - All garage storage requests now must be handled as a variance from published regulations. The Public Safety Branch is responsible for granting such requests, and will do so provided (a) the storage application is in conformity with NFPA 1127, and (b) it has been approved by the local authority having jurisdiction (AHJ), usually your local fire marshall. Field inspectors do not have the right to deny your request for a variance, nor are they the proper office to make a determination on it. We recommend when applying for an LEUP storage variance, you first clear your storage with the local fire marshall, then make the variance application.

ATF intends to codify the indoor storage variance in the upcoming NPRM, i.e. the new regulations will stipulate NFPA compliance and local AHJ approval as being adequate for sport rocket storage in attached garages of single family dwellings.

If you do not intend to store motors, then you must make alternate arrangements for storage and indicate those arrangements on your application. LEUP holders are required to have some provision for storage per the law, and ATF cannot grant variances to that, i.e. there is no "non-storage LEUP". Your alternate storage can be with either another LEUP holder or a licensed dealer.

However, ATF said sport rocket modelers cannot legally store black powder and AP motors in the same magazine. Black powder, except for the specific exemption granted in the law for antique firearms, must be stored separately from other low explosives.

6. On Field Sales - Licensed dealers cannot legally sell motors on site. You must order motors in advance, and can have them delivered to you, but the transaction must be consummated in the dealer's business location indicated on his license. The reasons for this are embedded in legislation restricting gun dealer sales to a fixed premises that can be inspected. Dealers can take orders to forward to their place of business and fill them from there, but cannot execute the trades on the field. ATF indicated relief on this front would have to come from legislation, and asking for such a change for sport rockets would result in the gun dealer community asking for equal treatment. As a result, we don't think we can obtain any relief on this item, and strongly urge you to order motors for delivery in advance.

Dealers may legally sell at a site only if ATF has granted them an additional license listing that location as a place of business. Dealers interested in the details of this approach should contact either their ATF office or HPRMADA

7. Sport Rocket LEUP - ATF was quite amenable to creating this class of license, generally in line with the elements of the position paper, i.e. lower fee, specifically for sport rocket use, etc.

8. Foreign National Participation - Our discussion of foreign nationals resulted in ATF correcting our understanding. The term used is "non-resident", i.e. they mean anyone not a resident of a particular state. Thus the regulation is much broader than we thought. There seems to be little relief in store for non-LEUP holder to obtain regulated material.

9. NPRM Scope and Timing - The proposed scope of the Notice of Proposed Rulemaking (NPRM) encompasses more than sport rocketry issues. ATF also intends to revise some other definitions, storage issues for other users, etc. Because of this breadth of items, we expect a 90 day comment period to be applied. ATF plans to complete its work and internal reviews within 90 days; the proposed NPRM would then be reviewed by Treasury staff, a process of unknown duration. Only after Treasury review would the NPRM be published. Our associations will kept informed on the progress and publication of the NPRM.

ATF suggested we can make our response to the NPRM publication more effective by asking our members to respond in effective ways. While you may wish to comment about the relative merits of the law or cite Constitutional passages, this is not effective. The ATF is required, with extremely limited staff, to log, read, review, and classify every response received. If responses don't stick to the relevant items cited directly in the NPRM, then time is wasted, and the final rule notice is delayed. We indicated we had no direct control over the responses, but would suggest to members how they can be more effective in replying to the NPRM. When it is published NAR and TRA will suggest how members can better support our positions with suggested outlines and drafts.

10. Summary - The meeting, 3 1/2 hours long, was cordial, productive and open. In cases where the law constrains the ATF, those constraints were made clear to us, and explained fully. In cases where regulation might be needed, ATF was open to our suggestions, and in many cases incorporated them. Where we had work to do after the meeting, that was also made clear. All in all we had a very productive meeting that set the stage for a clean NPRM publication.

We obviously do not get everything we wanted, but the door is open for us to obtain higher propellant weight limit exemptions if we can provide substantive data to ATF on the risks associated with such increases. The burden is now on the sport rocketry community once again to provide the underlying scientific and technical data to back our case for safe operation.

Finally, we believe that an open dialog has now been established with ATF that can result in a better environment for sport rocketry. Meeting the people involved was helpful, for both sides, and will only make the job easier going forward. As always, we appreciate our members' patience and input, and will strive to keep you informed going forward.

Rotary Rocket Debuts Affordable Space Vehicle

March 1, 1999—Mojave, CA

Rotary Rocket Company today unveiled a full-scale demonstrator of its Roton space vehicle before a crowd of 1,000 people, including top officials of NASA and the Federal Aviation Administration (FAA).

Novelist Tom Clancy, a member of the company's board of directors, said the Roton "is going to change the world" by dramatically reducing the cost of putting satellites and eventually passengers into orbit.

"It is our job as private citizens to make space happen, to make space where people work, and to make space the place where products are made," Clancy told the international media gathered to document the first public display of the Roton.

The Roton is a completely reusable single-stage space vehicle that returns to its base in one piece, unlike old-style expendable launch vehicles that are thrown away on each trip.

"The Roton is designed to launch some of the 2,000 satellites scheduled to be put into orbit over the next decade, a market worth $50 billion," said Gary C. Hudson, president and CEO of the company. Follow-on vehicles will serve the space passenger market.

Patti Grace Smith, who is responsible for licensing private spaceships as the associate administrator of the FAA, said "I would like to congratulate the entire Rotary Rocket team on this momentous occasion of the roll-out of the Roton ATV and wish them the very best as they write this new chapter in space history."

Dr. Daniel Mulville, NASA's Chief Engineer, said the space agency welcomed the innovations that entrepreneurial companies were bringing to the space launch marketplace.

"We encourage your continued efforts to achieve your goal of becoming a commercial reusable launch vehicle company. It is your goal, and it is our goal as well," Dr. Mulville said. "This is truly a significant event as we move toward the 21st century and realize the vision of low-cost access to space provided by the commercial sector."

The Roton demonstrator that debuted today, the Atmospheric Test Vehicle (ATV), will begin flight tests later this month from the Mojave Airport. The ATV will carry out low-altitude tests to gather data about the performance of its unique rotor-blade landing system. The ATV is similar in concept to the Space Shuttle Enterprise that NASA built to analyze the landing characteristics of its vehicle before building orbital versions.

Following the ATV flight tests, Rotary Rocket Company will begin construction of two Prototype Test Vehicles (PTVs) for orbital flight tests next year. Commercial delivery of communications satellites and other cargoes to low Earth orbit (150 miles altitude) will follow in 2001.

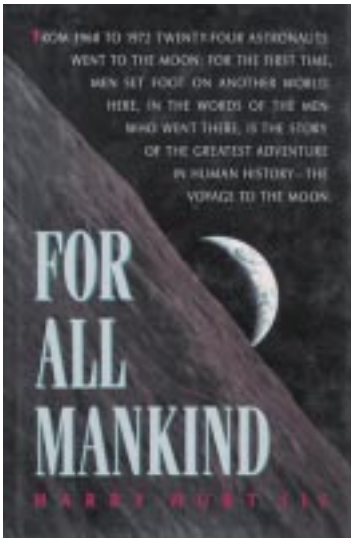
Roton's ability to launch satellites at low cost will benefit consumers through affordable high-speed Internet connections via satellite, less-expensive satellite telephones, and cheaper television programming via satellite. Existing expendable launchers are expensive, costing $2,000 to $5,000 per pound of cargo, and they fail at a rate of about one launch in ten, resulting in the destruction of the satellite payloads. Rotary Rocket will charge only $1,000 a pound (or less for multiple launch purchases) and the Roton is designed to land intact in the event of most equipment malfunctions.

The Roton's two pilots are a key safety feature because they will be able to override Roton's automatic systems if they fail to respond appropriately to unexpected flight conditions.

The Roton airframe and tankage are built by Scaled Composites, founded by aviation legend Burt Rutan, creator of the first round-the-world aircraft, the Voyager. Rotary Rocket is developing Roton's high-efficiency rotary rocket engine, its landing rotors and its avionics.

Bunny's Book Beat: "For All Mankind"
by Mark 'Bunny' Bundick

When Jeff Pleimling asked recently for materials for the Leading Edge, I thought "I should tell people about good (and bad) space books." I've amassed rather a large collection of space related books during my rocketry career, and have read many others from public libraries. So over the next few issues, expect to see an occasional Wabbit Book Weview here.



"For All Mankind" by Harry Hurt III

Published 1988 by Atlantic Monthly Press, the book is currently out of print, but available via the Du Page County Interlibrary Loan System.

The 20th anniversary of the first lunar landing brought forth a number of historical retrospectives on Project Apollo. Harry Hurt, a Harvard graduate and Newsweek correspondent, chose to interview the 24 Apollo astronauts who visited the moon. He then crafted a book that set chapters equal to various phase of the journey, i.e. launch, earth orbit, etc. The results are positively maddening for rocket nuts.

His language is quite poetic at time as he describes the sights and sounds of man's first tentative steps off our planet. However, he glosses over many details that we space nuts seek. When you read that the Gemini capsule went aloft on a "Titan V", or that the Saturn V's propellants were hypergolic (i.e. ignite on contact), you wonder precisely how much research this guy did.

Follow on chapters deal with the Challenger accident (at publication time, the Shuttle was still grounded), and comparisons of the US and Soviet space programs. The predictions of either a Soviet or Chinese leadership in manned spaceflight obviously didn't see the collapse of either economy coming.

At 327 pages, it's not an overly long book. Pictures are only black and white, and the few diagrams in the appendix are easily surpased by material at www.apollosaturn.com. There's not even a complete drawing of the Saturn V stack, for those of you interested in scale data.

Overall rating: 2 rockets (out of five). I might not read this one twice, and it's certainly not one I buy for my library. But some of the chapters and descriptions were worth the couple of nights I spent going through the books.

Next Issue: Andrew Chaikin's "A Man On The Moon: The Voyages of the Apollo Astronauts."

Heard on the Street

(with apologies to the Wall Street Journal)

Welcome to the Club! – Ryan Avard, Conrad Helland, Gregory Holich, J. Joseph Payton III, Michael Stickler, and Michael Svehla, Jr. have joined NIRA in recent nonths. Welcome!

Bong Launches – J.R. Pett (of Al's Hobby) has supplies the following list of scheduled dates for launches at Bong.

Date	Times	Sponsor
Mar 13	9:00 - 5:00	TWA
Jun 5-6	9:00 - 7:00	TWA
Jun 12-13	10:00 - 5:00	WOOSH
Jun 19-20	9:00 - 5:00	NIRA (MRFF)
Jul 10	9:00 - 7:00	TWA
Jul 17	9:00 - 5:00	WOOSH (ECOF)
Aug 28-29	9:00 - 7:00	TWA
Oct 2-3	9:00 - 7:00	TWA
Oct 9-10	10:00 - 5:00	WOOSH

NSL & NARAM Web Sites

Both the National Sports Launch (NSL) and National Association of Rocketry Annual Meet (NARAM) have internet web sites this year.

NSL

May 29-31 (Memorial Day Weekend), Ardmore, Alabama.
http://www.soar571.com/nsl99.html

NARAM

August 7-13, Allegheny Twp, PA.
http://www.nb.net/~rockets/naram41/naram41.html

Both sites can also be accessed through the main NAR web site at:
http://www.nar.org

Muncie Launches Cancelled!

(information from rec.models.rockets)

The following messages was posted on the rec.models.rockets newsgroup. Evidently the lines are high voltage lines and rockets can't be removed as simply as we are used to:

SMURFF V was scheduled for May 15 and 16. It is now cancelled. SMURFF VI scheduled for September is also cancelled.

I received an E-mail message from AMA a couple of days ago informing us that we could not use the facility in the for seeable future. Fortunately, the reason for the cancellation had nothing to with anything overt by a flyer or any problems between AMA and SCAM.

The power lines and the resultant easements are actually the problem. AEP got upset with rockets hanging up the power lines. The AEP corporate attorney sent a rather strong letter to AMA threatening to revoke their easement which would have shut down the AMA facility. AMA's attorney agreed that AEP had the right to do that. AMA has no choice but to go along with the warning.

This matter is under discussion between AMA and AEP. We will see what happens. Perhaps we can be back in operation in 2000.

I know many of you have already made plans for May and I am sorry for any inconvenience. However, there's nothing that be done at the moment.

We will post new developments as they occur, Let's keep our fingers crossed for 2000.

Ned Blumenschein
Launch Director

Fire at Estes Industries

(information from rec.models.rockets)

A 'controlled burn' that got out of control threatened to level Estes Industries on March 5th. "This was not a good day for a controlled burn because winds were gusting 35 to 40 miles per hour," said Dan Brixey of the Canon City Volunteer Fire Department.

The fire, started by area residents, quickly went out of control and moved to Estes property. The Fremont County Sheriff's Office indicated that the fire was under investigation and that the individuals who started the fire would be held accountable and could be charged with arson.

Damage at Estes was mainly confined to one out building that according to some reports contained finished model rocket engines (about 750,000), four 30-gallon drums of ammonium perchlorate and several containers of aluminum powder.

by Fins Up - Born Again Rocketeer.

'If you're not flying fins up, you're not trying hard enough!'

Greetings fellow BARs.

Not long ago, I returned to the hobby after twenty years away and found myself completely lost. It took me many months and hundreds of questions to climb to the pinnacle of expertise where I reside today. My goal now is to help other BARs, or any rocketeer, learn about the hobby. One of the best ways to facilitate that is answering questions in every issue of "The Leading Edge". Starting this month and continuing until everyone is flying "fins up", I'll be answering your questions about rocketry and the issues surrounding it. So get your questions to me at: ask_fins@hotmail.com or by snail mail in care of the editor. Look for FUBAR's web site in the near future.

Dear Fins: I've been back in the hobby for a year now and want to get certified for level one and possibly level two HPR. I've been surfing the web and looking at a lot of kits. I believe I understand everything I need for the construction of the airframe. What's confusing me is the motor. There are several manufacturers, different sizes, different burn rates, etc. Can you suggest a motor for me? Thrustless – LaGrange, IL

Dear Thrustless: I know where you're coming from on this one. I can't remember any other time since I've returned to rocketry when I've personally had so many question on one topic. Which motor to choose? You look around and you see disposable motors, reloadable motors, 38mm motors, 54mm motors , 75mm motors, Aerotech motors, Kosdon motors, quick burn motors, slow burn motors, high smoke motors. I know it's confusing, but without doubt the best motor to do your first certification flight is a borrowed motor. Rocketeers are friendly and experimental by nature. If you explain that you really want to get certified now but can't afford the motor, some willing schmuck will lend you his. Let's face it. This is the first time you're trying a project of this scale and chances are something is going to go wrong. If you're going to destroy a 54mm casing with a spectacular lawn dart, why pay $200 of your money to see it happen? If by some miracle of fate all goes well, then you can go and safely buy the same model motor yourself. If not, there's somebody else's name in addition to yours on the police report after your eight foot rocket plants itself in the front seat of that BMW. – *Fins*

Dear Fins: What's the best and worst things about being a BAR? Johnny C – Crystal Lake, IL

Dear Johnny: Hmmmm, the best part….. If you're like most BARs you were the studious type in high school. You didn't have much money, spent hours upon hours learning math and physics and limped along making rockets out of whatever you could find. That type of background has likely landed you in a very high paying technical job and you can now afford to go into any hobby store and buy anything and everything they have! You also are likely to have the technical expertise to construct a high powered rocket with sufficient thrust and payload capabilities to take out any single building in Chicago as soon as you get the bugs worked out of your active guidance system. The bad part is listening to the 25 years of NARAM stories of the guys who stayed in. – *Fins*

Tim Peckham

C/O Jeff Pleimling
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!