

The TARC Team, "Time Piggies", successfully test launch their dual stage, dual egg duration/lofter..

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Section 205

NOVAAR Free Press

January – February 2005

This is the official newsletter of the Northern Virginia Association of Rocketry (NOVAAR), Section 205 of the National Association of Rocketry (NAR). This newsletter is a benefit of being a member – *You are a member, aren't you?*

Section Officers

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Membership and Dues

To maintain the clubs launch equipment, pay for our website, and produce this newsletter we collect dues. Dues are collected annually and are; \$5 for members age 13 and younger, \$8 for members age 14 to 18 and \$10 for everyone else. A membership application can be found at many local hobby shops and on our website.

Meetings

NOVAAR holds meetings on the first and third Tuesday of the month, from 7:00 pm to 8:30 pm, at the King's Park Community Center in Springfield, VA. The most current topics to be discussed and directions to our meeting room can be found on our website.

Build Sessions

Once a month, on the third Sunday of the month from 1:00 pm to 5:00 pm, at the King's Park Community Center, the club gets together to build rockets and share construction techniques. The most current schedule and directions to our meeting room can be found on our website.

Launches

NOVAAR conducts monthly launches at [Great Meadow](#) which is located in The Plains, VA – approximately 50 minutes south of Washington DC on Route 66. Launches start at 9 am and run until 5 pm (10 am to 4 pm during the winter). The most current schedule and directions to [Great Meadow](#) can be found on our website.

There is no charge to fly at club launches (*motor sizes A to F*). However, there is a \$5 charge to launch high-powered rockets (*motor sizes G to I -- the field is not large enough for bigger motors*). **AND**, you don't have to be a member to fly with us. Though, after you meet us and, realize that we don't bite – *as long as we take our medication – we know you will want to join.*

If weather threatens the launch day, our website will report the status of the launch by 8:00 pm the day before.

Website

The club's website (www.novaar.org) is where the most current information about future club activities can be found. The site is maintained by...

Webmaster:..... Dan Winings
dwinings@adelphia.net

Newsletter

The club's newsletter is published 6 times a year or, as close to that schedule that is humanly possible for the editor to achieve. The newsletter reports on the club's activities and features articles written by club members about their endeavors within the Model Rocketry Hobby. The articles include, *but are not limited to*, topics on sport rocketry, competitive rocketry and high-powered rocketry. Send submissions to ...

Editor:..... Frank Prekel
fjprekel@aol.com

Calendar

March 2005

SUN	MON	TUE	WED	THU	FRI	SAT
		1 NOVAAR Meeting	2	3	4	5
6	7	8	9	10	11	12 NOVAAR Launch
			March 11 th , 12 th and 13 th NARCON			
13 Launch Back-up	14	15 NOVAAR Meeting	16	17 St Patrick Day	18	19
20 NOVAAR Build	21 First Day of Spring	22	23	24	25	26
27	28	29	30	31		

April 2005

SUN	MON	TUE	WED	THU	FRI	SAT
					1 April Fools Day	2 NOVAAR Launch
3 NOVAAR Launch	4	5 NOVAAR Meeting	6	7	8	9 NOVAAR Launch
10 NOVAAR Launch	11	12	13	14	15 Tax Day	16
20 NOVAAR Build	18	19 NOVAAR Meeting	20	21	22 Earth Day	23
24	25	26	27 Admin Pro Day	28	29 Arbor Day	30

May 2005

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3 NOVAAR Meeting	4	5 Cinco de Mayo	6	7
8 Mother's Day	9	10	11	12	13	14
	National Teacher's Day			Armed Forces Day		
15 NOVAAR Build	16	17 NOVAAR Meeting	18	19	20	21 NOVAAR Launch
22 Launch Back-up	23	24	25	26	27	28
29	30 Memorial Day	31	1	2	3	4
			June 5 – NOVAAR Section Meet			

Competition Rocketry

April 2nd and 3rd –

RAMTEC-12 at Great Meadow

On April 2nd and 3rd 2005, on our field at Great Meadow, SPAAR section will be conducting RAMTEC-12. After learning, the SPAAR had lost access to their field; NOVAAR suggested that they could use ours. And, they accepted. So, SPAAR is bringing the RAMTEC road show here.

Events to be flown are:

- D Dual Egg lofting Altitude
- D Helicopter Duration
- B Rocket Glider Duration
- 1/4A Parachute Duration

All of the information you should need is available at www.spaar.org/ramtec, including directions and a registration form.

Registration fee for the competition is:

- \$10.00 for A and B Division,
- \$15.00 for C Division and
- \$18.00 for Team Division.

The Contest Range will be open Saturday from 9am to 5pm and Sunday from 9am to 2pm. Events may be flown either day with the exception of D Dual Egg Lofting Altitude, which must be flown on Saturday.

The range is open for sport flying both days, during operation of the contest range. And will be managed by NOVAAR. All flights are subject to clearance of the Range Safety Officer.

Advanced Registration is preferred, however on-site registration and check-in will be Saturday morning at the range.

☆☆☆

June 5th –

NOVAAR Section Meet at Great Meadow

On June 5th (a Sunday), on our field at Great Meadow, NOVAAR will hold its annual section meet.

Events to be flown are:

- B Superroc Altitude
- A Streamer Duration, and
- 1/2A Boost Glider

The Contest Range will be open Sunday from 9am to 5pm. Joe Woodford will serve as the Contest Director.

☆☆☆

May 6th, 7th and 8th –

National Sport Launch, Plaster City, CA

The National Association of Rocketry annual National Sport Launch (NSL) will be held in the desert near Plaster City, California. This year's launch is sponsored by DART, "Diego Area Rocket Team", and will be held at the Plaster Blaster launch site. This promises to be an exceptional rocketry gathering with exciting launches and great camaraderie.

☆☆☆



July 30th to August 5th –

NARAM-47 at VOA Park, West Chester, OH

From July 30th to August 5th, 2005, NARAM-47 will be conducted at the Voice of America Park in West Chester, OH and is to be hosted by the Queen City Area Rocketry Klub (QUARK, NAR section 624 – <http://www.naram.org/>).

Events to be flown are:

- 1/4A Helicopter Duration
- 1/2A Boost Glider Duration
- A Cluster Altitude
- B Super Roc Altitude
- C Streamer Duration (Multi-round)
- Set Duration
- D Dual Eggloft Duration
- Open Spot Landing
- Giant Sport Scale
- Plastic Model Conversion, and
- Research and Development

The Contest Director is
Mark Fisher (micronzen@hotmail.com).

☆☆☆



Ever wanted to launch eggs into space? -- We'll pay you...

And we'll pay your friends too. Your school can compete against other schools and organizations from across the country for its share of \$60,000 in prizes! Thousands of students each year compete in the Team America Rocketry Challenge, a nationwide model rocket contest and the largest competition of its kind.

To win, each team must design, build, and fly a model rocket carrying a raw egg and return it safely to the ground while staying aloft for a predetermined amount of time. Whoever is the closest win!

Join us this year as we Celebrate the World Year in Physics, which marks the 100th year anniversary of Einstein publishing his papers on relativity.

**April 11, 2005 –
Qualification Deadline**

For more information, please visit our website at ...

www.rocketcontest.org



January Events and Activities

January 4th Meeting – Building High Powered Rocket Motors ... on the Government's Time

The first meeting of 2005 featured a presentation by Randy Repcheck on "Making Rocket Motors". Randy, a member of the division of the FAA that manages commercial space transportation, had an opportunity to attend a course conducted by the Reaction Research Society on building high-powered rocket motors.

The REACTION RESEARCH SOCIETY (www.rrs.org) was founded in 1943, and is the oldest continuously operating amateur experimental rocketry group in the United States. With a membership active in all areas of the propulsion sciences, the Society maintains the largest privately owned rocket test facility in the country and has, among its membership, many experienced, state licensed First and Second Class Rocket Pyrotechnic Operators. Utilizing these facilities and expertise, the RRS offers rocket motor building classes for the serious rocketry enthusiast.



The course is a unique "hands on" three-day class in beginning composite solid propellant motor technology. Students spend the first day in the classroom covering theory, materials, procedures, and safety. The second and third days of instruction are held in the field at the Society's Mojave Test Area. The second day involves the student in propellant mixing, casting, and curing. Each student is provided with all necessary materials to assemble and load a 300-pound thrust motor. All of the required propellant mixing/handling equipment, and motor assembly tools are available for the students. The course culminates on the third day with each student static testing their own motor in the Society's instrumented, state of the art test stand under the guidance of a Society pyrotechnic operator.



In addition to the knowledge and experience gained, the student takes away from the course all instructional handouts, test data, video coverage of the test firing, and the expended motor hardware.

Although designed to thoroughly cover all required technical information, this class is not just for "rocket scientists". The course materials have been carefully prepared to be useful and instructive to a wide range of students from professional propulsion engineers to the amateur experimentalist.

☆☆☆

January 8th Launch – Rescheduled due to Foul Weather

The forecast for Saturday, January 8, 2005, called for a 60% chance of precipitation in the morning with temperatures near 48° with. Southerly winds at 10 to 15 mph. Then, in the afternoon, the winds were to shift and come from the northwest at 13 and 16 mph.

Sunday's forecast was to be partly cloudy, with a high around 50 and easterly winds at 5 mph.

So, The NOVAAR launch is postponed until Sunday.

January 9th Launch -- A Sunday Launch Day.

The first launch of the New Year dawned cloudy and a tad colder than the forecasted 50 however, the winds were blowing gently from the east, in the morning. The turnout was very good with 115 flights and the arrival of a few local TARC teams – an indication of flights to come.

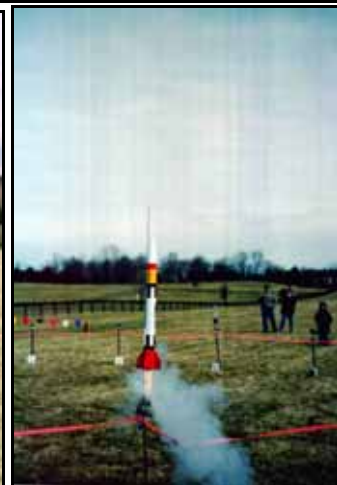
January 9, 2005 Launch Day Totals – 115 flights

¼A	¼A	½A	A	B	C	D	E	F	G	H	I	J	CLU	STA
0	3	2	8	13	27	17	8	3	6	3	2	1	16	6

CLU cluster, motors used not reported.
STA staged, motors used not reported.



January Events and Activities



January Events and Activities

January 16th Building Session

The build session for January focused on completing the club's demonstration rockets. Sanding was completed and fins were fiber glassed into on the I-ROC next, a coat of paint.

The damage incurred to the Wocket, from its sudden stop at the end its flight on December 11th, was repaired. And, its fins were reinforced.



When we next see the rocket's they will be painted and ready for their Fourth of July debut.

☆☆☆

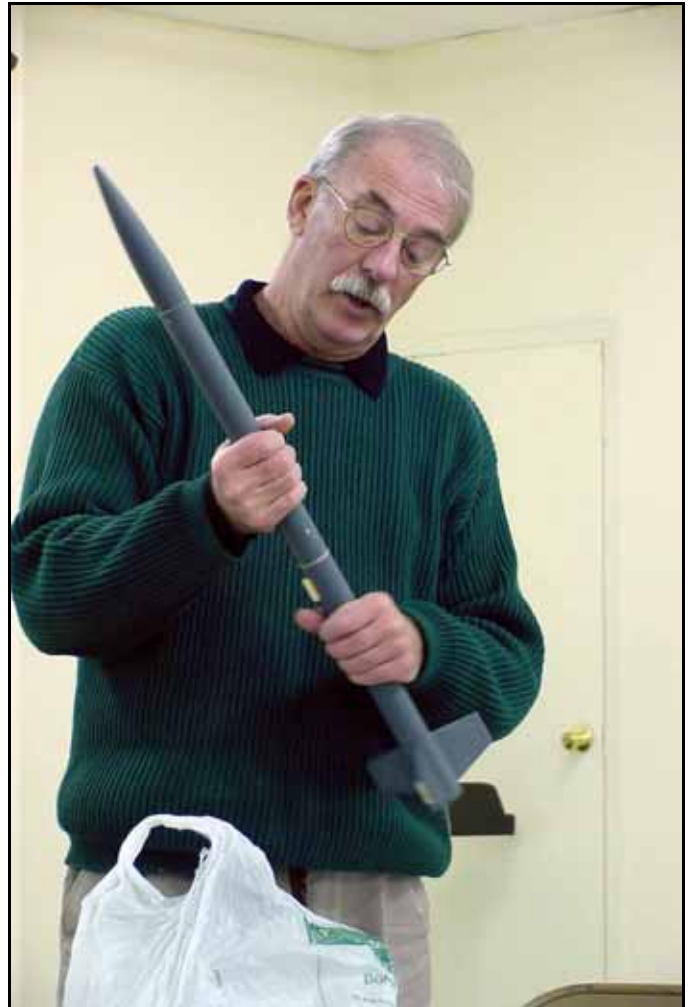
January 18th Meeting Making a Model Rocket that does Everything that Big-Ones do

The business portion of this meeting focused on the competition year to come; the date (Sunday, June 5th) and the events for the Clubs Section meet were set – Joe Woodford will be the contest director. At the same meeting a request from the SPAAR Section (Pittsburg, PA) was discussed and it was agreed that they could use the club's flying field to conduct RAMTECH-12 – they had just lost access to their flying field.

Also discussed was a request from the Challenger Center in Alexandria to help them conduct their summer-camp program. It was agreed that the idea was worth pursuing. Jon Hochheimer will coordinate.

Joe Woodford made the presentation for the evening. Joe discussed his efforts to build a dual deploy model rocket using a PerfectFlight dual event altimeter that he received as a gift. The model's airframe is made of BT-55 tubes. Christmas tree light bulbs will be cracked open and used as flash pot to break the rocket at apogee and then deploy the parachute at approximately 500 feet.

You don't have to build a large high-powered rocket to experiment with in-flight electronics!



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February Events and Activities

February 1st Meeting

Oakton High School presents their Critical Design Review for the NASA Student Space Launch Initiative

During the business portion of this meeting the club decided to purchase two new high-powered launch pads. The recommended supplier was "Yellow Jacket Systems" (www.yellowjacketsystems.com). Yellow Jacket only recently reopened for business – Trip Barber is coordinating the order.



The second order of business involved the replacement of the wooden range table a plastic, lightweight, table. It was decided to purchase the new table and donate the old table to the club's meeting room.

The presentation for the evening was made by the Oakton High School Rocket Club. The presentation was a preview of their Critical Design Review scheduled for February 15th with NASA,

They intend to test fly their rocket at our March launch.

☆☆☆

February 12th Launch

The February launch saw notable for the gusting winds and an increase in TARC flights.

February 12, 2005 Launch Day Totals – 88 flights

1/8A	1/4A	1/2A	A	B	C	D	E	F	G	H	I	J	CLU	STA
0	0	1	11	7	16	7	4	5	9	2	1	1	13	8

CLU cluster, motors used not reported.
STA staged, motors used not reported.



February Events and Activities



February Events and Activities

February 15th Meeting

Model Rockets ... Edmonds Aerospace's View

During the business portion of the meeting, Trip Barber reported that he had ordered two launch pads from Yellow Jacket Systems and that they should arrive within the next six to eight weeks.

Also discussed was the club's new website. It was agreed that up to \$120 per year be obligated to securing a commercial website provider. This would allow the club to have additional disk space for storage and email address for club members. Keith Wancowicz and Dan Winings are coordinating the move.

The presentation for the evening was made by Rob Edmonds of Edmonds Aerospace

(members.aol.com/RobEdmonds/Edmonds.html) a distinguished maker of rocket gliders and one of NOVAAR's senior most members.

Rob shared his views on the hobby industry and specifically the model rocketry hobby. He drew comparisons between the model airplane and model rockets hobbies. He noted that both hobbies reflect very similar "technology stories". As technology has evolved so have the hobbies.



Rob has observed that radio control flying has grown to dominate the model airplane hobby and sees a day when radio control will make a significant change in model rocketry.

A change that Rob is dedicated to making happen. The release of Edmonds Aerospace's "Arcie II", a boost glider sporting a single channel radio control, opened the door to radio controlled rocketry to newcomers.

During the presentation, Rob showed his next radio-controlled aircraft – this time sporting two channels.

☆☆☆



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February 20th Building Session

The February build session was dedicated for the construction of completion rockets for RAMTEC-12 regional meet to be held at Great Meadow. With the assistance of NOVAAR Senior Advisor, Ken Brown – who is also the owner operator of Qualified Competition Rockets (QCR) (cybertravelog.com/qcr/). Models built were QCR's "B" Rocket Glider and "D" dual egg-loft.



Trip Barber brought his fin alignment tool that makes very quick work of attaching the fins to the rockets.



☆☆☆

Advanced Rocketry

The Rouse-Tech CO2 ejection system

Will Marchant, NAR 13356

For larger high power motors, and all hybrid motors, the lack of a motor based ejection charge forces the user to implement an electronic recovery system. Fortunately there are a number of vendors of reliable and relatively inexpensive electronic systems to activate recovery mechanisms.

A small black powder charge is traditionally used to effect the actual ejection of the recovery components. Black powder leaves a lot of residue and the user must be careful to shield all recovery system components from the hot gases. Pyrodex is sometimes used but requires more containment to assure that the entire charge is consumed. Powder based ejection charges are also unreliable at high (above 20,000 feet) altitude.

Rouse-Tech (<http://www.rouse-tech.com/>) has a product (the CD3) that uses a CO2 canister to supply the large volume of gas necessary to deploy the recovery system. This allows the user to dispense with the protective gear for the parachute and recovery harness in the rocket. It also works regardless of altitude. Unfortunately, the system still requires a small amount of pyrogen (either black powder or Pyrodex) and an electric match (typically the Daveyfire 28B) to activate the CD3 mechanism.

The idea behind the CD3 is very simple: a plunger with a pointed tip is propelled by the pyrogen charge and pierces the CO2 cylinder releasing all the gas at once.

The CD3 system can use six different sizes of gas cylinders from 12 to 120 grams. The BSD Horizon 4" rocket uses about 1 gram of black powder for the main ejection charge. The 12 gram CO2 cartridge is the equivalent of one gram of black powder for that application.

The piercing mechanism consists of four (see photo 1) main pieces: a red anodized "barrel", a red anodized knurled end cap, an e-match holder, and the plunger. An o-ring is used on the e-match holder and on the plunger. The Nomex shield covers the pyrogen exhaust ports on the barrel. The 12-gram CO2 cylinder is shown in this picture. The components in this picture mass about 110 grams. Note that the e-match holder can hold redundant e-matches.



Photo 1: The individual components of the 12-gram CD3 are shown. The red anodized barrel shows two holes: the lower is the vent port for the CO₂ the upper is the vent for pyrogen gases. The Nomex shield is used to attenuate the pyrogen gases. The e-match holder clearly shows the wells for holding redundant e-matches. The grid in the background is of one-inch squares.

The assembled mechanism (see photo 2) can be attached to a recovery shroud line with tie-wraps (see photo 3). The starter kit also includes hardware for mounting the CD3 system to a bulkhead. The starter kit comes with all hardware and CO2 cartridges for the 12 and 16-gram system. Only one piercing mechanism is included.



Photo 2: This shows the assembled mechanism without the Nomex shield and without the e-match electrical harness. The e-match harness would exit through the hole in the back of the knurled knob on the left. That whole end of the mechanism would be covered by the Nomex shield.



Photo 3: The tie-wraps used to attach the CD3 to the nylon recovery harness are clearly shown in this photo. The placement of the Nomex shield is also shown. The left (aft) end of the Nomex shield is closed with masking tape. The e-match electrical harness exits from that end and is routed along the recovery harness to the altimeter connectors on the aft end of the payload bay. The large Nomex shield in between the CD3 assembly and the aft end of the payload bay is the main parachute reefed with a Defy Gravity Tether. Photo courtesy of Corrie Wolfe.

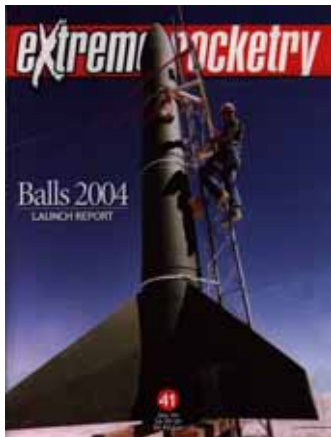
Ground testing consisted of one firing of a 12 gram system and it successfully ejected all recovery components from the main airframe. The two flight of the 12 gram CD3 have been successful.

The use of the CD3 system did allow the removal of 60 grams of Nomex recovery system shielding. That helps balance the 110-gram weight of the CD3 for a total increase of rocket mass of about 50 grams. The ability to mount the CD3 to a bulkhead may be a big advantage in some designs. And the removal of the bulky recovery system shielding might be critical in a volume sensitive application. The e-match harness in the CD3 design can be tied to recovery harness eliminating loose e-match harness that removes one worry about recovery system fouling. The CD3 is also a reliable system for flights over 20,000 feet. However, the CD3 adds a fair amount of complexity and replacement CO2 cartridges need to be purchased from Rouse-Tech.

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General Rocketry

NOVAAR Member and Proprietor of Edmund's Aerospace interviewed in Extreme Rocketry 41



☆☆☆

The 2005 Estes Catalog is released



☆☆☆

Model Rocketry featured as a Extreme Hobby in April 2005 issue of Popular Mechanics



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VERTICAL FORCE ROCKETRY

Vertical Force Rocketry is a model rocket retailer based in Northern Virginia.

We sell model rockets from FlisKits, Semroc, Rockethead Rockets, Estes, Quest, Custom, Loc Precision, Edmonds Aerospace, and Aerotech. We sell model rocket motors (engines) from Estes, Quest, and Aerotech.

A local dealer, means local delivery – you may qualify for free in-person delivery; if you live in or near Woodbridge, Virginia, AND, as a local dealer, We can be found on the field on NOVAAR launch days.

Join our mailing list Subscribe to our email list for news on product updates, specials, and contests.

Rich Aldridge

sales@vforcerocketry.com

www.vforcerocketry.com/

**Have you gotten your
NOVAAR Hat Pin Yet?**



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Frank Prekel -- fjprekel@aol.com

Catch me at the meetings or on the field.

The NAR pin is \$4.50 (plus shipping) and is available from NARTS (www.nar.org/narts).

Sorry, the U.S. Flag Ribbon is out-of-print



Photo: Rich Aldrige



Photo: Rich Aldrige