



THE SENTINEL

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CMASS Prepares for NEMROC 2008

In what has become a tradition, CMASS is preparing for NEMROC 2008, the New England Model Rocket Convention. NEMROC 2008 starts on Saturday, October 18th, with a series of discussions at the Amesbury Middle School, followed by a launch at Woodsom Farm in Amesbury on Sunday the 19th.

Bob Krech and the NEMROC team have scheduled an action-packed weekend, with vendors, speakers, and more. NEMROC 2008 is dedicated to Glen Avalear, NAR 26298, a long time rocketeer who recently passed away.

The sponsoring vendor for NEMROC 2008 is Fliskits, who will be providing the memorial kit, the Avalear, for the first 50 participants. Fliskits will also host a build session for anyone who wants to build their Avalear model at NEMROC, in addition to a custom NEMROC 2008 range box sticker and drawings for the launch on Sunday. Be sure to stop by to thank Jim Flis for sponsoring NEMROC!

A vendor forum is scheduled for 12:15-1:30pm on Saturday, with presentations from the vendors scheduled to attend:

- Jim Flis of Fliskits
- Doug Gardei of Gardei Rockets
- Greg Faith of Nashua Hobbytown USA
- Mike Kruger of Cosmodrome Rocketry
- Howard Greenblatt for Roadrunner Rocketry
- Jon Soller of Soller Composites
- Robert DeHate of PicoAlt
- Hot Rod Lincoln of Hot Rod Rocket Shop

Plus don't miss out on the pizza in the cafeteria during the vendor sessions!

In addition to the vendor interaction, there are a number of educational sessions scheduled in blocks from 9am-12noon and 1:30pm-4:30pm.

The speakers scheduled to present includes:

Boris Katan, our CMASS Cluster Monkey, will discuss how to make reliable igniters and how to make sure all motors in a cluster light all the time, every time. On his Tuginator, he got 26 of 26 motors to light so he really knows his stuff.

Dan Wolman, our most prolific wingman, will discuss the how-tos and how-not-tos of building and flying rocket propelled gliders.

Bill Spadafora, NAR S&T Secretary and CMASS President, will provide a 2008 S&T motor testing and status report. Many changes occurred in S&T in 2008 and Bill will bring everyone up to date.

Bob Krech, CMASS Senior Advisor, will discuss the fabrication of strong but lightweight composite airframe tubes from biaxial braid from Soller Composites.

Joe Giarusso, Jim Dixon, and Mark Kibler, 3 experienced CMASS members that achieved L1 or L2 certifications this year, will discuss their design philosophies, and discuss how to make high power certifications painless.

Phil Chouinard, a long time CMASS member, will demonstrate how to make great in-flight videos with a wireless Booster Vision Rocket

Video System and a portable Digital Video Recorder.

Dave Lindbergh, a professional electronics engineer and CMASS L2 member, will describe some of the sophisticated rocket electronics, cameras, location telemetry and GPS guidance he has assembled mostly from e-bay parts.

Weare Middle School SLI team will discuss their adventures at NASA Marshall Space Flight Center where their K powered rocket flew to 5282 feet, just 2 feet from the 5280 foot target altitude, a new SLI record.

Boris Katan's Updated Far Out Rockets, a magnificent Audio-Video Presentation on New England Rocketry, will be continuously playing in Classroom C.

The cost to attend the conference on Saturday is \$15 for adults, \$10 for students, and \$5 for TARC team members. Cost of the launch on Sunday is \$5 for flyers without a CMASS season pass.

More details about NEMROC 2008, including directions, the latest schedule, lodging info and more can be found on the NEMROC website, <http://www.nemroc.org>.

See you in Amesbury!

Highlights from NEMROC 2007

For the third year in a row, CMASS hosted the New England Model Rocketry Convention (NEMROC). 2007's NEMROC was moved to November instead of the traditional Columbus Day weekend to allow more people to join the festivities. The weekend started with a conference on Saturday, with seminars and build sessions held at the Amesbury Middle School in Amesbury, MA. The Saturday conference sessions were followed on Sunday with a launch at Woodsom Farm in Amesbury.

Here are highlights from some of the presentations from NEMROC 2007:

Far Out Rockets

Session by Boris Katan

My son, Paul, and I have had a lot of fun launching rockets with the great folks at CMASS. Our first Far Out Rocket was a FlisKits US TOG, a very cool looking rocket that lifts off fast on a D12. Currently building a 1.6x upscale to fly on G power.

As some CMASS launches are at smaller fields, built a few Art Applewhite saucers. A 7.5 inch saucer printed with the image of the Earth that flies on D to F power. A 10 inch mirrored gold cluster saucer that is designed with an interchangeable engine mount, 38mm, 29mm or 3x24mm. Only built the cluster mount, and have launched 6 times mostly on 3xD11-Ps. Also, my favorite, and most launched rocket this year at 13 flights, a silver 12 inch classic saucer. It has a 38mm engine mount and flew twice on H power at NERRF. But has mostly flown on G64s with a 29mm adapter. Lots of flame, smoke, noise and fire. The saucers have a lot of drag, so they don't go too high, most flights under 300 feet, and they rely on tumble recovery. This makes them a high fun - low risk flyer for a small field - or a windy day.

Another direction we have gone Far Out is with clusters. The VooDoo Daddy started with a Big Daddy kit and added lots of additional tubing to become 53 inches tall and 36 ounces, with eight 24mm engine tubes. Its first flight was on 4xE9-6s, then four flights using eight D12 and/or E9 engines. The most engines fired in one flight was a three stage flight of the VooDoo Daddy which burned 16 engines total. All engines lit. First stage 8xD, second stage 4xD12-0, third stage 4xD12-5.

The Ultimate Fireball is 66 inches tall and about 4 pounds. With 7x29mm engine tubes it has flown the only AP clusters we have done so far. First flight was on 2xG79s at NERRF. Then two flights

on 3xGs and last a dual deployment flight on 3xG77Rs and 4xEl6Ws.

Another fun Far Out event is a NORG night launch. Launching rockets in the dark is very exciting as the engine flame is much more visible. Built a Fat Boy with a lighted nosecone and taped on light sticks. The wildest night flight I've seen is Bob Krech's Pumpkin Chunkin. This 18 inch diameter illuminated plastic pumpkin flies up and around on a G64, then tumbles to the ground with a "thunk" recovery.

I have used Magnelite igniters by Rocketflite for all cluster flights and have found them to be very reliable and convenient, as their length eliminates the need for whip clips. Pictures of launches at the CMASS.org gallery, videos at bpasa.com.

Paper Rocket Construction

Session by Bob Harrington

The presentation was geared toward beginners and was a demonstration of the tools and techniques that can be used to make rockets from ordinary cardstock printed on your home printer. The tools needed were basic and most people would already have most of them. The exceptions were a sheet of 1/2" thick foam rubber and a circle cutter, while not absolutely necessary, they do make construction easier.

I demonstrated how to pre-crease fold lines for straight folds and how to strengthen flat pieces by laminating an extra layer of stock compressed under a flat surface until dry. The main are of interest was how to roll crease free body tubes. I demonstrated my technique of rolling a dowel over the back of the part while on the sheet of foam. The foam has enough give to allow the dowel to start curling the paper but is firm enough to keep creases from forming. Rolling the dowel back and forth causes the part to curl into almost a complete circle. Also shown was how to roll the dowel in a curved path for cones and transitions.

My hope was to give the audience the confidence to try and make a paper model. I hope to see at least a couple of paper models at upcoming launches.

A Good Finish Starts At The Beginning

Session by Tony Vincent

My NEMROC presentation this year was on my finishing techniques. I started by stating that these are the techniques that I use and that there are many other ways to do some of the same things. I mentioned some of the other ways as I went through my presentation. Then I explained that to have a good finish you have to start before you do anything, by doing most of the prep work first.

I went through the steps that I use to fill body tube spirals, papering fins, sealing balsa transitions and nose cones. I talked about planning your paint scheme before construction, neat glue joints and fillets, painting, masking, applying decals and trim tape and clear coats. I brought some examples of my techniques, tools and some of the supplies that I use as well as some finished models.

Introduction to Model Rocket Types

Session by Doug Gardei

The first presentation I did during Nemroc was an Introduction to the different styles of model rockets available beyond the few kits that department stores and the few remaining hobby shops offer. Kits from Aerotech, Estes, Fliskits, LOC, Sunward, Quest and more was displayed. The presentation also covered the different types of rockets out there, from basic deigns, futuristic, UFO's, scale, gliders, helicopters, and more

Motor Ignition

Session by Doug Gardei

My second presentation dealt with motor ignition. Started out with tips for igniting black powder motors, and worked the way up into the

harder to light composite motors. Covered the basics dip-your-own pyrogen using Magnelite Pyrogen. Used pre made wires and home made wires which used nichrome or graphite. Also covered how to use pyrogen to improve igniters already in your range box.

Semroc Saturn 1B Review

By Tony Vincent

Last fall I purchased the Semroc Saturn 1B, this was to be my winter build. This is a 1/70 scale model retro reproduction of the Estes kit from the late 60's. The kit contains many high quality parts and a very thorough 32-page instruction booklet.

I started it right after Christmas and working on and off I finished in early April. I'm not going to go into a lot of detail on the build except of a few areas. One of the first things you have to do is decide which motor mount you want to have, a four 18mm cluster or a single 24mm mount. I chose to make an interchangeable mount so I could have both. I can't go into a lot of detail because I didn't take any notes so I'm doing this from memory. I used a BT-70 for the mother tube and tube couplers for the mounts. Because of the size of the BT-70 I had to cut out sections of the eight tank tubes to fit around the mother tube. I used two Estes engine hooks (one on each side) to hold the coupler/mounts in place. The shape of the Estes hooks makes it very easy to slide the mounts in and out.

The other decision you have to make is to use the laser-cut balsa fins or make built-up fins from balsa ribs with card stock paper covers. I chose to make the built-up fins, as they are more true to scale.

There are 5 embossed wraps and many laser-cut details to finish out this model.

The only other modifications I made were to put a baffle in the forward end of the stuffer tube, some of the surface details and the tower.

The Apollo capsule (a separate kit in it's own bag) escape tower is one of the most difficult parts of this build. After building the Little Joe II and reading some reviews on EMRR and posts on The Rocketry Forum I decided to make it a little easier. The tower is made from wood dowels that have to be sanded down in diameter. This is not hard but time consuming. Instead I used styrene rods, much easier.

Painting this model is a challenge in it self. I thought about painting the tank tubes before assembly but decided against it because I wasn't sure how I could get a good seam between the scalloped fairing shroud and the tubes. There is a lot of masking with the tank tubes and roll patterns. It took me 9+ hours to mask this rocket! Some of the detail pieces I painted separately and applied them after. Also included are some nice waterslide decals.

The 1B was first flown at the April 21st launch in Amesbury. I went for the cluster of four C6-5s for it's first flight. Only three of the motors lit, but it had a nice slow boost with a slight arc and a good recovery with on damage. Later in the day I flew it again on an E15-4 with a good straight boost and a nice soft landing.

For the recovery the kit comes with a 32" plastic chute and the capsule has it's own 12" chute for separate recovery. The capsule is very light so I wanted to keep it attached to the main rocket. To do this I used a six feet of 1/4" elastic cord from the body with a 30" nylon chute at the end and four feet of Kevlar string from the elastic to the capsule with a 12" mylar chute attached 10" from the capsule. This worked very well, although I'm thinking of lengthening the Kevlar for more separation from the main chute.

This is one of the most challenging and fun builds I've done in a long time. All and all this is a true builders kit, well worth the price.

Launch Data

By Jon Scheinbart

Rarely does my day job and my hobby allow me to combine a project. I needed to learn how to use Oracle's Application Express (APEX) product. Briefly, APEX is an application builder that comes with tools for creating databases, data entry screens, and reports. In order to really get some depth and understanding of the product, I wanted to do something substantial and useful. I was, also at that time, reproducing the familiar CMASS Flight Cards to make them available electronically on <http://www.cmass.org>.

Hmmm...Flight Cards have lots of information on them, and we have a lot of them after launches. I needed lots of data for my investigation into APEX. Ah ha! Why don't I enter the flight cards into a database, create some screens and reports, and see what happens. So I did. The results: I learned enough about APEX to satisfy my boss, and I now have a database that holds the data from all of our launches from October 2007 going forward.

I've learned some things that I didn't expect:

- Cards are used for more than flight data: young artists' drawings appear on the back, lists of rockets with what engines go with them, and in a pinch, napkins for soaking up extra mustard from our famous hotdogs.
- I have become a handwriting analyst, deciphering cards quickly written with nearly frozen fingers.
- I decided to let the cards speak for themselves and not try to interpret missing/incorrect information. Who knows, there might actually be an engine designation of A3-8 or B4-6.

Other bits and pieces of note: Not everyone fills out the cards completely, even for things that I

would think are necessary for a flight. So, where important information was missing or unreadable, I generally substituted the word UNKNOWN.

I could have split out the data by flight date, but I thought it would be more interesting to show the data aggregated for the last four flights of the year.

Flights by Launch Date

Flight Date	Number of Flights
10/06/2007	374
10/20/2007	368
11/04/2007	219
11/20/2007	150

Motor Distribution for All Four Launches

Total Impulse	Number of Engines
1/8A (mmx)	18
1/4A	2
1/2A	31
A	201
B	264
C	357
D	146
E	70
F	48
G	53
H	13
I	4
J	4
K	2
unknown	4

Totals differ due to a number of reasons: clusters, illegible flight cards, multi-stages.

Number of Distinct Flyers for All Four Launches

There were approximately 239 different people that launched rockets. Items to note about the data:

1. Some cards reflect the different names for the same person (Mike vs. Michael or Robert vs. Bob). I did not edit any of the data; therefore, this number may be artificially higher.

2. Some cards have multiple people mentioned as the flyers. I took the first one listed.
3. Some cards had the TARC team listed. I used the team name.
4. Sometimes the first name or last name was omitted from the card. For this, I substituted 'UNKNOWN'.

Top 10 Most Prolific Flyers for All Four Launches

Across all four launch dates, some folks flew more than others. Here is the list of the top 10 most prolific flyers for the last four launches of the year.

There actually may be two Liams that contributed to his top-10 finish.

Name	Number of Flights
Gardei, Doug	45
Harrington, Bob	44
Lubertowicz, Paul	35
Clement, Scott	26
Henion, Scott	24
Vincent, Tony	22
Hammer, Dylan	19
UNKNOWN, Liam	19
Flis, Jim	19
DeAngelo, Michael	17

Motor Configurations for All Four Launches

Yet another note about this: There were a few instances of clustered multi-staged flights (you know who you are☺). For these instances, I chose to represent these flights as clustered. In future iterations of the database, I may allow an addition of the “clustered, multi-staged” configuration.

Engine Setup	Number of Flights
Unknown	2
Cluster	44
Single	1032
Multi-Stage	33

Motors Launched by Manufacturer for All Four Launches

I called this section “Motors Launched” instead of “Motors Burned” because as we all know, not every motor lights on a cluster or stage (at least mine don’t).

Manufacturer	Engines Launched
Aerotech	132
AMW	7
Canaroc	1
Estes	1024
MPC	5
Pro38	6
Pro-Jet	2
Quest	25
RoadRunner	11
Skyripper	2
UNKNOWN	2

I could list the rockets by manufacturer, but about half of the flight cards had none listed. But for those that were listed, Estes was first and Fliskits was second.

I hope you all enjoyed reading these statistics. I could slice and dice the data nine ways to Sunday, but I’m not sure what would interest folks. I can tell you which pads were most often used (how fun is that). I can tell you the most popular rocket name. I can’t tell you what the most popular “rocket” is as folks tend to write anything on the card and they could use the real name or some made up name for the rocket (btw, it is Generic E2X, thanks to the scouts, I think). If you’ve got any ideas for future charts or have questions, just post a question in the CMASS forum.

GET THE LATEST FROM CMASS

Keep your eyes open for the CMASS website at <http://www.cmass.org>

- CMASS Forums!
- CMASS Photos
- CMASS Latest News
- CMASS Updated Launch Schedule
- And more...

CONVENTIONAL WISDOM AGREES:

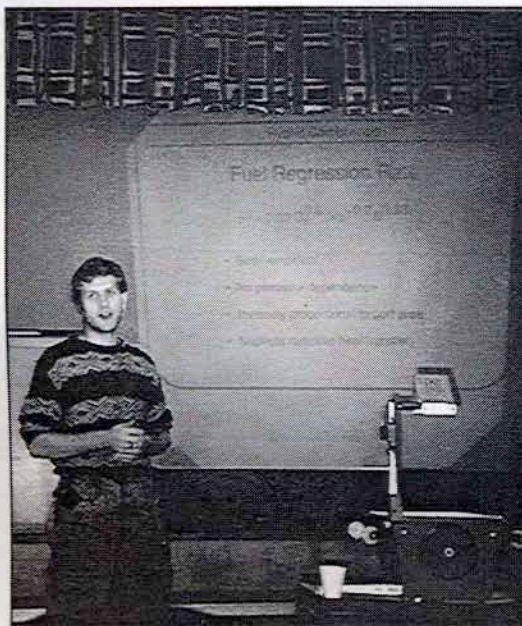
NEMROC-VII IS THE BIGGEST AND BEST

by Jim Cook

After a summer vacation spent hosting the 1991 National Sport Launch in Illinois, could NEMROC-VII have been anything less than an encore to our success? Last year you may have read accounts by Bill Spadafora and me as NEMROC-VI participants. This year, we graduated to hosts! Once again this year, NEMROC was held on Columbus Day weekend in Northboro and Spencer, sponsored by CMASS and the Goddard Society. Saturday's seminars were held in the Lincoln Street primary school this year, a change from the middle school of last year. (The school board didn't think that a hundred

Earth Orbit. Using a safe, mid-tech hybrid-rocket technology fueled by LOX and rubber, the group plans several test launches at the decommissioned Fort Devens military base before offering the project's result to commercial firms as a less-expensive route into space. Equally impressive was one of the first seminars of the day: Greg Fuller from A&M Models of Hudson MA, presenting "Professional Model Building." Utilizing their collection of artists, engineers, ex-teachers, and other diverse types, A&M has modeled everything from Patriot missiles for Desert Storm celebrations to a full-scale F18 fuselages (minus the wings) for use in measuring radar cross-sections with various radar-absorbing paints. Museum models and operating exhibits are also a standard offering. Since most models are delivered to the customer on completion, Mr. Fuller had to illustrate most of his work with a photo album, but he did bring a 2x scale M-16 rifle (with working parts) designed for Army training, and invited our club members for a group tour of his operation at a later date. Limited only by the customer's budget, the amount of detail and precision A&M can (and does) incorporate in its models would make many a NARAM Scale competitor pant. This year, the mountain came to Mohammed—in the "Hands-On Tracking Lab," the field came to the classroom when seminar leader Ron Quattrochi set up tracking scopes and a measured baseline indoors. Not satisfied with just "show and tell," Ron suspended a model from the ceiling to allow students to work the scopes and read and compute the numbers to find the simulated model's actual altitude. This was a course, complete with test: on Sunday, Saturday's students could become NAR-Certified Trackers by operating one of the scopes and consistently closing actual tracks as Ron operated the other during the sport launch. Glen Avalear, Andrew Long, and Lee Meadows made successful tracking series, while Ron earned his certificate as a Certified Tracking Trainer. *(continued over)*

MIT graduate student Arthur Schlauch discusses the combustion parameters of hybrid engines, such as the LOX/rubber engine with which his team hopes to achieve Low Earth Orbit by 1995. (Photo by Ron Quattrochi)



crazed rocketeers would mix well with a thousand crazed soccer players!) Sunday's launch was held at the CMASS field in Spencer. New this year was keynote speakers Larry Smilg and Arthur Schlauch presenting MIT's "Project Olympus." A third-year MIT Aeronautics & Astronautics undergraduate student and winner of a Presidential Young Investigator award, Larry described the four-year project's progress toward the goal of launching a five-kilogram payload into Low

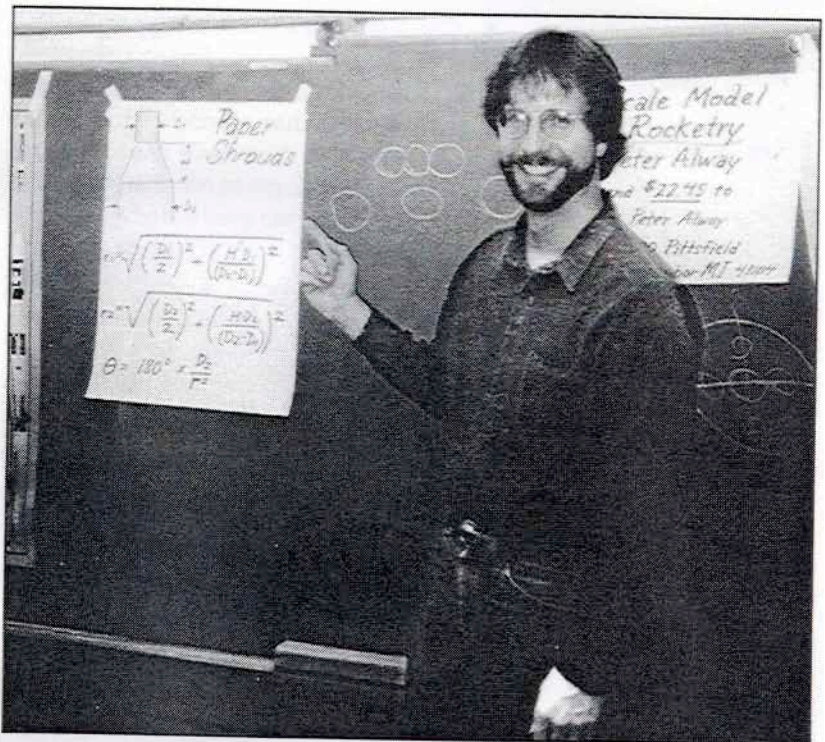
*Blast from the Past... NEMROC '91***NEMROC-VII** *(continued from previous page)*

While Ron's students were being baffled by the law of sines, John Buscaglia did the same with the laws of physics and aerodynamics in his seminar on "Basic Stability Determination." It's difficult to teach at all levels, particularly when your audience spans ages from adult to pre-junior high, but John did it well. Though some folks in these sessions may have felt lost in space, they made up for it at other seminars, some of which touched on the same material from another direction. Based on feedback surveys from last year's NEMROC, several new presentations were offered, including Scott Clement's mobbed session on "Designing Your Own Rockets," NEMROC veteran Brian McCarthy's seminar on lofting "Sophisticated Payloads," Rod Thomas' well-attended discussion of "Scale and Semi-Scale Models," and Aron Insinga's slide presentation on "Soviet Space."

We also retained our most popular past presentations based on the same feedback surveys: Steve Michaels' two hour "Introduction to Model Rocketry" for novices; Tony Vincent and Diana Ryan's "Applying a Beautiful Finish," Brian McCarthy's "High-Power Rocketry," Bernie Biales' "Learning to Fly Boost/Gliders," Gary Hughes' "History of Model Rocket Engines," Jim Flis's "Hands-On Airbrush Lab" and "Styrofoam Cup Rockets," and his seminar on "Instant Glues."

When attendees weren't at seminars, they could enjoy various videos. This year's tapes included a Cineroc compendium provided by Herb Desind, tapes of past NEMROC presentations and launches, and tapes of Jay Apt's Space Shuttle ride.

When videos palled there was always the NEMROC range store, run by our own capable Bill Spadafora. One of this year's additions was the new, official NEMROC mug, sporting a bright spiral galaxy and the slogan, "NEMROC... a galaxy of fun." With Bill selling materials on consignment from local outlets and Al Andrake selling everything from AAA in Pennsylvania, it was barely possible



to hold onto any of your cash. (If Microbrick and the material from NARTS had shown, it would have been well neigh impossible. One problem has been solved for next time: Bill has annexed NARTS and now runs it out of his basement. Watch out, Microbrick!)

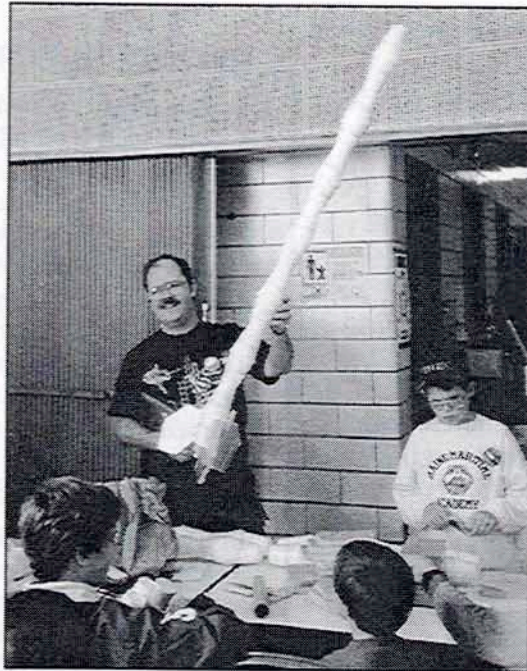
For some, Saturday's most important event came in the early evening, when the NEMROC-VII kit was distributed for the kit-building session. Once again, Jim Flis of the Goddard Society designed the model, dubbed the "Corona," in cooperation with Estes, who donated the parts and engines. Jim quipped, "I'm getting good enough at this to work for Estes as a SPEV designer."

Door prizes this year included kits, parts, and flight equipment donated by QCR, Rocket Research and Distribution, Flight Control Systems, LOC, the Hobby Emporium; a host of plastic models donated by Glencoe Industries; some computer software; books; and free club memberships. All speakers received commemorative mugs.

Rod Thomas gave the talk on Scale and Semi-Scale Models. His tips included good places to get scale information, and handy formulas for making accurate custom parts such as paper shrouds. (Photo by Ron Quattrochi).

Blast from the Past... NEMROC '91

So you say you have a bunch of kid rocketeers with some time on their hands—what's the worst that could happen? Jim Flis puts in his bid for styrofoam cup mega-rockets, and his students seem to agree. The one Jim is holding was the *small* one. (Photo by Ron Quattrochi)



With Sunday came good weather for the sport launch on the Spencer field. For New England in October, "good weather" allows for a wee bit of chill and breeze; not enough to deter this year's crop of rocketeers, new and old, as 50 people made over 250 flights. Through the miracle of instant glues at the building session, most Coronas made their maiden flight that day; including those belonging to Chip Burnley, Scott Chipman, Chris Grayson, Tim

Carr, Joshua Griffis, Dan Houston, Ian Jakus, Lee Meadows, Justin Meyer, Michael Plotz, Cheryl Racine, Dennis Szymanski, Derek and Mike Theriault, Tim Meier, Jim VanDerAa, Chris Weeks, and David Weiner. A free B6 was provided for each model.

Among the more exciting models flown were Jim Flis's Maxi Mars Snooper, Maxi Orbital Transport (see cover), Maxi Trident, and Maxi Birdie (with feather recovery). Jim also demonstrated how to fly the paper rocket each NEMROC participant received in his convention packet; a "McCup" built in the Styrofoam Rocket Seminar (from 500 cups donated by McDonald's); and, of course, his huge "Maxi McCup." With the help of Mark Sheehy, Jim's own Corona model was flown from a genuine solar-powered launch controller.

Within the CMASS membership ranks, notable flights included John Buscaglia risking his Fred on an FSI D20-5 (which did *not* cat). Bill Spadafora brought out his newly-finished Wernher von Braun Space Shuttle design, which he scaled from a photograph of a "concept" model in a 1950's magazine. He flew it on an Estes D12-3, which *did* cat. [However, the Shuttle portion did glide safely back to the pad despite the complete destruction of the booster, suggesting that Wernher still had a thing or two to teach modern engineers. —Ed]

(continued on page 33)

When you present the seminar on "Designing Your Own Rockets," you're required to have an unusual design sense and an overactive imagination. At left, Scott Clement loads his Boiler Plate Goose for its first test flight. At right: will it fly? Yes! Yes! But the flight wasn't exactly kosher—right after this photo, the Goose took a fatal swan dive. (Photos by Jim Cook and Bill Spadafora)



Blast from the Past... NEMROC '91

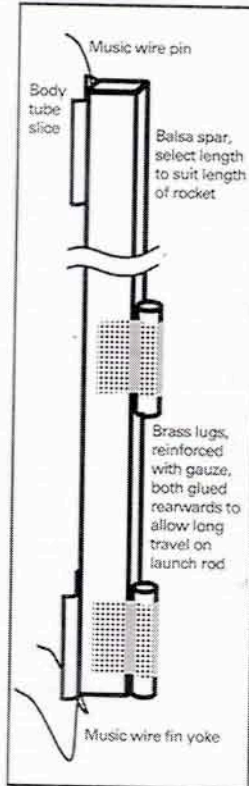
Letters (continued from page 2)

[How long a single lug should be depends on the weight of your model and the diameter of your rod. Make it too small, and wind or boost can snap it off at the glue joint. Unless you're in competition, where drag counts, make it at least 2" long on larger birds to get a good structural joint.

[Double lugs (more for sport birds) are even better. 1/2" to 1" each should do for a typical Estes kit (a little longer for wider rods). Put one near the bottom of the bird, and the other about 3/4 of the way up.

[Extra-tall birds are a problem, especially when they are taller than the launch rod you're using. (This is the only situation in which any of us in the office can imagine lugs being "too far apart.") You can locate a long bottom lug at the CG and an auxiliary lug 1/3 of the way down the rod. You can get a longer rod, or use a tower. If performance is not critical, you can use a bracer pop lug (see right) to support a long model on a shorter rod.

[Whatever you do, try to design your bird's launch hardware so that your model gets at least 2 1/2' of solid guidance from the launch rod before you depend on fin stabilization. —Ed]



NEMROC (continued from page 9)

Tony Vincent demonstrated his Twin Fin II, plans for which were in the *Sentinel* issue in everyone's convention packet. Tony also demonstrated his just-finished Saturn 1B on a D12-5, and fooled the LCO with his Deep Space Transport on two B6-0's and a B8-5. (Chris was sure that the center engine didn't light.) Scott Clement, leader of the Saturday design seminar, flew his Boiler Plate Goose, a model vaguely resembling a pterodactyl with rear ejection. The goose had its own ideas about flight: it flew a horizontal loop over the crowd and landed beak first, snapping its neck. Finally, we're happy to report that Jay Quattrochi is alive and well after risking his life flying brother Ron's Alpha III.

Our introduction stated that NEMROC was an encore performance to the National Sport Launch. Well, was it a snap? Yes and no. It was fairly clear by now how to do it, but it was still a lot of work just the same to get done. In spite of the efforts of Bill and myself, NEMROC continues to be a success, again pulling in over 100 participants and remaining the largest convention in the NAR.

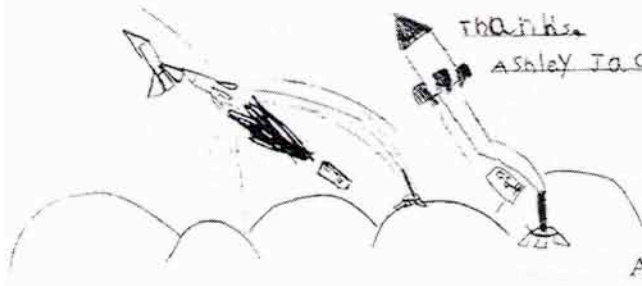
The Family that Flies Together...

Dear CMASS,
Thank you for allowing me to launch my Spag'sRoc and others on May the 18th. I'm looking forward to attending my 2nd NEMROC convention in October.

Sincerely,
Tapley Jackson

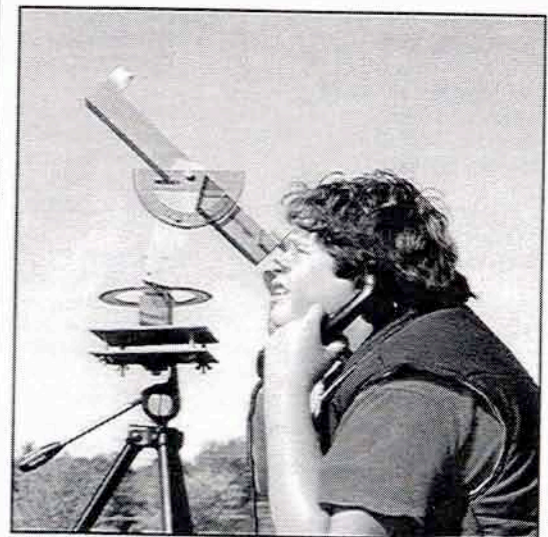
Hi,
I had lots of fun at the launch on May 18th and I hope to be at the next NEMROC convention. If I am then I'll see you there.

Thanks,
Jake Jackson



Thanks
Ashley Jackson

Thanks,
Ashley Jackson



Richard Nye, of Windham, Maine, tries his hand-eye coordination at tracking rockets for altitude during the convention launch. Rich discovered that it's not always as easy as it looks, especially when your tripod has a loose head-mounting nut. (Photo by Jim Cook)

The Sentinel is published irregularly by the Central Massachusetts Spacemodeling Society (CMASS) of Auburn, Massachusetts, which is section number 464 of the National Association of Rocketry (NAR).

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Please feel free to contact any or all of us with questions you have about CMASS, the NAR, or rocketry in Massachusetts.

CMASS Membership Form

Name _____

Birth Date _____

Street _____

Phone _____

City _____ State _____ Zip _____

Email _____

Membership type

- NAR: Member number _____ HPR lever: None Level 1 Level 2 Level 3
- Associate: I agree to abide by the NAR Safety Codes when flying at CMASS launches.

Dues for twelve month's membership

- \$4, 14 or younger
- \$6, 15-17
- \$8, 18 or older

Membership renewals are due either January 1st or July 1st, whichever is closest to the day you joined. Your membership expiration date is printed on the mailing label.

Make checks payable to CMASS and mail with this form to:
CMASS, 22 Coolidge Road, Wayland, MA 01778

CMASS Launches

Remaining 2008 Launches

October 19 Amesbury
 November 1 Amesbury
 November 15 Amesbury

In January 2009, watch for
 Frozen Follies in Acton

Launch Day Schedule

9:00 Setup range
 10:00 Launching starts
 4:00 Take down range

Amesbury: Woodsom Farm Park
 Amesbury, MA

Tewksbury Livingston Street Park
 Tewksbury, MA

Acton: School St. Soccer Fields
 Acton, MA

Sudbury: Davis Field, Sudbury, MA

Directions: Send email to:
secretary@cmass.org

Schedule May Change:
 for the latest info, go to our
 website, www.cmass.org

Weather Cancellation:
 After 8:00AM on the day of
 the launch, if the weather is
 questionable, call 718.231.1018
 before heading to the site.

Other Events

March 20-22 NARCON-2009, Wethersfield, CT – www.narcon2009.org
 June 2009 New England Regional Fun Fly, Pine Island, NY – www.nerrf.com
 July 2-6, 2009 LRRS, Tripoli's Annual Launch, Potter, NY
 August 8-14 NARAM-51 (NAR's Annual National Competition), Johnstown, PA – www.naram.org
 1/8A HD, A SD, 1/2A PD (MR), RandAlt, B R/G, B Alt, D DELD, Peanut SpSc, SFFC, R&D

CMASS Club Meetings

Meeting Schedule

Nov. 4, 18 Marlboro
 Dec. 2, 16 Saugus
 Jan. 6, 20 Marlboro
 Feb. 2, 16 Saugus

Meetings are held the first and third Tuesday of each month from 7:00-10:00pm..

The location alternates each month between:

- Bill Spadafora, 5 Granby Street, Saugus, MA – 781.233.0339
- Doug Steinfeld, 72 Prendiville Way, Marlboro, MA – 508.481.9337

Call for directions or to confirm a meeting. Changes in date /location are sent to
 the meetings@cmass.org mailing list (email webmaster@cmass.org to be added.)

THE SENTINEL

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 Maynard, MA 01754