



Northern Virginia Association of Rocketry



Free Press



December 2002

NOVAAR EVENT CALANDER

- 6 January 2003 -
NOVAAR Meeting, 7 PM –
“Plastic Model Conversion” – Jim
Brower
- 11 January 2003 – Sand & Paint
NOVAAR Equipment Trailer at
Manassas Airport; 12-5 PM
- 18 January 2003 - Sport Launch and
Team America Flights at Great
Meadow 10AM - 2PM
- 21 January 2003 –
NOVAAR Meeting, 7 PM "CanSat"
Educational Rocket Payload
Program - Ivan Galysch
- 4 February 2003 – NOVAAR
Meeting, 7 PM “Helicopter Design”
– Ken Brown
- 9 February 2003 - Sport Launch and
Team America Flights at Great
Meadow 10 AM- 2 PM
- 16 February 2003 - Building session
at Kings Park Community Center 1-
5 PM. D Helicopter kits - Ken
Brown (QCR)
- 18 February 2003 – NOVAAR
Meeting, 7PM – “Supersonic Model
Rockets” – Greg Bock
- 4 March 2003 – NOVAAR
Meeting, 7 PM. Tom Concannon
discusses his team's Team America
rocket

(continued on page 5)



A two-stage rocket takes off at a cold December sport launch at Great Meadow.
(photo contributed by Jonathan Rains)

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December 2002

Editor: Greg Bock

Contributors: Trip Barber, Greg Bock, Jonathan Rains, Eric Robinson and Keith Wancowicz

The **NOVAAR Free Press** is the official newsletter of the Northern Virginia Association of Rocketry, NAR Section 205. Subscriptions are included as part of the membership dues.

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7021 Forest View Drive
Springfield, VA 22150-3120

Visit NOVAAR's Web site at:
<http://www.geocities.com/CapeCanaveral/8561>

Or better yet....

ATTEND NOVAAR MEETINGS!

NOVAAR holds meetings twice a month. We meet the first and third Tuesday from 7:00 PM to 8:30 at the Kings Park Community Center in the Kings Park Shopping Center. The shopping center is in North Springfield, two miles outside the Beltway (I495) at the intersection of Braddock and Burke Lake Road. Dues are \$5.00 per year for ages 13 or younger, \$8.00 per year for ages 14-18, and \$10.00 per year for age 19 or older. The maximum yearly membership fee for a family is \$20. Make checks payable to "NOVAAR" and send to the Treasurer at:

Roger Hillson
ATTN: NOVAAR RENEWAL
4317 Selkirk Drive
Fairfax, VA 22032

Club members who wish to receive important announcements of launches, meetings and other club activities should send their E-mail address to Roger Hillson (hillson@erols.com)

President's Corner

Trip Barber, NAR 4322

I recently attended the organization meeting of "NOVAMARC", with a dozen or so reps from model airplane groups and the chief site planner of Fairfax County Parks Authority. Our group goal is to get in on the ground floor of the site planning for the vast tract of land the County just received from the Federal Government that used to be Lorton Prison. The outlook for getting some kind of "model aviation park" on this site by 2004 is reasonably favorable, and if this happens we will gain a once-per-month model rocket (E and smaller engine) flying site in close to complement our site at Great Meadow. There are lots of public meetings and other steps between now and getting this deal sealed, and many other users to be accommodated at the site, so we will have to see. I provided a post-meeting input to the Tom McClain, the model airplane flier and AMA Vice-President who organized this effort. You can read this input on page 7.

Editor's Ramblings

Greg Bock

The past two months have been busy ones for NOVAAR. At the Tuesday night meetings, NOVAAR members presented talks on composite materials, hybrid motors, fiberglass airframes and TV camera payloads. Some of these member presentations will appear in future newsletters.

This issue, which winds up the year, contains some pictures of the Holiday Party; an amusing item contributed by Jonathan Rains called the Susan Test – a test designed to determine if a substance was an extremely insensitive detonating substance (EIDS); information on a replacement for thermalite wick; and an update on the Team America contest.

I would like to thank Keith Wancowicz, Jonathan Rains and Eric Robison for their photos of the recent sport launches and the NOVAAR Holiday Party. Special thanks goes to Keith for his assistance in turning the newsletter into web format.

LATE BREAKING NEWS!!
NARAM 45 WEB SITE LISTS HOTEL INFORMATION
www.naram45.org
MAKE YOUR RESERVATIONS EARLY

NOVAAR'S 2002 HOLIDAY PARTY & AUCTION

Every year NOVAAR members gather together in December to exchange rocket stories, eat good food, and support the club through purchases at the traditional auction. 2002 was no exception. The club made over \$300.00 from the auction, and obtained some new members as well. Special thanks to all who made the party a success. Some of the party highlights are shown on below and on the next page.



Serial Number 001
Bart Merkley, NOVAAR's launch equipment manager receives the first of the newly produced NOVAAR sport shirts from NOVAAR President Trip Barber. (photo by Eric Robinson)



"Hey Dude!! I want one of those for my Level 2 Certification flight!!" --NOVAAR Auctioneer extraordinaire receives bids on the *Dude* mylar balloon rocket kit produced by Estes Industries. (photo by Eric Robinson)



(photo by Keith Wancowicz)



Jonathan Rains and John Hochheimer examine an Estes V-2 before auctioning it off. (photo by Keith Wancowicz)



A few of the auction items that were bought in by club members. (photo by Eric Robinson)

Team America Update

Trip Barber NAR 4322

Response to the Team America event went far beyond our most optimistic expectations. There are 875 teams and about 8000 high school students registered for it, with 175 of the teams registered under the "reduced fee, no kit" basis that we offered when kits (altimeters) ran out at #700. Entries are closed for this year, and the teams are all busy designing, building, and test-flying their rockets. They have to have a successful flight, witnessed by a NAR Senior member, by March 9 in order to qualify for selection to the final "top 100 team" flyoff at our Great Meadow launch site on May 10, 2003.

I am regularly posting questions from registered teams with my answers on the Compuserve Sport Rocketry Forum <http://go.compuserve.com/rocketry>. Set the date feature to list all messages since October 1, in order to browse them. These supplement the FAQ's on the Team America website.

Several NOVAAR members have contacted and are actively working with teams in the Northern Virginia area. If you are one of these please let me know if you see issues or questions arise; if you or your team are having it, others probably are as well. Feel free to communicate on the Sport Rocketry forum.

Nearly every member of NOVAAR has signed up for range crew duty for the big Team America flyoff in May. We will be joined by dozens of other NAR members from around the country to help run what has become the biggest event that the NAR has ever run. Thanks to everyone in NOVAAR for stepping forward to make this happen!

Is ThermOLite DynOmite??

Greg Bock

Many older and some not so old rocketeers remember "thermalite wick", the famous (or infamous) wick used to ignite motors using flashbulb ignition. Used in conjunction with a flashbulb, thermalite wick was particularly reliable and easy to use to ignite clustered motors. Thermalite, apparently, is no longer manufactured and to make its use more complicated it requires a Low Explosive User's Permit (LEUP) to purchase and special permits to store it. I gave up on flasbulb ignition because of the storage requirements. I can remember buying this stuff 10 or 15 years ago in 25-foot rolls and receiving it through the mail or via UPS.

In product review in recent the December 2002 issue of *Extreme Rocketry* Ray Dunakin discussed a fuse product called ThermOLite, as opposed to ThermALite, wick, which looks like it may partially fill the void created by the absence of thermALite. ThermOLite wick does not require an LEUP to purchase it or use it. A company called Pyrotek sells it (www.Pyrotek.org). After reading Dunakin's article on it I decided to purchase about 15 feet of thermOLite and try it out. The package arrived in a matter of days via US mail.

The wick is covered with a clear plastic sheathing and contains two wires, one along the center and a silver one outside. With the plastic sheathing stripped off the wick is about 1.5 mm in diameter. Based on the item in *Extreme Rocketry*, it appears that its relatively slow burning rate of 1 inch per second will relegate the wick to the initial ignition of clustered single stage rockets rather than for igniting upper stages. The old ThermALite came in three burning rates ranging from slow (1 ips) to fast (5 ips). The faster burning rate was good for upper stage ignition of the large length of fuse needed to get to the nozzle of the upper stage. I tested it using a flashbulb, and indeed, as Ray stated in the article, thermOLite can be ignited by a flasbulb. I'm eager to test this new product in a 3 motor cluster at a future launch and see how it goes.

Water Rockets

Volunteer to be a judge or to operate a NOVAAR information table at the Virginia Science Olympiad – 5 and 26 April 2003. *See page 7 for details.*

UPCOMING EVENTS

NOVAAR meets the 1st and 3rd Tuesday of each month at the Kings Park Community Center. Meetings begin promptly at 7 pm and usually last 1-½ hours. The Community Center is located in the King's Park Shopping Center, Braddock Rd. and Burke Lake Rd. — two miles outside the Beltway in Springfield. NOVAAR flies at Great Meadow - Travel on I-66 to The Plains Exit #31; proceed south on Old Tavern Rd. (Rt. 245) to enter the gate

8 & 9 March 2003 – Sport Launch and Team America Flights at Great Meadow; 10 AM – 2 PM

16 March 2003 – Building Session at Kings Park Community Center; 1-5 PM – ¼ A Boost Gliders – Robert Edmonds

18 March 2003 NOVAAR Meeting 7PM; Discussion: Roger Hillson will do a preflight demonstration of his X-Cam TV camera rocket

1 April 2003 - NOVAAR Meeting 7PM; Discussion: Radio Control Rocket Gliders – Dan Winings

5 April 2003 –

- Sport Launch at Great Meadow; 9 AM - 5 PM
- Science Olympiad – 8 AM – 12 PM at Oakton High School

12 April 2003 - **OPOSSUM-7**

OPOSSUM-7 (Only Possible Open Strategically Shackled Uproarious Meet) will be an Open Meet at Middletown, MD.. **NOVAAR will fly this contest as a club.** Events:

- ¼ A Boost Glider Duration
- A Helicopter Duration
- 1/4A Flex-Wing Glider Duration
- Open Spot Landing

26 April 2003 - Science Olympiad – 8 AM – 12 PM at Oakton High School

10 May 2003 – Team America National Championship Flyoff at Great Meadow 9 AM – 5 PM

ECRM-30 - May 17 – 18 2003

ECRM-30 will be held as a Regional Meet on May 17-18, 2003 (9AM – 4PM) at Middletown, MD. **NOVAAR will fly this contest as a club.** Events are:

- Peanut Sport Scale
- 1/4A Boost Glider Duration
- A Helicopter Duration

- Set Altitude (150 meters)
- Random Altitude (must be flown before Set Altitude)
- Open Spot Landing
- No electronics may be used for deployment on the altitude events. Altitude will be measured to ejection.

Contestant fees: \$10 for A/B Division, \$15 for C Division, \$20 per team for T Division

May 24 – 26 2003 - NATIONAL SPORT LAUNCH – Clarks Summit, PA

June 21 2003 (Rain Date 22 June 2003) MARS 29

MARS-29 will be held as a Regional Meet at Great Meadow, (9 AM – 5 PM) **NOVAAR will fly this contest as a club.**

Events are:

- ¼ A Boost Glider Duration
- A Altitude
- D Helicopter Duration
- C Egg Loft Altitude
- ¼ A Parachute Duration (multi-round)

Contest Director – Jim Brower (jbrower721@earthlink.net)

4 July 2003 – July 4th Airshow at Great Meadow – NOVAAR High Power Rocketry Demonstration

19 July 2003 - Sport Launch at Great Meadow; 9AM – 5 PM

August 2 – 8 2003 NARAM 45 -

Evansville Indiana, Contest Director: Lila Schmaker (see www.naram45.org for hotel information.)

Events:

- 1/4A Boost Glider Duration
- A Helicopter Duration
- A Altitude
- B Parachute Duration (Multi-Round)
- C Super-Roc Altitude
- E Streamer Duration
- F Dual Egg Loft Duration
- Open Spot Landing
- Peanut Sport Scale
- Plastic Model Conversion

23 August 2003 - Sport Launch at Great Meadow; 9AM – 5 PM

28 Sept 2003 - Sport Launch at Great Meadow; 9AM – 5 PM

15 Nov 2003 - Sport Launch at Great Meadow; 9AM – 5 PM

13 Dec 2003 - Sport Launch at Great Meadow; 9AM – 5 PM

The SUSAN Impact Test comes from a United Nations publication “Recommendations on the Transport of Dangerous Goods, Test and Criteria”. . NOVAAR member Jonathan Rains obtained publication for the NAR. It was one of many the NAR reviewed when it was evaluating reloadable motor technology many years ago. The publication had many different tests, of which the SUSAN test was one.

TEST 7(c) (1)SUSAN IMPACT TEST.1 INTRODUCTION

The Susan Impact Test is designed to assess the degree of explosive reaction under conditions of high velocity impact. The test is conducted by loading the explosives into standardized projectiles and firing the projectiles against a target at specified velocity.

48.2 APPARATUS AND MATERIALS

48.2.1 Explosive bullets, 51 mm in diameter by 102 mm long, which are fabricated by normal techniques, are employed.

48.2.2 The Susan Test employs the test vehicle shown in Figure 48.1. The projectile has an assembled weight of 5.4 kg, and contains approximately 0.45 kg of explosive. Overall dimensions are 8.13 cm in diameter by 22 cm long.

48.2.3 The projectiles are fired from a 81.3 mm smoothbore gun. The gun muzzle is 4.65 m from the 64 mm thick, smooth-surface, armor steel target plate. Projectile impact velocity is obtained by adjusting the propellant charges in the gun.

48.2.4 A schematic drawing of the firing range showing the target—gun layout and the relative positions of the diagnostic equipment is shown in Figure 48.2. The flight path is about 1.2 m above ground level.

48.2.5 The test site is equipped with calibrated blast gauges and recording equipment. The airblast recording system should have a system frequency response of at least 20 KHz. Measurements are made of impact velocities and air shock blast over pressure. Air blast is measured at a distance of 3.05 m from the impact point (gauges 1, 2 and 3 in figure 48.2).

48.3 PROCEDURE

48.3.1 The propellant charge in the gun should be adjusted to produce a projectile velocity of 333 m/s. The projectile is fired and the impact velocity and airblast produced as a result of its reaction on impact are recorded. If a velocity of 333 m/s (+ 10% - 0%) is not obtained, the amount of propellant is adjusted and the test repeated.

48.3.2 Once an impact velocity of 333 m/s is obtained, the test is repeated until accurate pressure-time records are obtained from at least five separate shots. On each of these accurate shots, the impact velocity must be 333 m/s (+ 10% - 0%).

48.4 CRITERIA AND METHOD OF ASSESSING RESULTS

The maximum airblast overpressure that is determined from each airblast is recorded. A minimum of 10 records is necessary for a valid average. The average of the maximum pressures obtained is recorded. If the average pressure obtained by such a procedure is *greater* than or equal to 27 kPa (i.e. the blast overpressure that a like mass of cast TNT would contribute at a velocity of 333 m/s), then the substance is not an EIDS explosive and the result is noted as “+”.

48.5 EXAMPLES OF RESULTS

Test substance	Result	Data reference
Composition B	+	USA sources
PBX-9502	—	USA sources

Composition B: cast material consisting of 60% RDX and 40% TNT

PBX-9502: pressed material consisting of 95% TATB and 5% KEL-F.

This is the Northern Virginia Association of Rocketry (NOVAAR) input on site usage plan and site requirements I provided to Tom McClain, the AMA Vice-President who is organizing an effort to get a field to fly model airplanes and rockets.

SITE REQUIREMENTS

We need a site 1000 feet or larger on a side to support flying up through E rocket engines under the NAR Safety Code. This is the largest engine type we would use at Lorton; larger rockets would be flown at our site in The Plains, VA. All rockets flown at Lorton would be one pound or smaller liftoff mass, so no FAA waiver or notification is required. We would not expect the rockets we fly to go above about 1500 feet. We will not use radio-control equipment, but may use FRS communications radios. Our lightweight rockets drift freely downwind from apogee under their non-controlled recovery device (generally a parachute, sometimes a glider or a streamer), so we prefer a site with no or virtually no trees or water hazards, and vegetation that is not tall or deep. Ideally, we would like the site to have a near-treeless area downwind, beyond the 1000-foot site area, for those rockets that drift unusually far on windy days. (20 mph is the max-allowed wind under the NAR Safety Code). Within the site, we would like to set up the launch area slightly (100 feet or so) up the prevailing wind direction (northwest) from the center. The largest launch range that we set up fits within a 100-foot diameter circle, including safety standoff distances from the launch pads. This circle needs to be cleared of vegetation other than short grass, but involves no permanent structures or paved areas.

Rocket-flying requires clear airspace overhead and downwind, and we cannot very well control where the free-drifting rockets may land, so it is hard to do rocketry and free-flight or R/C model airplanes simultaneously. For this and insurance reasons (see below), our preferred approach is to get one weekend day per month allocated to rockets and very few other uses (we would need to figure out in NOVAMARC which other forms of flying operations would be compatible), and to not do rockets on the site on any other day.

INSURANCE AND CONDITIONS OF USE

We believe that it is reasonable for Fairfax County to insist that all model aviation and rocketry operations at the site be covered by liability insurance that provides coverage to the site owner (the County), and would support making this a condition of use. The National Association of Rocketry insurance program that would provide this site-owner coverage does so under terms quite different from what I understand AMA's to be. The NAR insurance that is part of membership covers the individual member against his own liability for safely conducted flight operations. Individual member insurance does not cover the site owner. Site owner coverage is provided through only through chartered clubs ("sections") of the NAR, for launches that they

conduct and supervise. It covers the site owner and the section for all safely conducted rocketry activities on the range that that section operates, including flights by persons who are not NAR members.

Neither NOVAAR nor any other NAR section requires NAR membership as a condition of flying on our rocket ranges; only the range crew staff (members of the section) needs to be members, not the fliers. Our launches and the owners of our launch sites are still fully covered by NAR insurance. The personal liability coverage of individual fliers is their own problem, and they can join the NAR if their personal insurance does not cover this activity.

Because the rocket range has to be run by a chartered NAR section in order for the County to have insurance coverage, we do not want this site's rules permit people to just walk up and fly with their own equipment, at times of their choosing. We need to run a structured, organized flying range with safety check-ins and our launch equipment. Setting this equipment up and staffing such a range is a lot of work, and we prefer to do it only one day per month. Most NAR sections operate this way. So for insurance reasons, as well as airspace management reasons, having one dedicated rocket-flying day a month (and no rocket flying at other times) seems to make sense.

VOLUNTEERS NEEDED

VIRGINIA STATE SCIENCE OLYMPIAD

Organizers for the 2nd Annual Virginia State Science Olympiad competition have asked if NOVAAR is interested in assisting as judges in their "bottle rocket" competition that will be held in Fairfax County during April 2003. NOVAAR has also been invited to set up an information booth at the event. The organizers anticipate having over 600 students at the 2 days of competition. The "bottle rockets" that they fly are 2-liter soda bottles with water and pressurized air. This is a new arena of sport rocketry that is about to be recognized by the NAR with approval of the activity's first Safety Code. NOVAAR would need three people for each day from about 9AM – 1 PM

The middle school events will be held Saturday, April 5, 2003 at the Sandburg Middle School, 8428 Fort Hunt Rd., Alexandria, VA. The high school events will be held Saturday, April 26, 2003 at Oakton High School, 2900 Sutton Rd., Vienna, VA 22181. Contact Greg Bock at (703) 430-6959 or gbock@erols.com if you would like to volunteer for this effort. To find out more about the science Olympiad visit <http://www.fcps.edu/DIS/sciengfair/olympiad/index.htm>

FEBRUARY IS FOR HELICOPTERS

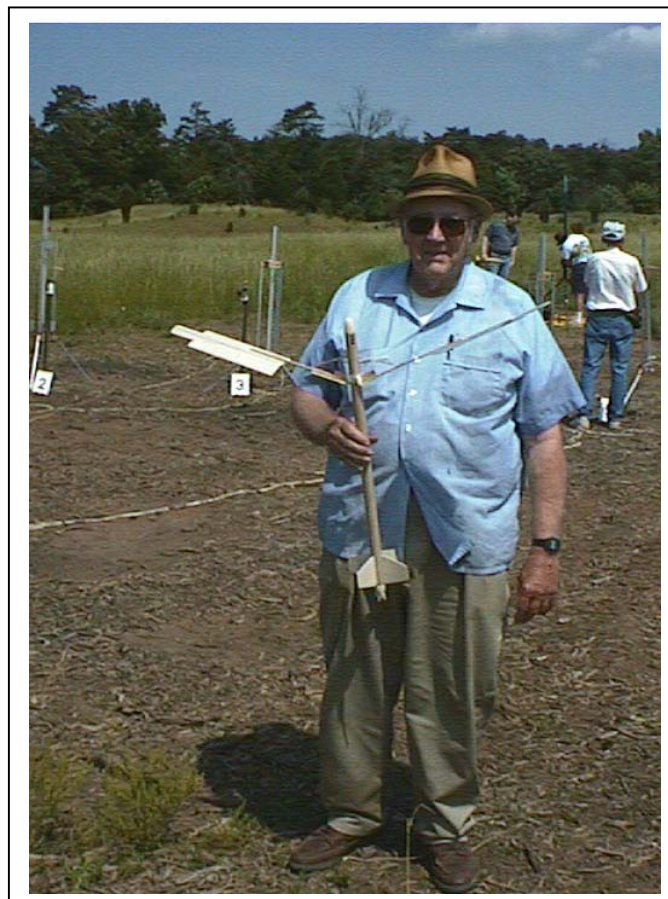
**Presentation on Model Rocket Helicopter Design by NOVAAR'S
Senior Advisor Ken Brown**

Tuesday, 4 February at 7 PM at the Kings Park Community Center

Club Building Session for D Helicopters

Sunday, 16 February 1-5 PM the Kings Park Community Center

Get ready for the upcoming flying season



NOVAAR MEMBERSHIP APPLICATION

Dues are \$5.00 per year for ages 13 or younger, \$8.00 per year for ages 14-18, and \$10.00 per year for age 19 or older. The maximum yearly membership fee for a family is \$20.00. Make checks payable to "NOVAAR" and send to the Treasurer at:

Roger Hillson
ATTN: NOVAAR RENEWAL
4317 Selkirk Drive
Fairfax, VA 22032

Roger can also be reached by email (hillson@erols.com) and telephone (703-978-6957 evenings). Be sure and put "NOVAAR RENEWAL" somewhere on the outside of the envelope, and enclose a copy of the renewal application.

Date _____ Please check one: ___ New Member ___ Renewal

NAME: _____

DATE OF BIRTH _____

STREET: _____

CITY: _____ STATE: _____ ZIP: _____

HOME PHONE: _____

NAR membership number, if a member: _____

EMAIL ADDRESS
(Optional) _____

I heard about NOVAAR from:

Dues are for one year of NOVAAR membership and do not include optional NAR Membership.

Please check one category based on your age as of the previous July 1st:

One: ___ Age 13 or younger (\$5) ___ Ages 14-18 (\$8) ___ Age 19 or older (\$10)

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