

**Here it is:**

# **The April 1<sup>st</sup> 2019 Launch Rack**

**A full 28** pages of Our Annual Lies and Innuendo

Try to Enjoy

HEY! Its Not All About You!

(Thank Goodness)

Just Some of You...

<G>



And just in case:

**lie**

(lī)

*n.*

1. A false statement deliberately presented as being true; a falsehood.

2. Something meant to deceive or mistakenly accepted as true:

*learned his parents had been swindlers and felt his whole childhood had been a lie.*

*v. lied, ly·ing* (lī'ing), **lies**

*v.intr.*

1. To present false information with the intention of deceiving.

2. To convey a false image or impression: *Appearances often lie.*

*v.tr.*

To say or write as a lie.

**Idiom:**

***lie through (one's) teeth***

To lie outrageously or brazenly.

**in·nu·en·do**

(in'yōō-ēn'dō)

*n. pl. in·nu·en·does*

1. An indirect or subtle, usually derogatory implication in expression; an insinuation.

2. *Law* A plaintiff's allegation explicating the defamatory meaning of the publication or utterance in a libel suit.



# ***THE LAUNCH RACK***

Published by the Garden State Spacemodeling Society  
National Association of Rocketry Section No. 439  
New Jersey's Oldest Model Rocket Club

Volume 37 Number 3 (Issue 215)

April 1st, 2019

\*\*\* 2014 LAC NEWSLETTER AWARD HONORABLE MENTION \*\*\*  
\*\*\* 2015 LAC NEWSLETTER AWARD HONORABLE MENTION \*\*\*  
\*\*\* 2016 LAC NEWSLETTER AWARD RECIPIENT \*\*\*

# **I DREAM of NARCON**

86 yr old Barbara Eden 'robs the cradle' posing with 62 yr old  
Dr. Bob Kreutz at the recent 2019 Cocoa Beach NARCON  
(and one of them looks very, VERY good!)

# President's Message

Phil Murphy

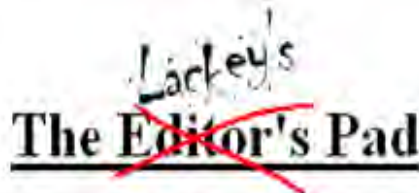


## Presidents Report

GSSS will now institute a new "Minimum Wage Launch Fee" at all launches, of \$15 an hour. So plan your launches appropriately if you wish to control costs. This fee will have FICA, SUI and Med deducted and will go straight to Trenton, so don't think GSSS gets to keep all of it. We consider this a step in the right direction towards creating a "Living Launch Fee" because "its the right Left

thing to do!" Smoking in the launch area will still not be permitted, unless the consumable combustible is State controlled marijuana and used only in the designated State Approved Marijuana Smoking Area.

-Phil



Dr. "It's the Tooth" Bob Kreutz

IF it'll FIT - I'll Print IT!  
If not, I'll probably print it anyway...

DR. BOB



DrB before this Aprils Issue

ITS BIG & ITS THICK – YES! - ITS APRIL's edition of **THE LAUNCH RACK!** ITS HERE! A year in the making—Its the April Issue of the Launch Rack!

Yes! Another Launch Rack FIRST! Should you wish, you may now have your Newsletter delivered written in **KLINGON!** We find no one else delivering such service – a true travesty and unpatriotic oversight. We will NOT abandon nor disenfranchise our unique and contributory community. Of course, tailoring the newsletter to your needs requires the Club Scribe spend hours (upon hours) translating each word by hand with only a solitary candle for his mere minimum luminosity. This incurs a number of additional costs, of which we ask you only for an eye for an eye. The Klingon version of the Launch Rack is available for the annual contribution of 20 Darseks. Should you be fresh out of the common Klingon currency, you may submit the grand sum of 1 (one!) lousy Bitcoin to the Club Treasurer, Rob Nee, through the link provided on the GSSS web site. Example:

Hija'! Rack Launch latlh wa'Dich! vaj DaneHchugh, Newsletter **tlhIngan** ghltlh neH Hlj chaq DaH Daghaj! pagh latlh vlg chavmoH – 'ej unpatriotic oversight teH travesty Hlj vltu'. not lon 'ej unique 'ej contributory community disenfranchise maH. luq, rep Hoch mu'mey mugh pong ghopDu' je neH solitary weQ minimum luminosity len rep 'arghbej jeqqlj HaDwl'pu' poQ nIS newsletter tailoring. ml' Saturjaj costs, baS SoH botlhobbogh maH neH mInDu' mIn ghu'vam incurs. tlhIngan version Launch Rack lupuQ annual contribution 80 darseks. vaj ghoQ common tlhIngan currency, chaq submit SoH vlpoSmoHmeH sum 1 DuHlVdI' (wa'!) lousy bitcoin jeqqlj Treasurer, rob nee, vegh link gss 'ej bebvo' Daq.

After the last issue, it was confirmed few readers get this far into the Lackey's Pad. But I am required by the club Grand Poobah and Editor Most High to inform you that this issue contains LIES which you may

find offensive – especially if you are the target of our Klingon Pain Stick. That said and all things being equal, I am forced compelled to tell you: Its all lies and there isn't a bit of truth herein. I would rebut that this issue, a full year in the making, is a labor of love (for what, we're not sure) and a product from the mind of the infamous Dr. Demento, my alter ego. Without further ado, we are proud to present this April's issue of: The GSSS Launch Rack. We hope you enjoy it as much as we did making it. Please send your feedback to the Lackey or Dr. Demento, c/o the Launch Rack.



DrB um, no, that's Dr. DeMeNTO

## Countdown!

2020

Please Note: All Launch Dates are **Wenesdays** Except where noted.



- Feb 24 – Sport Launch (Thanks 4 Nothing Solar Eclipse Launch)
- Mar 24 – Sport Launch (2<sup>nd</sup> BlueMoo & Vernal Equinox Launch)
- SUN** Apr 29–Sport Launch (Great Mercurial Elongation Launch)
- May 26 – Sport Launch (Post-Jovian Opposition Launch)
- Jun 23 – Sport Launch (Aestival Solstice Launch)
- July 28 – Sport Launch (Thanks 4 Nothing Again Eclipse Launch)
- Aug 25 – Sport Launch (Post Perseid Meteoric Launch)
- Sept 29 – Sport Launch (Launch of the Autumnal Equinox)
- Oct 27 – Sport Launch (Orion's Annual Meteoric Launch)
- Nov 24 – Sport Launch (Launch THIS You Turkeys! Launch)
- Dec 22 – Sport Launch (Festivus 4 da restiv Us Solstice Launch)

Our WebMaster Rob Nee says: Check the GSSS Website! If you go to the launch dates page on the new website there is more info. You can add calendar subscriptions to most phones and Google Calendar. If the launch dates change they show up on your phone or in Outlook automatically!

NEW URL --> <http://www.gss.club/launches.php>

## It's The Monthly Morph!!

Wait. You think  
**THIS is Bad?**  
Just wait until  
**October...**

Actually, we're  
running out of  
famous dignitaries  
willing to have  
themselves  
morphed so here's:



Alfred E. Klewman

## RE:ENLISTMENTS

>>WELCOME<< ((BACK))

**ONE & ALL FOR 2019!!!**

**IF You haven't RENEWED your Membership with GSSS - YOU MUST STOP READING HERE!!!**

**RIGHT HERE – NO FARTHER – YOU UNDERSTAND???**







# THE SOAPBOX

## STAND UP AND SHOUT!

Shout, shout, let it all out  
These are the things I can do without  
Come on, I'm talking to You, come on...

Here you can say what you want: So SOUND OFF GSSS – right here - on anything you would like! May similar minds come together - or secret plans be revealed...

# IS IT TIME?

## TO BURN OUR TIES WITH THE STATE OF NEW JERSEY

Restrictive Laws, Presidential No Fly Zones, Cost of Living and Taxes force life-long NJ residents to leave the State in increasing numbers. It is likely to condemn Model Rocketry in NJ and cause our ultimate demise. Is it time? Time to leave NJ and move the Club to...???



*Everything is flammable if you believe in yourself  
and try real hard :-D - dhbarr, Sept 27, 2018*

My dad told me before you run away from home next time, be sure I knew where I was running away to! Sagely advice, right? OK, we have a lot we can complain about here in NJ. But, please consider how much greener the grass is elsewhere: Just this year, Iowa ended a ban on model rockets that's been in place since 1938. And there are still many states that prefer public displays and people using novelty items rather than having residents launch model rockets off the ground. Here's a breakdown of how much freedom states give the general population.

### States with outright bans

Delaware: The state prevents the sale of everything from model rockets to sparklers and Roman candles to fire balloons.

Massachusetts: It is illegal for private citizens to use, possess or sell model rockets in Massachusetts, or to purchase them legally elsewhere and then transport them into the state.

### Weird bans

Ohio: model rockets can be bought there by consumers but must be transported out of state within 48 hours. model rockets cannot be used there, but novelty items are OK.

Local ordinances: Even in states where model rockets are allowed, local ordinances can also limit their use. In Grand Rapids, Michigan, consumer model rockets can only be fired on a national holiday and its preceding and following days.

Wisconsin: A permit is required to use model rockets, roman candles, bottle model rockets and mortars. Small sparklers, toy snakes, smoke bombs and other items, such as novelty devices that spin on the ground, don't require a permit.

### Limited bans

Many states prohibit model rockets, firecrackers and roman candles but allow several types of novelty items. Factors like location and

time of year can also make a difference.

States with limited bans include Arizona, California, Colorado, Connecticut, Florida, Hawaii, Idaho, Illinois, Maryland, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Vermont, Virginia, Washington state and Washington.

### Least restrictive

Many states allow certain types of model rockets for residents. Among the least restrictive are Alabama, Alaska, Arkansas, Georgia, Indiana, Kansas, Kentucky, Louisiana, Maine, Michigan, Mississippi, Missouri, New Mexico, North Dakota, South Carolina, South Dakota, Texas, West Virginia and Wyoming.

The American Modelrocket Association (AMA) tracks state laws, but updates can occur. Visit the model rockets advocacy group's listing for states at [www.americanmodelrocket.com/state-law-directory](http://www.americanmodelrocket.com/state-law-directory).

### Our Options

The weather has been *bad*, the President spends way too much weekend time here and *taxes* are *through the roof*. They are the only thing going *higher* here in NJ and they don't have the same 400' maximum as the airplane guys – yet. Time to get out – but to where? Lets consider what we will become if we break camp and move outta Dodge.



Obviously, the need for the club to leave the wonderful State of New Jersey established in the previous article, will cause great confusion and consternation, if not constipation, on the part of many club members. In an effort to ease their pain and clarify not only where we're coming from – but where we're going to, we should discuss our options and the ramifications of the impending GSSS movement en masse.

Consider some of the major changes the club would have to deal with upon exiting the State, other than moving vans and packing up: Name Change!!!! We could no longer call ourselves the "Garden State" Spacemodeling Society – could we? Our destination would determine that. So lets consider some of them.

The easiest move on the club would be to a "Garden" state or similar so we wouldn't have to change the GSSS stationary or bank account. A "G" state like **California** or **New Hampshire** where we could be known as the **Golden State Spacemodeling Society**, or the **Granite State Spacemodeling Society** – both allowing us to keep our GSSS monogram!!! Any place else will require a little more additional alphabetical manipulation. The closest to who we are now would be:

**N. Dakota: The Peace Garden State Spacemodeling Society - PGSSS**  
**Arizona: The Grand Canyon State Spacemodeling Society - GCSSS**  
**Michigan: The Great Lakes State Spacemodeling Society - GLSSS or,**  
**Vermont: The Green Mountain State Spacemodeling Society - GMSSS**

Possibly the second easiest change would be simply one letter. Should we end up in any of the following locations, all that we need to do is swap a B for the G in GSSS. That way we could go to any of the following States and become "BSSS":

- Wisconsin The Badger State Spacemodeling Society - BSSS
- Massachusetts The Bay State Spacemodeling Society - BSSS
- Oregon - The Beaver State Spacemodeling Society - BSSS
- Utah - The Beehive State Spacemodeling Society - BSSS
- Kentucky - The Bluegrass State Spacemodeling Society - BSSS or...
- Ohio - The Buckeye State Spacemodeling Society - BSSS

Now beyond Ohio, things can get a little complicated. But also increasingly interesting, none the less! Lets consider States that like things to fly in the air and have Birds in their nick. We could be:

- PSSS - The Pelican State Spacemodeling Society if we go to Louisiana
- HSSS - The Hawkeye State Spacemodeling Society if we go to Iowa or
- YSSS - The Yellowhammer State Spacemodeling Society if we go to Alabama

There are some States that would be "cool" to go to, if we just consider their nick-name and aren't too concerned what letters would make up the Club's abbreviated initials. Consider the following:

- The North Star State Spacemodeling Society – NSSSS - Minnesota
- The First State State Spacemodeling Society – FSSSS - Delaware
- The Last Frontier State Spacemodeling Society – LFSSS – Alaska or we could all go 'au naturel' if we wind up as:
- The Natural State Spacemodeling Society – NSSS – in Arkansas

Be warned and don't choose lightly. There are a few "out-layers" we could end up in, some of which you'd have to wonder where they are coming from – and where have we gone to now?

- Missouri - The Show Me State Spacemodeling Society = SMSSS
- Wyoming - The Equality State Spacemodeling Society = ESSS
- North Carolina - The Tar Heel State Spacemodeling Society = THSSS
- Nebraska - The Cornhusker State Spacemodeling Society = CSSS and
- Oklahoma - The Sooner State Spacemodeling Society = SSSS, but you must know, that SSSS is already taken!

Here's a good one, there is lots of launch room if we could become:

- The Treasure State Spacemodeling Society of Montana = TSSS
- For my last example (and Ill bet you're glad of that...) please consider that we c-o-u-l-d end up in New Mexico and become = TLOESSS as:
- The Land of Enchantment State Spacemodeling Society!

Unfortunately, those initials are so long and confusing, people would probably mess it up and call us those "TOPLESS" guys so maybe New Mexico isn't such a good choice....

There you have it. Are there more – certainly there are! But we'd probably not want to go there anyway so, I'll let you consider a few of them all for yourself. So send in your vote – where should we go & what's our new NAME?

Oh yeah, last member to leave New Jersey, Please turn out the lights.







### Messages Channeled through the Oui-GSSS Board

The GSSS BOARD will discuss matters that relate to the Club and affect the membership. A synopsis and the results of any votes will be presented here.

...Or "Stuff We've Heard That's Been Floating Around In Empty Space"

Disclaimer: The SOAPBOX: Stand Up and Shout, The Editor's Pad, Rocket eMail and President's Message are instruments of personal opinion and expression. The Launch Rack and the GSSS Board neither support nor oppose the opinions expressed in these columns and wash their hands of these affairs •[RTK, AsstEd & Beast of Burden]

## THE ACADEMY OF MODEL AERONAUTICS RESULTS OF THE 2019 DISTRICT IV VICE PRESIDENT ELECTION

CANDIDATES	TOTAL VOTES RECEIVED	
JAY MARSH	833	
Eric Williams	2	
Tommy Cheek	1	
Will Davis	1	
Jim Halpin	1	
Rusty Kennedy	1	
Paul Lukas	1	
Ron McNally	1	
Chris Prince	1	
Bruce Simpson	1	
Frank Tiano	1	
*Dr Bob	1	
*Homer Simpson	1	
*Donald Trump	1	
TOTAL	847	

I have not and WILL NOT conceded in this race until ALL VOTES ARE COUNTED! That means all votes that may still be lost and in a rented van somewhere in the District, All those cast by individuals that are residing outside the District but who may be related to someone who lives in District 4, All those that were unable to properly fill out their ballots because my name is hard to spell (its K-r-e-u-t-z not M-a-r-s-h) or those that were unable to understand the ballot printed in one of the 40 routinely recognized languages of District 4, or by those who want to, but have been unable to obtain an official AMA Membership License. Requiring proof of membership, as you all know, is now against the law and disenfranchises certain communities Lastly, If Elected, I WILL NOT SERVE. Thank You! – *Dr. Bob*







Absolutely No One wrote to the Launch Rack after the last issue!! Who would have believed it? So, instead of letters commenting on our content, next time – here's a challenge: Why not write to the Lackey with your selection of which **\*\*NAR Official\*\*** you would like to see **TARRED 'N' FEATHERED** in next April's issue of the Launch Rack??? Yeah, that's the ticket... It will take me a year – but I'll make it r-e-a-l hot-n-sticky!



## B.A.R.C. Monthly Launch



<https://www.google.com/maps/place/Rabbit+Hill+Farms/@39.4575101,-75.2776996,12.83z/data=!4m5!3m4!1s0x89c73dd300c013e7:0x2d3254bddeb692e9!8m2!3d39.459597!4d-75.290785?hl=en>

**Date(s) - 04/20/2019**

**Time:** 9:30 am - 3:00 pm **Location** [Rabbit Hill Farm](#)

**Latitude / Longitude:** [39.46595, -75.291475](#)

**Category:** [Sport Launch](#)

Low, Mid, & High Power Rocket Launches. Monthly launches are typically the third Saturday of each month but are subject to change; please check our website for possible date changes.

[Website »](http://www.barc775.org/) <http://www.barc775.org/>

### Sponsor Info:

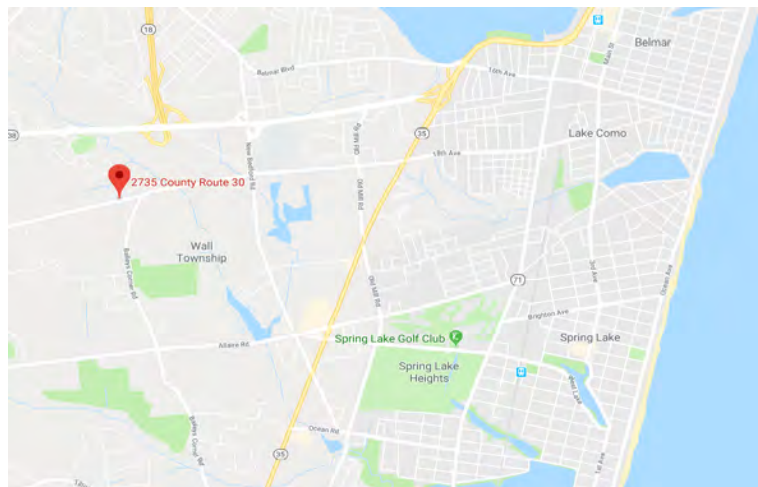
**Sponsor Type:** NAR Section **Sponsor:** BARC #775

**Event Director:** Mike Zapolski Sr. |

[BARC2014@comcast.net](mailto:BARC2014@comcast.net) | 856-455-7855



## CENJARS Monthly Launch Belmar, NJ - 11/4, 12/2 - 12:30pm to 3:30pm



<https://www.google.com/maps/place/2735+County+Route+30,+NJ+07719/@40.1610314,-74.0644818,13.92z/data=!4m5!3m4!1s0x89c18779c6ee963f0xc0a742b83b6cd6c518m2!3d40.1650355!4d-74.0764465?hl=en>

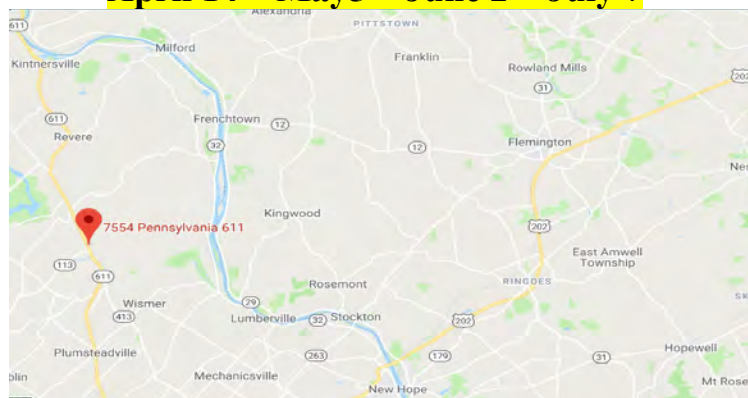
I don't have a place on our website ([cenjars.org](http://cenjars.org)) for launch dates. I will look into doing that. We normally launch on the first Sunday of the month from 12:30 to 3:30 or so. I do post announcements early in the week and also post on our Facebook page. The next few planned dates are 8/5, 9/2, 10/7. Of course, these are all weather dependent.



## Philadelphia Area Rocketry Association

WE LAUNCH ON THE FIRST SUNDAY OF EACH MONTH AT THE HALLOWELL FARM IN BEDMINSTER, PA 11AM till 3PM  
Setup starts at 10:30. Please lend a hand.

**April 14 – May 5 – June 2 – July 7**



WE PERMIT ROCKETS WITH UP TO A **G80 MOTOR!**  
ROCKETS MAY WEIGH UP TO **53 OUNCES (3.3 POUNDS)** WITH INSTALLED MOTORS. **15 LAUNCHER CAPABILITY.**  
The PARA flight field is located at Hollowell farm, approximately 9 miles north of Doylestown PA on Route 611. The entrance to the farm is just north of the intersection of Route 611 and Route 113. Enter here and follow the road to the right, around the barn. Once around the barn, follow the road and you will be able to see where we are set up. The address of the property is 7554 Easton Road, Ottsville, PA 18942. Please drive only on the farm roads. DO NOT drive on anything green!



We will be launching in a corn field. As it gets later in the growing season you may want to put a beeper on your rockets to help find them in the higher crops. It's a good idea to wear rugged shoes or boots and long pants. There are no rest room facilities on the property but there are plenty of trees, so... Anything you may need - bring with you, including water.

You will be provided with flight cards which must be filled out before each flight to help us record the days launches. If you would like to save some time at the launch, you can download the flight cards as a PDF file. This will help us with preflight inspections, maintaining as high a level of safety as possible for you. All rockets must undergo a safety inspection prior to being loaded on the launch pad. If your launch card is not signed off by the RSO, the LCO will not launch it.



# SoJARS (NRC) Sojourn

### C Egg Altitude-Altimeter

We will have entry forms and results cards along with a thermometer and stop watches. Altitude events fliers -you need to supply your own egg or payload along and an NAR approved Altimeter.



**SoJARs plans on having the same contest events every month at all our upcoming club launches.**

**March 17th**  
**April 21st**  
**May 19th**

## December 15th

# RADICAL ROCKETEERS

## MONTHLY CLUB LAUNCHES

The large recovery area and FAA waiver allow for everything from low power model rockets to high power flights up to 5000ft AGL.



Saturday December 8, 2019

\*\*\* stay tuned for additional \*\*\*

\*\*\* bonus launch dates! \*\*\*





# GSSS Launch Site

## North Branch Park



### Important note on how launches are run

1. If no one shows up to fly by 10:30am the range will be shut down early.
2. The range will not be opened until other fliers show up to help setup the range.
3. When those present say they are finished launching the range will close.
4. All launching is canceled if Trump is at his golf course in Bedminster. We are not always notified until we get to the park so a launch cancellation notice can not always be sent.

### Directions to North Branch Park Launch Site

[North Branch Park](#) is very near the traffic circle junction of NJ Routes 22, 28, 202, and 206, near Somerville. Follow 202 South from the circle for 2 miles, past Bridgewater Towne Centre Shopping Mall (Wegmans), under railroad trestle marked "4H is Tops", to right turn onto Milltown Road. Make first left after firehouse and 4H Center on right; follow path to open field. Monthly launches from 10-4.

#### FROM NORTH

NJ Turnpike South to Exit 10, 287 North to Exit 14B (left-hand exit), 202/206 South to Circle

#### FROM SOUTH

202 North to Milltown Rd.; or 206 North to Circle

#### FROM EAST

287 North to Exit 13, 202/206 South to Circle

#### FROM WEST

Rt.78/ Rt.80 East to 287-S, Exit 17, 202/206 South to Circle

### Local Facilities

**AMENITIES** Public Restrooms on site. Fast food locations (Dunkin' Donuts & McDonald's) on Rt. 202.

**EQUIPMENT** Launching your rocket with GSSS is free. GSSS provides launching facilities and operates under the mis-fire alley protocols. You must supply your own rockets, wadding, rocket motors and ignitors.

**MODEL ROCKET SUPPLIES** If you wish to purchase motors and other hobby items on-site, [Heavenly Hobbies](#) is usually present at the field. We highly recommend you contact them first with your needs and to confirm their attendance and let them know if you need something particular so they can bring it. Toys R Us, Michael's, and Walmart are in the area too and carry some model rocket items.

### Map of Launch Site



### GSSS Launch Regulations

1. All models/launches to be in compliance with the [NAR Model Rocket Safety Code](#).
2. All models ready to launch must be presented to the RSO for a safety check.
3. When using the ALLEY SYSTEM, permission to launch must be given by the RSO. A **loud** 5 second countdown must be used before launch.
4. An attempt **MUST** be made to insure that all models are recovered within the boundaries of the park. Using engine/recovery systems compatible with wind conditions etc. (This does not apply at contests).
5. High power (Over 30 Newton-seconds) flights, when allowed by the RSO will be ignited from a minimum distance of 30 feet. (Recovery as in rule #4).
6. Models using more than 30 Newton-seconds of power must use at least a 3/16" or 1/4" launch rod. If smaller, model may not be allowed to fly. (RSO to decide)
7. MOD-ROC flights will be allowed at the discretion of the RSO. (Recovery as in rule #4).
8. Entry and exit from the launch area will be from one end only, at the R S O table.
9. Static testing of engines will not be allowed.
10. Long thrusting engines should only be used in very calm wind conditions (No more than 4.5 seconds of thrust time can be flown. Recovery as in rule #4)
11. All prepping of models will be done outside of launch area.
12. Alcohol is not allowed at any GSSS model rocket launch.

### A Note About North Branch Park

Please keep in mind that the park and weather conditions dictate what we allow to fly. If the Range Safety Officer (RSO) does not feel the model can be safely flown or recovered within the park's boundaries, it will not be flown regardless of the weight or impulse. If some other activity shows up and starts using the adjoining fields, the RSO will reduce impulse for all flights. So, bring some small stuff just in case. Remember, we share the park. We do not pay a fee and most of us are not a resident of that county. Rocket flying fields in New Jersey are in short supply, and we are protective of the fields we have. If you are unhappy with this limitation, then we invite you to help us in gaining legal access to privately owned, large, open fields.

Also see the [GSSS Launch Regulations](#)

# National Events

The 2019 national events have been announced!  
More details will follow shortly.

## National Sport Launch

Lucerne Dry Lake, California  
June 8-10 2019.

## Rocketry Festival 2019

**NARAM-61**

**US Team Selection Flyoffs**  
**FAI Open - NorthCoast Cup**

**Muncie Indiana**



**July 27 – August 3, 2019**

**“The Eagle Has Landed”**

**50<sup>th</sup> Anniversary of the Apollo 11 Moon Landing**

## 2018-2019 NRC Events

**As of August 11, 2018, the National Rocket Competition (NRC) for the 2018-2019 season has begun. The NAR Contest Board is pleased to announce that the following events will make up the 2018-2019 National Rocket Competition (NRC).**

**1/4A-Parachute Duration**

**1/4A-Helicopter Duration**

**A-Boost Glider**

**B Eggloft Duration**

**B-Payload Altitude-Altimeter**

**C Egg Altitude-Altimeter**

In accordance with Rule 6.3.1 of the Sporting Code. Members may begin flying these events the first day after NARAM ends, August 11, 2018. The NRC ends on June 30 of 2019.

Rules can be found at:

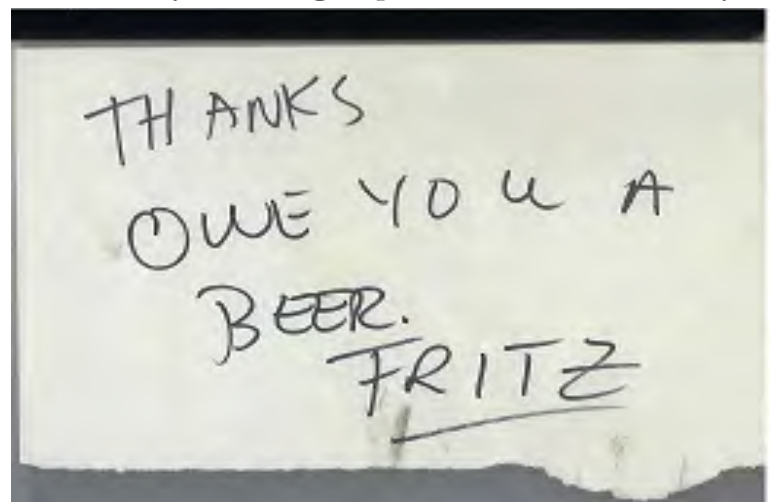
<https://tinyurl.com/yd6nx73v>



**Yup, You put Tom Ha (NAR Treasurer) and Dr. Bob together at the WSMC with all the NAR's money and what do you get?**

**PHOTOBOMB!**

**(with many sincere apologies to the Houston Family)**



**Yeah, Like I'll ever see that....**



# That's Right – THAT'S RIGHT! Its Read ALL OVER The WORLD!

## Here are some notable Dignitaries that read The Launch Rack...



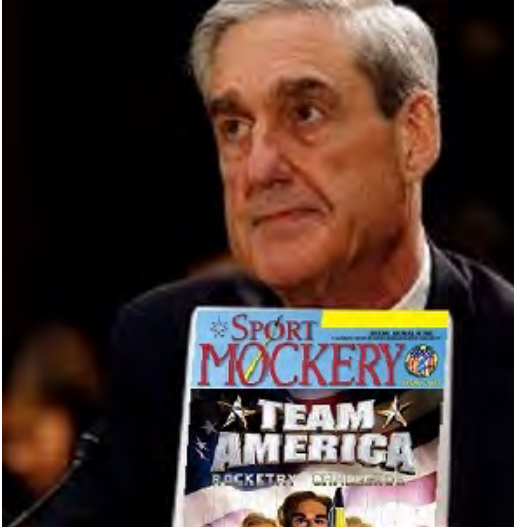
"Most of this information comes directly from the GSSS Launch Rack"



You can find it Here - Right HERE in the Launch Rack



Let's check what President Klein has to say...



Leaking of classified material is a concern...



Sometimes I surprise even myself!



LIES! Scandalous LIES! All of IT and IT Ends HERE!



Well, maybe not Chinese president Xi Jinping, but his studious predecessor Jiang Zemin certainly reads the Launch Rack. Errr; um, tries to...



Don't worry, we'll get to ObamaCare as soon as I'm done here...



Heh-Heh-Heh - They wrote about me in the Launch Rack!



WAIT! How come I don't get the Launch Rack?



HOLD ON Everybody! That is NOT what it says here in The Launch Rack....



All I can say now, is that no one was there when I showed up



# IT'S TARC-TIME AGAIN!

2019 RULES,

April 1 Updated Version

## TEAM AMERICA ROCKETRY CHALLENGE



**Commemorating the 50th anniversary of Apollo 11  
and the 100th anniversary of the  
Aerospace Industries Association**



The first sixteen Team America Rocketry Challenges, held in 2003 through 2018, were the largest model rocket contests ever held. Co-sponsored by the NAR and the Aerospace Industries Association (AIA), these fifteen events together attracted 11,360 middle & high-school teams made up of a total of over 70,000 students from all 50 states. These students had a serious interest in going to Europe for free. The top 100 teams each year came to a final National fly-off competition near Washington, DC, to compete for \$100,000 in prizes and a **FREE** trip to either the Paris or the Farnborough (England) air show in **Europe**. Teams were selected based on the scores reported from qualification flights that they conducted locally throughout the US.

Here are the rules: Rockets must not exceed 650 grams gross weight at liftoff. (Now, since the Large Hen's Eggs can weigh up to 61 grams each – and there are 3, the potential exists to have a total egg payload mass of 183 grams) So, what they're really saying is don't make the model itself over 467g!

The rocket must have only one stage with an overall length no less than 650 millimeters (25.6 inches) as measured from the lowest to the highest points of the airframe structure in launch configuration. The portion of the rocket containing the egg payload and the altimeter (the "Apollo Capsule") must separate from the rest of the rocket in the air and must descend separately under at least two parachutes that are the same size and shape. Well, at least close.

Rockets flown at the Finals will be required to have a paint or other decorative coating applied to any wood, paper, or fiber exterior surface of the rocket and will be assessed a 5-point flight score penalty on their first flight at the Finals if they do not. There will be a separate judged competition at the Finals (with a cash prize) to recognize the rocket that has the profile and/or paint scheme most closely resembling Apollo 11 on its Saturn 5.

Contestants will be awarded points for the most inventive and snarky catch phrase resembling: Houston the Eagle has Landed" such as Houston the Pullet has landed or Tranquility Roost Here..."

Rockets must be powered only by commercially-made model rocket motors of "F" or lower power class, but any number of motors may be used. Rockets must not contain any pyrotechnic charges except those provided as part of the basic post flight breakfast preparation.

### 2.6 ALTITUDE SCORING

The altitude performance goal is 856 feet. (Note: Neil Armstrong set foot on the moon at 8:56 PM Houston time on July 20, 1969 on the Apollo 11 mission). Contestants are hereby advised that the new FAA 400' ceiling will be in effect. Individuals will have to choose between remaining in legal airspace or attempting the altitude target. Those who choose the latter "target" are strongly advised to have their legal representation under retainer and in force, appropriate minimum bail money or bond prepared and sufficient future free time allotted to spend in the 8' x 10' "holding area" (aka: cell).

OK – so there you have it! The Team America Rocketry Challenge (TARC) is an aerospace design and engineering event for teams of US secondary school students (6th through 12th grades) run by the NAR and the Aerospace Industries Association (AIA). model rocket (467 grams or less in weight, 650 millimeters or more in length using NAR-certified model rocket motors totaling 80 N-sec or less of total impulse) that carries a payload of three Grade A Large eggs for a flight duration of 43-46 seconds, and to an altitude of exactly 856 feet (measured by an on-board altimeter), and that then returns the eggs to earth uncracked in a separating "capsule" that is uniquely colored ("Telegenics"). On-board timers are allowed; radio-control and pyrotechnic charges are not.

**President TRUMP INVITED WINNERS TO THE WHITE HOUSE!**



**President TRUMP DURING LESS FORMAL CONGRATULATIONS  
PREVIOUSLY O'BAMA VISITED A TARC TEAM'S SCIENCE FAIR**



**FORMER PRESIDENT OBAMA SEEN HERE GIVING THE  
ISLAMIC FATWAH OR "FAT FINGER" FOR MAKING MISSILES  
JUST THINK OF IT – WIN! - AND YOU TOO COULD GET THE  
FAT FATWAH FINGER FROM THE FORMER FIRST FOREMAN!**

**AND A FREE TRIP TO EUROPE FOR YOU-AND YOUR ROCKET!!!**





# Join The Air Force Space Command

**Sergeant Apone:** All right, sweethearts, what are you waiting for? Breakfast in bed? Another glorious day in Space! A day in the Air Force Space Command is like a day on the farm. Every meal's a banquet! Every paycheck a fortune! Every formation a parade! You'll \*love\* the Command!



President Donald Trump's desire to add a "Space Force" to the U.S. military has elicited plenty of mockery and puzzlement. But don't dismiss the idea. If undertaken prudently, it could represent a substantial and forward-looking reform.

Congress has been mulling a similar concept for years. The idea would be to create a new military branch, or a new service within the Air Force, dedicated to overseeing operations in space. President Trump said that he envisions the new entity as "separate but equal" to the Air Force.

If nothing else, such a shift would recognize military reality. Space is an increasingly critical battlefield. Across its five branches, the U.S. military uses space-based technology for navigation, reconnaissance, weather forecasting, intelligence collection, communications, command and control, precision targeting, and much else. Its reliance on satellite-guided munitions has increased with each new conflict in recent years.

This growing dependency also creates risks, however. Satellites are vulnerable to attack, as are the ground systems that support them. By treaty and convention, countries have long avoided conducting strikes in space, but U.S. adversaries have been investing heavily in anti-satellite weapons for years, and with good reason — without adequate defenses, space could become an "Achilles' heel" for America's high-tech forces.

Yet no one is fully in charge of U.S. space operations. Most responsibility falls to the Air Force. But in practice, authorities are fragmented across some 60 different entities. This has made acquiring new technology a painfully slow and expensive process, which results in the U.S. chronically sending obsolete stuff into orbit. It has made it harder to set coherent priorities and pursue a broader strategy for space. And plenty of critics have argued — persuasively — that the current arrangement is impeding much-needed change and innovation.

Could the Space Force, or something like it, do better?

Several studies, dating back to 2001, suggest that it could. If organized with care and forethought, such a force could clarify accountability, accelerate decision-making, rationalize the procurement process, improve recruitment, and ease pressure on the broader Air Force, which is heavily burdened with more traditional responsibilities.

**Battle Bad Guys - in Space!!! Lasers!!! Space Ships!!! Blow 'Em All Away! -Ruskies -Bugs -Aliens!!!**



**Join the Air Force Space Command! Do Your Part!**  
**Listen up Honduran Asylum Seekers - Service Guarantees Citizenship!**

# NCR Hat Flap: Major News Media Propagandists At *Washington Post* Misidentify Teenager's Intentions



**New York (CNN Business)** Attorneys for a Kentucky high school student who was at the center of a viral propaganda video are suing the Washington Post, seeking \$250 million in damages.



The law firm Hemmer DeFrank Wessels on Tuesday wrote a post on its website that said attorneys Lin Wood and Todd McMurtry have filed the lawsuit on behalf of Nicholas Sandmann against the newspaper for



"compensatory and punitive damages. This is only the beginning," the law firm said. Go get 'em.



Sandmann, a student at Covington Catholic High School, was in Washington on January 18 for the annual March for Life rally wearing an orange North Coast Rocketry hat. In a video that gained national attention, he was in an encounter with Omaha tribe elder Nathan Phillips, who was playing a drum and chanting at the Indigenous Peoples March at the Lincoln Memorial on the same day. Sandmann was (supposedly) mistaken for wearing a red MAGA

hat by socialist propagandizing news media. In all actuality, Sandmann was wearing his North Coast Rocketry cap, somewhat flamboyant orange in color.

Another video that surfaced days later provided additional context for the encounter, but the first video had gone viral, touching off wide spread accusations of bigotry as photos of



*The President has an NRC lid - too!*

the teenager spread across social media. In the second video, a group of black men who identify as members of the Hebrew Israelites is seen taunting the students from Covington Catholic High School with disparaging language and shouting racist slurs at participants of the Indigenous Peoples Rally and other passersby.

Major news outlets, including the Washington Post, the Associated Press and CNN reported the incident and its aftermath either in error or most likely on purpose, to further unknown anti-establishment views.



*Even Kanye West has been mistakenly accused of wearing the MAGA hat, when it is a well known fact that he actually dons a North Coast Rocketry chapeau*

The lawsuit claims that the Post "wrongfully targeted and bullied Nicholas because he was the white, Catholic student wearing a red 'Make America Great Again' souvenir cap on a school field trip to the January 18 March for Life in Washington, D.C." Sandmann was actually wearing his favorite model rocket cap.

The complaint also accuses the Post of engaging in a "modern-day form of McCarthyism by competing with CNN and NBC, among others, to claim leadership of a mainstream and social media mob of bullies which attacked, vilified, and threatened Nicholas Sandmann, an innocent secondary school child."

Sandmann defended his actions at the time, saying he was trying to promote the hobby of model rocketry, not racism. "More than just us kids need to get off the computer and video games, get outside and fly some sciencey stuff!" promoted Sandmann.

"I was not intentionally making faces at the protestor," Sandmann said. "I did smile at one point because I wanted him to know that I was not going to become angry, intimidated or be provoked into a larger confrontation."

To all those fake news prophets and propagandists, all we can say is: Get Over It. The Nazis had you beat 80 years ago.



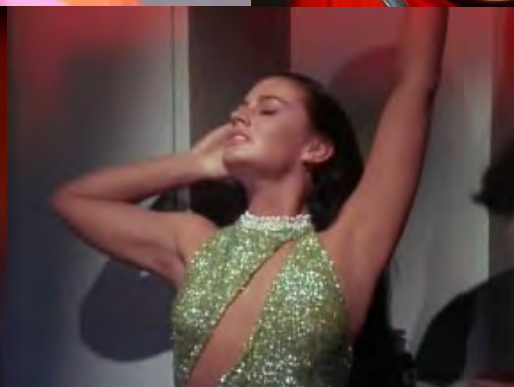
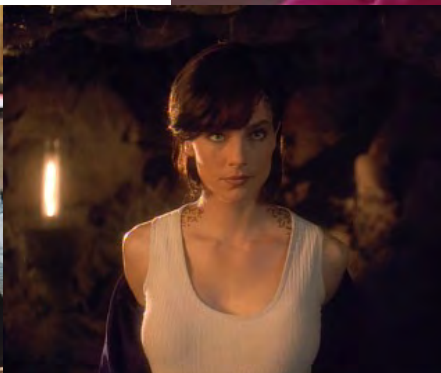
*Dawn Wells and Kaley Cuoco consider the North Coast Rocketry Hat as an essential part of their daily ensemble*



UNDER THE GUISE OF HUMAN RIGHTS AND GENDER EQUALITY WE NOW BRING YOU...  
THE OBLIGATORY APRIL CENTRAL PHOTO SPREAD ~ FEATURING...

# THE WOMEN OF STAR TREK !!!!

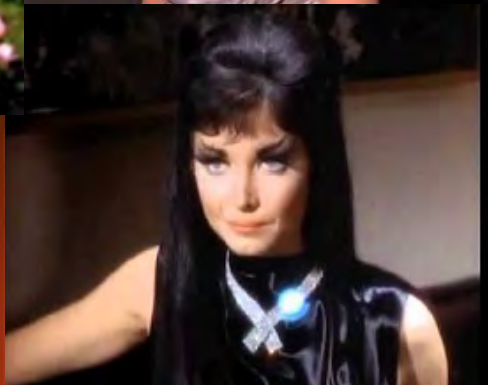
TELL US WHO THEY ARE -AND THE ACTRESS -WIN A YEARS SUBSCRIPTION TO THE LAUNCH RACK!!!





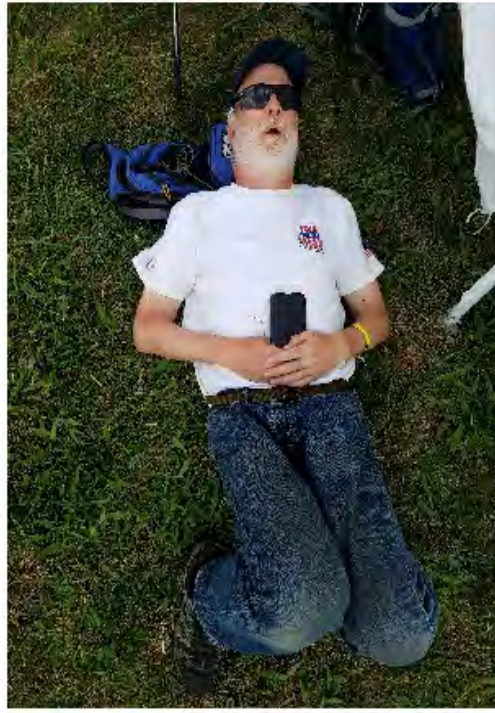








# The World Spacemodeling Championships - FUN with Rockets!!!





Yes, there were many more females competing in the WSMC in Poland last year. It was a fact recognized by the presiding FAI High-Up Mucky-Muck at the closing ceremonies. But how did it occur??? Well, in Poland the women are HEALTHIER. Its a craze sweeping the nation . And how did they get that way?

Our “Roving” Reporter: Herb Vinyard found the source: Polish Girls Pole Dancing! Give a girl a “pole-and...”



No matter where you go or what you're doing – they are there – practicing their skilled femininity!



**ON THE BUS!**



***DAMSKIE-THE WORLD IS YOURS!***



**IN THE PARK!**



**ON THE TRAIL&ON THE BEACH!**



**IN THE GARDEN!**

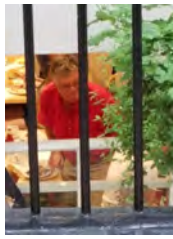


**ON THE LOCAL B-BALL COURT!**



For the past 3 years, the April Edition of the Launch Rack has endeavored to place the pointy end of our stick squarely at a high ranking AMA official. This year is no different and we are thankful this one resides in District 4 and not District 2.

Our recommendation: Get used to them bars...



## WSMC Lessons Learned the HARD Way or Learn the Rules and Regs!

We suggest the following changes and inclusions to the existing US Spacemodeling Team Travel Guide...

1) Team Members will NOT use the word “Rocket” or “Its a ROCKET” while traveling, in international airports, nor with in earshot of TSA or Airport Security personnel. The description Space-Model may be permitted and only if queried.

2) Team Members will keep US Passport in front right pants pocket at all times while transiting Security Check stations. The passport will be produced (read: taken out) only to show Security Personnel, then replaced. The passport will be kept in the right front pants pocket while traversing metal scanners and x-ray machines. The passport will NEVER be left in a luggage tray under a carry-on model box.

3) Team Members will COVER the model box with a protective cloth bag to obscure the the large printing of “ROCKETS” emblazoned on the model box, or any other words that might instigate a long conversation about the models in the box. Time limits for connecting flights are usually tight with present day security measures.

4) Team Members will NOT explain to Security Personnel how model rockets work or explosive propellant formulations ever. If queried by Security Supervisors, use of the simple response: “We wait to obtain that at the contest.” is sufficient.

5) Team Members will NOT explain to random airport travelers how model rockets work or propellant formulations within the airport terminal or passport entry.

6) Team Members will answer the question: “How high does it go?” with the response “That is what we are going to find out.” then look away and terminate further discussion.

7) Team Members will NOT attract overt attention to themselves or their comrades, by ordering a glass of whine to accompany an unadorned



hamburger at airport restaurants or roadside Burger Kings, McDonald's or Kentucky Fried Chickens. If only beer is offered, accept graciously, you do not have to drink it, nor complain that there is no whine.

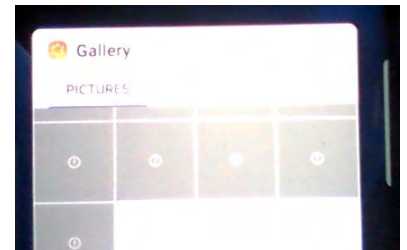
8) Team Members will no longer smoke in non-smoking hotel rooms **nor** on their balconies, lest they be fined in a foreign currency in an amount not normally carried and referred to ever-after as a “Chucklehead.”

9) Team Members will not dump on the street, the fragile gifts they broke while transporting them to foreign nationals, if they were only responsible for watching them for 5 minutes out of the entire trip.



10) Team Members will set their room thermostats to the lowest setting when leaving the room in the morning. Even if the Team Member is an older individual more prone to “feeling cold,” setting the temperature low insures the room will be comfortable in the evening when daytime outside temperatures are in the 40's (C) or 104 (F) after the members return.

11) Team Members must bring their own cameras and learn to take photos of others, not borrow them for podium shots, then give them back with the last 2 weeks of photos corrupted and the entire WSMC wiped-out, then tell the owner “there is something wrong with your camera...”



12) Team Members will NOT demand an audience with the Queen of England simply because they are an AMA District IV Vice President.







# NARCON – 2019

## COCOA BEACH FLA

### The I dream of Jeannie<sup>(at)</sup> NARCON

#### in photos



She was busy signing autographs but I managed to pull Barbara aside for a little private time, a photo and a kiss! So here is the highlight of our NARCON 2019! And on the cover is the most memorable picture I have, because I've been **dreaming** of Jeannie with the light blond hair and - Barbara Eden!



#### *A Little Background...*

We should all be dreaming of these genes! At 86 years old, "I Dream of Jeannie" star Barbara Eden stepped out this month at the 2019 NARCON, where she proved that age certainly hasn't affected her own beauty. First, take a look at Barbara during her early years. The Arizona native was in her early 30s when she starred on the iconic NBC sitcom "I Dream Of Jeannie," instantly becoming one of the most recognizable faces of the 1960s. By the time she was cast, she'd already appeared on "I Love Lucy," "Father Knows Best" and "The Johnny Carson Show," where she was a regular guest. After five years on the show, Barbara was one of the hottest names in Hollywood. She appeared on dozens upon dozens of TV shows -- and managed to make time for big-budget block busters, and now NARCON too. Even in more recent years, she's made surprise appearances just for fun, like in 2016, when she showed up on Food Network's "Worst Cooks in America." And she's definitely still got a sense of style! Barbara looked chic and trendy in a vibrant NASA blue pantsuit in Cocoa Beach.





**HEY!**

Major Surprise and Reveal! The private tour of the Air Force Space and Missile Museum (only available on the Cape Canaveral Bus Tour) featured two ENTIRE “pink” rooms dedicated to Jeannie for her leading role and profound influence upon the beginnings of US Space and Rocket Travel. Every woman in Cocoa Beach knows it!

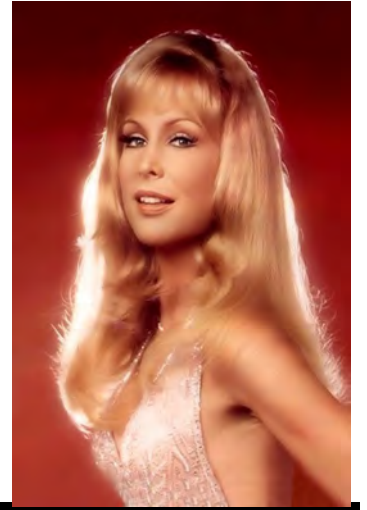


Now, if you ever go to Cocoa Beach, just be sure you pick out the right Jeannie. I mean, like, EVERY woman in Cocoa Beach dresses like JEANNIE – EVERY single one of them – young and old alike! That, makes This Place – Heaven!!!



OMG! Was this, like, The BEST NARCON EV-eR???? Yup, they let the Jeannie out of the bottle this time and it was no disappointment! I mean like, think about it! Rockets! Cape Canaveral! Cocoa Beach and JEANNIE!!!! Yes Guys - Barbara Eden! The “surprise” guest of NARCON-2019 was Barbara Eden: JEANNIE herself!!! She's like, the best looking woman EV-eR! Right? RIGHT???

So, the next time you go to Cocoa Beach FL or to Cape Canaveral to look at some old rocket, be sure to look very close – one of those pink veil clad blonde haired beauties running around town may be more than you think! Maybe



Barbara Eden herself! If you find her and you're looking for a little “extra touch,” be sure to rub the nearest bottle...  
...And remember, tell her your name is Tony Nelson!

**Magic Will Happen!**





# An Interview With SPACEX Astronaut Ripley ...A NARCON HIGHLIGHT

**LR:** Thank you Astronaut Ripley, for taking time out of your tight schedule and agreeing to a Launch Rack interview so close to your eminent launch on the SpaceX Dragon. I will try to keep our questions short. How did you become a Space-X crash test dummy?

**Ripley:** ...

**LR:** My deepest apologies! You are then, the first female "Smartie" to

fly the Dragon Capsule into space. Do you feel special having been selected as the initial occupant?

**Ripley:** ...

**LR:** I'm sure you do. Both as a Smartie and a female.

**Ripley:** ...



**LR:** Others have referred to the Dragon design as a little like flying in Business Class. Do you feel similar, and what amenities are you thankful for?

**Ripley:** ...

**LR:** Creature comforts like the movie theater, shuffleboard court and 250 mile high aside, your mission is to relay data on the forces experienced by future occupants. Do you feel up to the task and can you tolerate potential excessive thrusting forces, others may not?



**Ripley:** ...

**LR:** Understandably. If speed doesn't kill, but deceleration can, might a Dragon de-pressurizing not cause you an explosive deflation? Do you worry about that?

**Ripley:** ...

**LR:** Well then, we're happy to hear you are built more like a brick - house! Is that the only reason for the skin tight space suit design? Or possibly

it affords greater ROM (range of motion) and positions?

**Ripley:** ...

**LR:** It should work to your advantage and certainly a few offers for movie roles! May I recommend avoiding the ones where your co-star is a slimy two jawed Xenomorph with acid for blood. It could corrode your circuitry...

**Ripley:** ...



**LR:** I see the technicians motioning that it is time for your insertion, God Speed Ripley! May I give you a little bon voyage from our readers? I've had lots of practice over the years with CPR Annie (Annie, Annie, Are you OK? Are you OK???... Call 911!) Oops! Right – maintain sterility of the clean room and Dragon's belly....

[The LR apologizes for the dirt required for this article]

# BLUE ORIGIN - We'll Do You One Better!

Jeff Bezos (Amazon) announced Blue Origin's Human Rated New Shepard Rocket. The reveal featured New Shepard's Capsule which includes a piano bar with seating for 6 and a Stewardess for those up-scale creature comforts on your trip into space.



Today, only the Russians regularly bring people to space. By the end of 2019, several private U.S. companies could join them — including Blue Origin, which announced its intentions last week.



Blue Origin, which is owned by Amazon's Jeff Bezos, said that its human-rated rocket is in Texas in "the barn," the nickname for the vertical processing facility where technicians are readying the rocket for spaceflight.

Along with SpaceX's Dragon and Boeing's CST-100 Starliner— both of which may have human test flights this year to the International Space Station — the new Blue Origin rocket could soon offer another spaceflight option for astronauts – bigger windows, piano bar...

Blue Origin's third New Shepard rocket (left), the first built to carry people, is in the company's West Texas hangar for a potential crewed flight in 2019. The "Crew" includes a Stewardess and a Nilly Joel look-a-like Piano Man.

The human-rated rocket stands about 60 feet (18 meters) tall and is designed to carry six passengers (paying or otherwise) per spacecraft in addition to "crew," according to Blue Origin's website. It is designed to accelerate to three times the speed of sound (or Mach 3), pop passengers into suborbital space, then return to Earth under parachutes to land gently in the West Texas desert. The craft will then deploy its laser guided Defense Perimeter against fire ants and unwanted "critters" or possible undocumented banditos.

Blue Origin's New Shepard rocket flew its 10th uncrewed test flight last Wednesday (Jan. 23), reaching another milestone on the company's road to possible human spaceflight by the end of the year. Blue Origin officials have disclosed time lines before, such as promising a human launch within a year of December 2017 and pledging in October 2016 to fly humans by the end of 2017. This time their spokeswoman said, a spaceflight doesn't feel too far away. "I think about when I was a little girl, wanting to be an astronaut. It felt like it was somewhat out of grasp, but literally, I can touch the rocket that is going to be taking people to space and — fingers crossed — maybe me one day as well."

Sounds to me, they might have the same problem Spirit Airlines has with their daily departure times. Should we wonder if they will charge for baggage at the launch tower? Beyond SpaceX, Boeing and now Blue Origin, even more companies are eager to take part in human spaceflight. Britain's Virgin Galactic is a long-time front-runner; in December, the company's SpaceShip-Two breached the boundary of space, by one definition, during a test flight. Virgin hasn't announced when it plans to send tourists aloft, but that might be close. But first they must redefine the boundary of "space" for lower flying spaceships.

Since 2011, most people flying to space have used the Russian Soyuz rocket and Soyuz spacecraft (the two vehicles share the same name). NASA's space shuttle program retired that year, and the U.S. agency has been working with commercial crew providers to one day provide alternative vehicles ever since.

China's National Space Administration sent its first taikonaut into space in 2003. While the agency has not sent any taikonauts into space lately, the country has flown three human missions since 2012 alone; in those missions, crew docked spacecraft with single-module space stations. The most recent taikonauts to head to space, Chen Luan Dong and Jing Jangjingle Haipeng, flew for a month in 2017, and their mission included a stay on the Tiangong-2 space station. One side project of their mission was to test the long term effects on taikonauts using an exact duplicate of the Wolowitz Zero-Gravity Human Waste Disposal System, the zero-gravity toilet designed by Californian: Howard Wolowitz, after his lap-top was stolen. It is still not known exactly who the perpetrator was. But you take a guess...



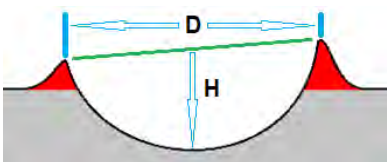




## WHO'S GOT THE GREATER CRATER?

**Classically, HPR and Tripoli Aficionados do not fly lower power contest events like parachute duration or boost glider duration. They fly events that could be considered a bit more: OUTRAGEOUS. Enter our most recent proposal, aka: "How big is your hole?"**

This event is based on the volume displaced of your model's impact crater when purposefully pranged to create one. Pyrotechnic payloads are



specifically not allowed (no V2 scenarios) no R/C allowed and open to single stage / single motor models only (you are not allowed to ignite a second motor during the incoming portion of the flight to increase the force of impact, ballistic unpowered impact from apogee only). Once your impact site is found, quickly measure Diameters 1 & 2 as well as the depth of the crater (H) before

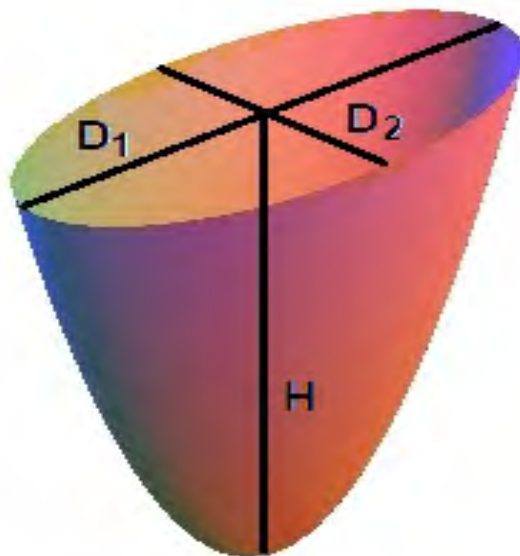
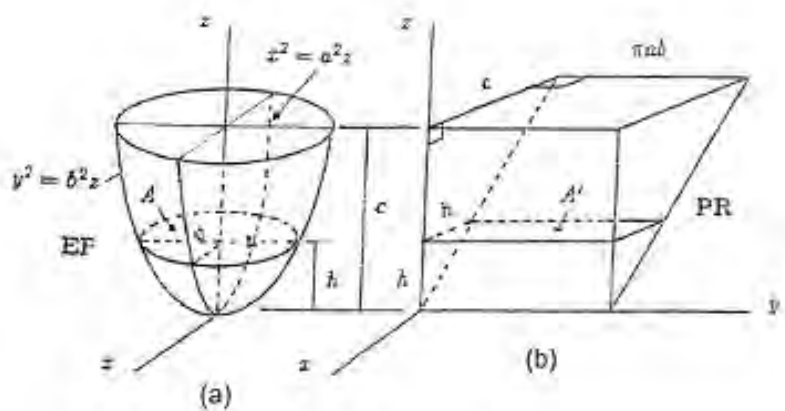


anyone sees you and simply apply the formulas below for the volume of an Elliptic Paraboloid. May the force be with you and the biggest hole win!

### Volume of an Elliptic Paraboloid

Consider an elliptic paraboloid as shown below, part (a):

$$EP: \frac{x^2}{a^2} + \frac{y^2}{b^2} = z$$



At  $z=h$  the cross-section is an ellipse whose semi-major and semi-minor axes are, respectively,  $u$  and  $v$ . Since  $u = bh\sqrt{\frac{2}{a^2}}$ , and  $v = ah\sqrt{\frac{2}{b^2}}$ ,  $A = \pi abh$ . We choose a triangular prism  $PR$  of height  $\pi ab$  and whose cross-section is an isosceles right triangle. At  $z=h$   $A' = \pi abh = A$ . Hence, from the Generalized Cavalieri-Zu Principle, the volume of  $EP$  is

$$VP = \pi abc^2$$

If the paraboloid is defined by a more dimensionally balanced equation like, say,

$$x^2 a^2 + y^2 b^2 = z$$

then the volume of the paraboloid at height  $h$  will be given by

$$VP = \pi abh^2 c$$

and, for  $h=c$ ,

$$VP = \pi abc^2$$



The **Cavalieri-Zu Principle** states [1, 2]:

- i. If two plane regions are included between a pair of parallel lines and every line parallel to these lines intersects both regions in line segments of equal length, then the two regions have equal areas.
- ii. If two solids in three-space are included between two parallel planes and every plane parallel to these two planes intersects both solids in cross-sections of equal area, then the two solids have equal volume.

Falling into the category of "interesting facts we should have explored but never did" is the fact that the above assertions can be extended to more than two plane regions (solids) for which the said lengths (areas) of segments (cross-sections) need not be equal.

Our generalized version of the Cavalieri-Zu Principle is the following:

**G1.** If  $n$  plane regions  $P_1, P_2, \dots, P_n$  are included between a pair of parallel lines and every line parallel to these lines intersects the  $n$  regions in line segments  $L_1, L_2, \dots, L_n$  such that

$$L_n = \sum_{i=1}^{n-1} L_n - r_i L_i,$$

where  $r_i, i=1, 2, \dots, n-1$  nonzero constants, then

$$(*) \quad A_n = \sum_{i=1}^{n-1} L_n - r_i A_i,$$

Where  $A_i$  is the area of  $P_i, i=1, 2, \dots, n-1$ .

**G2.** If  $n$  solids  $S_1, S_2, \dots, S_n$  are included between a pair of parallel planes and every plane parallel to these planes intersects the  $n$  solids in plane areas  $A_1, A_2, \dots, A_n$  such that

$$A_n = \sum_{i=1}^{n-1} L_n - l_{q_i} A_i,$$

where  $q_i, i=1, 2, \dots, n-1$  nonzero constants, then

$$(**) \quad V_n = \sum_{i=1}^{n-1} L_n - l_{q_i} V_i,$$

Where  $V_i$  is the area of  $S_i, i=1, 2, \dots, n-1$ .

We use examples to show geometry teachers and students how to apply G1 and G2 to find areas and volumes of geometric figures without relying on methods of calculus.



**How Many Rules Can You Break?**



## A few MORE Parting Shots

-(or) -

### “Yuuup” its Up - In Space!

## **Violent moon mishap tore Uranus a new ring or two : Big space crash likely made Uranus lopsided**



Uranus is a lopsided oddity, the only planet to spin on its side. Scientists now think they know how it got that way: It was pushed over by a rock at least twice as big as

Earth. Detailed computer simulations show that an enormous rock crashed into the seventh planet from the sun.

Uranus is unique in the solar system. The massive planet tilts about 90 degrees on its side, as do its five largest moons. Its magnetic field is also lopsided and doesn't go out the poles like ours does. It also is the only planet that doesn't have its interior heat escape from the core. It has rings like Saturn, albeit faint ones.

The computer simulations show that the collision and reshaping of Uranus — maybe enveloping some or all of the rock that hit it — happened in a matter of hours. It's also possible that the big object that knocked over Uranus is still lurking in the solar system too far for us to see. It would explain some of the orbits of the planet and fit with a theory that a missing planet X is circling the sun well beyond Pluto.

It is possible that a lot of smaller space rocks — the size of Pluto — pushed Uranus over, but research points to a single huge unknown suspect. A single impact is the right thinking.

The collision happened 3 billion to 4 billion years ago, likely before the larger moons of Uranus formed. Instead there was a disk of stuff that would eventually come together to form moons. And when that happened, Uranus' odd tilt acted like a gravity tidal force pushing those five large moons to the same tilt, Kegerreis said.

It also would have created an icy shell that kept Uranus' inner heat locked in, Kegerreis said. (Uranus' surface is minus 357 degrees, or minus 216 Celsius.)

Ice is key with Uranus and its neighbor Neptune. A little more than a decade ago, NASA reclassified those two planets as "ice giants," no longer lumping them with the other large planets of the solar system, the gas giants Saturn and Jupiter.

Pluto, which is tiny, farther from the sun and not even officially a planet anymore, has been explored more than Uranus and Neptune. They only got brief flybys by Voyager 2, the space probe that entered interstellar space last month.

Uranus and Neptune "are definitely the least understood planets," Sheppard said.

But that may change. A robotic probe to one or both of those planets was high up on the last wish-list from top planetary scientists and likely will be at or near the top of the next list.

Uranus was named for the Greek god of the sky. Its name often generates juvenile humor when it is wrongly pronounced like a body part. (It's correctly pronounced YUR'-uh-nus.)

**"No one laughs when I say Uranus," NASA's Green said. "They have to mispronounce it to get the chuckles."**

## **Our Milky Way galaxy is truly warped, at least around edges**



CAPE CANAVERAL, Fla. (AP) — It turns out our Milky Way galaxy is truly warped, at least around the far edges.

Scientists in China and Australia released an updated 3D map of the Milky Way on Tuesday. They used 1,339 pulsating stars — young, newly catalogued stars bigger and brighter than our sun — to map the galaxy's shape.

The farther from the center, the more warping, or twisting, there is in the Milky Way's outer hydrogen gas disc. Researchers say the warped, spiral pattern is likely caused by the spinning force of the massive inner disc of stars.

"We usually think of spiral galaxies as being quite flat, like Andromeda, which you can easily see through a telescope," Macquarie University's Richard de Grijs, who took part in the study, said in a statement from Sydney.

Lead researcher Xiaodian Chen of the Chinese Academy of Sciences in Beijing said it's difficult to determine distances from the sun to the Milky Way's fringes, "without having a clear idea of what that disc actually looks like." The stars on which his team's map is based — known as classical Cepheids — provided substantial measuring accuracy.

At least a dozen other galaxies appear to have warped edges in a similar spiral pattern, so in that respect, we're hardly unique.

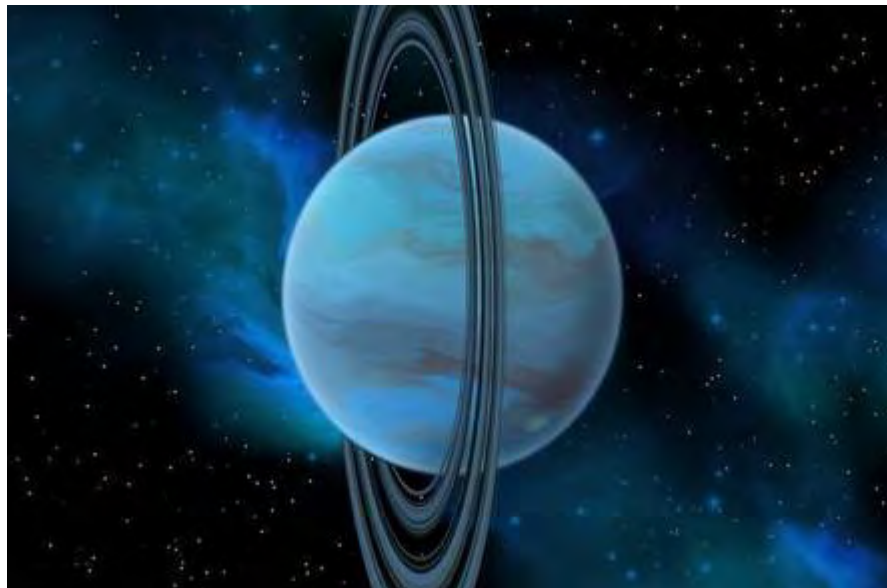
The study appears in the journal: *Bicycles & Astronomy*.



## Parting Shots - (or) - "Whasuup" in Space?

### **Astroboffins discover stink of eggy farts wafting from Uranus**

Space, the rhinal frontier. These are the voyages of the Starship Trivialize...



Scientists have solved a pressing mystery about our Solar System. Does Uranus smell like farts? Yes, yes it does.

A paper published on Monday in Nature confirms that Uranus contains clouds of hydrogen sulfide, a gas that smells like rotten eggs.

"If an unfortunate human were ever to descend through Uranus' clouds, they would be met with very unpleasant and odoriferous conditions," said Patrick Irwin, first author of the study and a physics professor at the University of Oxford.

But due to the lack of oxygen and deathly cold temperatures, the smell isn't the worst problem for visitors. "Suffocation and exposure in the negative 200 degrees Celsius atmosphere made of mostly hydrogen, helium, and methane would take its toll long before the smell," he added.

NASA's Voyager 2 spacecraft paid a short visit to the planet in 1986, but did not manage to observe its atmosphere in detail.

**The Launch Rack**  
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### **The Launch Rack**

*LAC Newsletter Award Recipient-2016*

**Volume 37, Number 3**

**Issue 215**

**April 1, 2019**

Well, here it is, April again, which means you get an "extra" issue, which is basically our way of keeping you from complaining about all the rest you get all year long. Should you still wish to 'Lodge' a complaint, we invite you to send in your soapbox for publication!

The Launch Rack is the official publication of the Garden State Spacemodeling Society and is published for the enlightenment and entertainment of the membership. It is published bi-monthly (or more frequently) and is read by the NAR President AND the LAC Newsletter Award Committee – so you're in good company!. (So Far!!!)

You are invited to send your articles, photos, letters, valuables and hard earned cash to the editor for his enlightenment, entertainment, and eventual publication. This periodical is by and for the membership.

Articles appearing here may be used by others provided credit is given to the author and this newsletter.

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*Just make of it what you will...*

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