SOJARS **Altitude!**

NAR

South Jersey Area Rocketry Society Official Newsletter — NAR Section #593

VOLUME 3, NUMBER 5 — = $1.00 = — SEPTEMBER / OCTOBER 2001

Sad September, Hopeful Future

Oh, say, can you see, by the dawn's early light,
What so proudly we hailed at the twilight's last gleaming?
Whose broad stripes and bright stars, thro' the perilous fight'
O'er the ramparts we watched, were so gallantly streaming.
And the rockets red glare, the bombs bursting in air,
Gave proof through the night that our flag was still there.
Oh, say, does that Star-Spangled Banner yet wave
O'er the land of the free and the home of the brave?

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Altitude! is the Award Winning (NAR's Best New Newsletter for 1999 – 2000) Official Newsletter of **SoJARS**, the **South Jersey Area Rocketry Society, NAR Section #593.** ***Altitude!*** is published bimonthly for the benefit of **SoJARS** members. Information contained in ***Altitude!*** may be used by anyone as long as proper credit is given. Address all correspondence to our email address:
SoJARS@rocketryonline.com
Please visit the frequently updated **SoJARS** website at **http://www.sojars.org** or call the **SoJARS Hotline: 856-424-5905**

Calendar of Events

SoJARS Meetings

Unless otherwise specified, all meetings take place at the Cherry Hill Public Library, 1100 North Kings Highway, Cherry Hill, NJ. (856) 667-0300. Directions are available on our web site. For 2001, all meetings will be held on the 4th Tuesday of the month, 7:00pm - 9:00pm, in Room A.

Tuesday, September 25.
Presentations: Motors by Darren Wright.

Tuesday, October 23.
Presentations: Whatever Comes Up!

SoJARS Launch Dates

Unless otherwise specified, our launch area is at the Gloucester County College. Directions are available on our web site.

September 2001 Launch Cancelled due to September 11, 2001 tragedy.

Sunday, October 14, 12:00pm to 4pm.
Rain date: October 28.
Theme: Patriotic Rockets

Sunday, November ??, 12:00pm to 4pm.
Rain date: ?.
Theme, Funtest, Vendor: TBA

Sunday, December ??, 12:00pm to 4pm.
Rain date: ?.
Theme, Funtest, Vendor: TBA

GSSS, NAR #439

Launches are usually held on the fourth Saturday of each month, 10am - 3pm: Sept 29, Oct 27, Nov 24, Dec 29, 2001.
Location: North Branch Park, near Somerville, NJ
GSSS Hotline: (908)-658-9417
Website: http://www.robnee.com/gsss/

MARS, TRA #105

Next Launch: TBA.
Location: Sod Farm, Allentown, NJ.
Website: http://www.njtripoli.org/

METRA, TRA #94

Next Launch: October 6 - 7.
Location: Barron Field, Wawayanda, NY.
Web: http://www.users.nac.net/jdcluster/Metra.html

Calendar of Events
Continued

Garden State Tripoli, TRA #74
Next Launch: TBA (MAYBE in Spring 2002).
Location: Cederville, NJ.
Website: http://www.njtripoli.com/

PARA, NAR #520
Next Launches: October 7, 11:00a - 4:00p.
Location: a farm 9 miles north of Doylestown, PA
Phone: You may call Chuck Arkens (215) 855-5599 or David Stoetzer (215) 412-4348 the night before or the morning of the launch for verification.
Website: http://www.para520.org

Delaware Tripoli, TRA #106
Next Launch: October 19 - 21.
Location: Harper Farm, Rhodesdale, MD
Website: http://www.detripoli.org/

Maryland Tripoli, TRA #68
Next Launch: TBA.
Location: Higgs Dairy Farm, Price, MD
Website: http://www.mdtripoli.org/

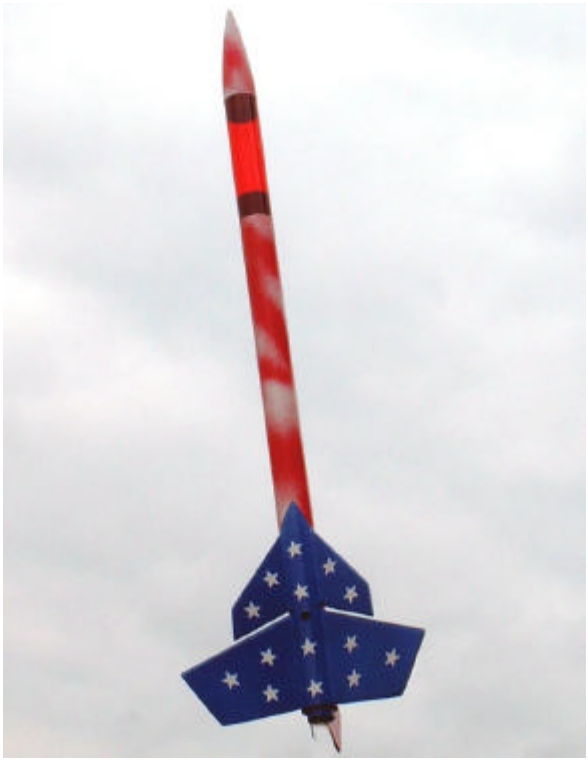
Altitude! Deadlines
Submissions for publication are accepted continuously by the editor. The Deadline for the November/December issue will be November 3.

Welcome New Members!

A warm SoJARS welcome to Brian Owen from Clarksboro, Bill Baker from Mickleton, Daniel Toomey from Deptford, Edward Romani from Holland, PA, and Nick Mustaro, bringing us to 73 members!

Special Editorial

September 11, 2001. Unfortunately, another "date which will live in infamy." There is nothing I can say that hasn't already been said. As I'm sure all SoJARS members are aware, we voluntarily cancelled our September launch in light of the sad events of that day. As it turns out, the FAA had temporarily suspended all sport rocketry operations operating under FAR Part 101 anyway. We do plan to fly in October, with a theme of "Patriotic Rockets."



I had originally planned to finish up the newsletter and send it to our printer that week, so we'd have hard copies in time for the September launch and meeting. But I obviously put that plan aside and, like the rest of us, became engrossed in the non-stop, commercial-free reporting that poured into our homes. Oh, I still went to work each day, and was even on call over the weekend of the 15th - 16th. The following week it was still difficult to return to a semblance of "normal routine." So now, a few weeks behind my own little self-directed schedule, the newsletter will still come together.

I'm sure all SoJARS members, indeed all rocketry enthusiasts, share my sadness for now, but share also my hope for the future. We will stand together. We will remain united. We will oppose even stronger than ever threats to our great, free, progressive civilization. Through our hobby, however humble, may we also contribute positively to the growth and development of the young minds that look to us for guidance and hope. And may we never doubt the potential for a future in which hatred is unknown.

President's Report

Some pleasant surprises!

For those of you that missed the last launch, I wanted to point out some nice surprises I noticed at the launch. The nice surprises came in the form of lots of new faces of all ages and several new enthusiastic junior and leader members!

Many of us have gotten used to the "usual suspects" at the field. What was neat about the August launch was the relative scarcity of regulars and the abundance of new faces. We signed up three new members at the field (Welcome to Dan, Brian, and Bill!). We also had about a half dozen first or second timers come out to fly. Why is this important? Well, as I've said before, the lifeblood of a group such as ours is growth and new members. As people are always lost to attrition it is important to always be bringing new people into the fold.

To those of you who have joined us recently… Welcome! I know you'll find good times at our launches and meetings. Feel free to step forward to the RSO table and try your hand at the mike, launch panel, or as Safety Officer.

In other news, Estes has released E motors and we will be raising the motor limit at the field to "E" impulse when conditions allow it. Thanks to all for the understanding after we cut the limit in the spring. As for the possible field at Kingsway High School… remember the saying "don't count your chickens before they are hatched?" The school board "after much discussion, declined" our application to use the field. As one of our frustrated members said: "So much for the educational aspects of rocketry!" So, our search for a true mid-power capable field goes on. As always, if you know of any farmers or any large fields in your area, please let me know.

Finally, our new meeting format is going nicely. With attendance varying from 5 to 15, we will not be having formal "talks" at meetings. The informal talks have been a pleasure, however. This past month Bruce Canino and Ed Romani told us about their experiences at NARAM (See the meeting minutes for details).

That's about all. See you at the next launch!
Art Treiman

Editorial

I hope everyone had a fun summer. Though hot and dry as usual, we managed to have a couple of great launches in July and August. As we drift into fall, hopefully we will have the fine rocketry weather typical for this time of year. In anticipation of a good flying season, Tom Mitchell, our Official Contest Director, has announced an interesting unsanctioned contest for us in October. Full details follow the Launch Reports.

Earning Front Page Billing this time was to be Adrian Liggins, with his informative piece on Russian Commemorative Rocketry coins. You'll find his article on page 8. In this issue we have several other submissions in the Member's Forum. Jack Komorowski gives us another RSO Soapbox entry. Barry Berman presents a heartwarming story about a Sci-Fi writer, who's recent passing was eased by his fans caring messages. New member Ed Romani reports on his BAR experience at NARAM. Darren Wright returns to our pages with an interesting article on making motors.

In the Q&A Section, I share insights from (who else) John Coles on simulating rockets using clusters of body tubes, such as tube fins or ring fins or, more specifically, as attached boosters. I also had a question for Randy Culp about his rocketry timeline and glossary and the "pumpkin seed effect." I additionally contributed a review of Tim Van Milligan's Video Book "Building Skill Level 1 Model Rockets."

Art Treiman tells me he has a book review for the next issue, so keep your eyes open for it. In addition to his usual President's Report, for this issue Art shares with us the info he received from the MD/DE Tripoli group concerning their upcoming TRA Sanctioned Regional Event planned for October 19 – 21 at the Rhodesdale, MD site.

Be sure to note in the Calendar Section that PARA has a new website, www.para520.org.

On our masthead, please also note our new Webmaster: Paul DeCraene courageously stepped up to the plate after Pat Flanagan could no longer run our site since he joined the Navy. Thanks and good luck to both Paul and Pat for their new challenges!

Finally, Tom Mitchell, Russ Mozier, and I send a few website suggestions your way. Check them out if you have some time.

Launch Reports

July 15, 2001

By Barry Berman

First, here's the answer to the "incredibly obscure, Dennis Miller-style reference" I included in the June 10, 2001, launch report. NO ONE even tried to answer it so it was much more obscure than I thought.

The "clue": "Rich Van Leer showed he had a lot of focus..."

The answer: 1970's Dutch rock group Focus, famous for their song, Hocus Pocus - memorable for the yodeling, was fronted by keyboard, flute and yodeler Thijs (pronounced "tye-ss") Van Leer.

Yeah, I know, who cares?

The Official Launch Report for July 15, 2001, will appear in the next issue. Sorry for the delay.

August 19, 2001

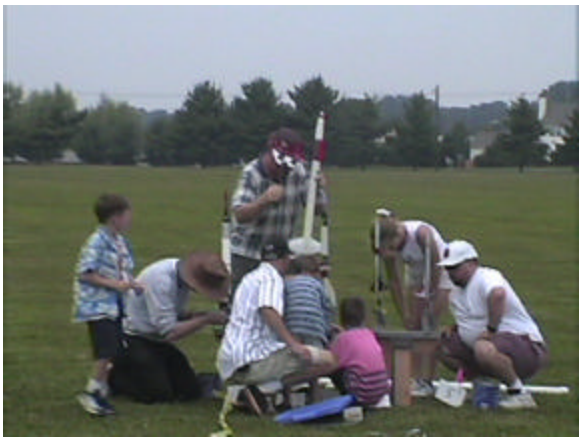
By Joe Libby

Our August Launch Day was spectacular! Sunny and warm, but not too hot, with almost no wind! Perfect! At first it seemed we were going to have just a handful of rocketeers, so Art waived the usual procedure of presenting launch cards. Well, by about 1:00pm we had quite a crowd. Since there were no launch cards I can only estimate, but I'd guess 20 regular rocketeers put over 100 rockets into the sky.

Most exciting for me was the launch of my parallel staged "PS-1" which flew beautifully on a pair of B6-0 pop-off boosters with a central C6-5 sustainer.

Art also debuted his Big Dude, a 7-foot tall inflatable Mylar sight to see. It flew quite well on a D12-something.

I wish we had collected cards for a more detailed report. A lot of rocketeers flew some nicely crafted models. Below is a photo showing how busy it could be at the racks…



Below, Tom (at the controllers) and Art watch the racks fill up with rockets.

Contest

B Marshmallow Munch

By Tom Mitchell

I am pleased to announce that we will hold a contest this October: B Marshmallow Munch. As you can guess, it won't be a sanctioned contest.

The rules are simple. You must make a safe, stable flight with a regular marshmallow (no mini-marshmallows.) Safely recovery the rocket, and eat the marshmallow. That's right, you gotta eat the marshmallow. It is a timed competition, from first motion of the rocket, until the marshmallow is eaten. The lowest time wins. Any rocket (with a 'B' motor, of course) may be used, and any type of recovery may be used, as long as it is a safe recovery. The marshmallow must remain undamaged, although mission points will be awarded to anyone who 'toasts' their marshmallow. (But remember, you still have to eat it.) Good luck, everyone.

Members' Forum

RSO's Soapbox

By Jack Komorowski

At the July launch, I used a term that apparently not too many people have heard, or understood what it meant in relation to rocketry. We had just launched a V-2, I think it was, and it was angled into the wind. At launch, it proceeded to *weathercock* severely, causing the rocket to fly at an almost horizontal angle. I mentioned the fact that this bird had really weathercocked, and those at the table with me mentioned that they had never heard of the term. Well allrighty then (to use a Jim Carey phrase).

This is an interesting term. I remember hearing it used way back when the first rocket engine I saw was, (drum roll please), a Roc-a-Chute. Yes indeedy, I'm that old, and I think that puts me just on this side of being an old rocketeer. I was flying with some others, (I had one kit and two engines), and I heard one of the adults mention that there was a fair breeze and that any rockets flown would weathercock. We kids all nodded wisely, yep weathercock, are we gonna fly or not, is it ready yet? We all used the term after that, and somehow we knew that the rocket would fly *into* the wind if we weren't too careful. We had some good "nosedives" or prangers back then. We learned quickly. (Let's face it, $2.50 for all your stuff back then was about a 1/4 of your paper route pay. And being young, it sometimes came down to having a glorious hoagie and an ice cream soda with your buddies, or fly with the other guys you hung out with, who liked things that go swoosh. The stomach can be very persuasive. Still tries to outwit me at times. I think it's gaining).

Weathercock: something in the shape of a rooster (cock) for showing the *direction* of the wind; a weathervane. The rooster was used on weather vanes since colonial times, as far as I can tell. It may be older. As it was used to indicate the direction of the wind, say it is pointing to the NE, you would know, or hope to know, what type of weather to expect for that time of season. We know about Nor' Easters, right? So how does this apply to rockets? You did ask, right?

We all know that rockets do have a tendency to fly into the wind, and there are quite a few reasons for this. We aren't here to get technical, so we'll just go with a few. Stability. Ah, here's a good one. Did you know that an *overstable* rocket will fly into the wind more readily than one that is more closely balanced to the caliber of the airframe? It's also called "noseheavy". Another factor to consider is the amount of fin area, and *wing* area, for those scale aircraft, F104, X15, etc. The more area you have, the more your bird is going to go into the wind.

We all want to recover our rockets close to the launch area, saving use a long walk. But as ***safety*** is the watchword, we have to take into the consideration of what the rocket is going to do once it leaves the launch rod/rail. Remember that bird that was launched earlier? Well it went horizontal, and did a power dive. Not pretty. What made it worse, to save the time of recovery, the rocket's launch rod was **pointing into the wind**, already making things worse. There was another episode that I'll mention, (and asking forgiveness here), as it involved a beautifully done, and expensive, F104 Starfire. This was a BIG beaut', and I couldn't wait to see this fly, as I hadn't seen anything like this before. I had handled this mid size powered bird, and knew it to have a lot of nose weight to make it stable due to all the fin/wing area on it. I watched as it was being loaded on the away pad, and noted that it was angled into the wind, a little too steeply, I thought. I mentioned it to the owner, and got a go from him, as this was what he wanted. At launch, she left the pad, climbed for a short distance, and then promptly became an aircraft, and hit the ground hard, totally wrecking it. I was heartsick, what a beautiful model and what a good job building it.

So, what can we glean from all this (yeah, I know, I'll finish soon)? Well, if you want the max altitude from the rocket, or it's best performance, angle ***away*** from the wind, by a few degrees. You'll get a straighter flight, and have less chance of having a crabgrass killer on your hands. Oh, about the walk for recovery you say? Hmmm, try a smaller engine, or shorter delay if you need to fly into the wind. Barring that, if you aren't sure, ask someone, or be safe, don't fly it.

Oh, one more thing, (groan). A weathercock can be a fickle person, hence a person who goes which way the wind is blowing, as in fairweather person. No, I ain't, either.

Poul Anderson, Science Fiction Grand Master

By Barry Berman

As I mentioned in the last edition of Altitude, I am a member of the Heinlein Society - a non-profit charitable organization dedicated to the memory and ideals of Science Fiction's first Grand Master, Robert A. Heinlein.

One of the things we occasionally do on our biweekly internet reading group chats, is "meet" well

known SF authors, such as Joe Haldeman, Jerry Pournelle, and recently, Poul Anderson.

Several months ago, Poul and his wife and writing partner, Karen joined us on line to discuss his stories and answer our questions. I had not read many of his books at that point, but after chatting with him, I resolved to read more of them.

On the evening of July 31st, Mrs. Virginia Heinlein posted a message on the newsgroup "alt.fan.heinlein", informing us that Mr. Anderson - a long-time friend of the Heinleins - was very ill. He had been under treatment for prostate cancer.

After reading the notice, and following Mrs. Heinlein's suggestion, Mr. Anderson's admirers began to e-mail him their greetings and best wishes. Karen Anderson, and their daughter Astrid, read these messages to him through the night.

The next day, author Greg Bear - Astrid's husband - informed us that his father-in-law passed away peacefully, as he listened to his family read him the thanks and prayers of his devoted fans.

Poul Anderson was 74 years old.

A BAR AT NARAM-43

By Ed Romani

RSO, LCO, CATO, NAR, SOJARS, PSC, SPARR, PD, SD… welcome to the wonderful world of rocketry acronyms.

Needless to say my, first NARAM was also my first real introduction to rocketry since 1968. As a youngster we flew (correction - Launched) rockets every way we could imagine. We probably broke every NAR rule. But at NARAM-43, this was quite a different story for me. Very well organized and regulated. A little confusing at first, but the people there were very helpful and friendly.

I arrived on Saturday afternoon to setup camp at Stony Brook State Park, and left Thursday with a day a Niagara Falls. I never knew what the temperature was, but it was hot. There were all kinds of different rockets. From Micro Maxx BG gliders to 10foot tall M-powered rockets. The competition range was very active throughout the week. The 2 events that I found fun to watch were the B SuperRoc and E Helicopers. That's where I learned the word CATO. Over at the Sport Rocket range I was busy with the few rockets I brought. An RTF Astrocam, Firebird, Equinox, and a still tacky, Mercury Redstone. I had called the Equinox an Eclipse on my flight card, but I was corrected by Superman. A nice fella dressed in a full Superman costume, down to the red boots. I didn't catch his name… Clark? Throughout the week the LSO could be heard saying, "Heads Up!" or "I See Smoke" or "There is no 'Chute." I witnessed Bill Spadafora's cert level 2 launch. It came down whining with a thud – no 'chute. Buried a least 8" in rock-dry dirt, it missed a van by 10 feet. That's when I learned the word PRANG.

On Tuesday night there was the picnic, followed by a scholarship auction. I had a successful bid on the bag of nose cones and Peter Always' binder book of sketches, before he published "The Rockets of The World." The main event for me was when I met Vern Estes. Not quite the millionaire-tycoon I pictured. Soft spoken, and dressed in jeans, more like a farmer from Iowa.

NARAM-43 was a great way to revitalize my passion for model rocketry. I have since joined SOJARS and SPARR. Well, I better get busy; there is a bag of 226 nose cones waiting to be launched. :-)

Russian Space Program Coins

By Adrian Liggins

Many mints around the world frequently produce special issue coins, either for general circulation as legal tender (such as the current U.S. issue of state quarters) or as non-circulating issues, usually in precious metal (such as the U.S. silver dollars). In the U.S., space-related circulating issues have been limited to an adaptation of the Apollo 11 flight patch on the reverse of the Eisenhower (1971-1975 and 1977-1978) and Susan B. Anthony (1979-1999) dollar coins. The Soviet/Russian mint has been somewhat more prolific, with issues either directly commemorating their space program, or using elements in conjunction with the celebration of other events. As a point of reference, the Russian currency is the rouble: there are 100 kopeks to the rouble. During the Soviet era, a rouble equaled roughly 1.6 U.S. dollars: following the demise of the Soviet Union, a U.S. dollar is now worth about 26 roubles.

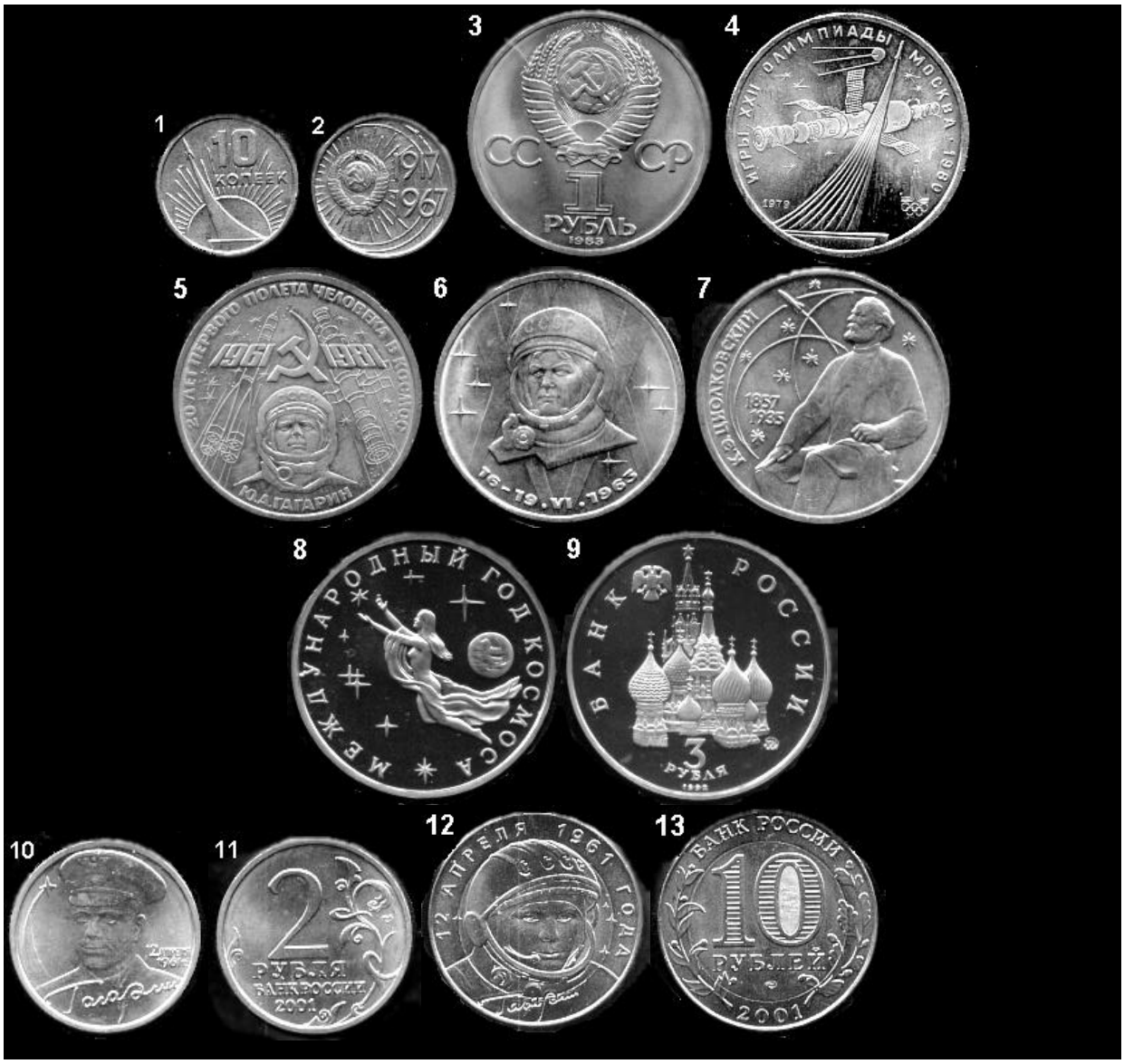
The first reference to the space program appears on the 1967 10-kopek coin, which features a stylized rocket and exhaust trail on the obverse (front) [1]. This is a depiction of a monument to the space program, which can be found in the north end of Moscow (a plinth can be clearly seen under the exhaust trail). This issue actually honors the 50th anniversary of the revolution, with the reverse featuring the years 1917 and 1967 in addition to the soviet emblem [2]. The coin is silver in appearance and is slightly smaller than a U.S. penny.

The next four space-related issues were all 1 rouble coins. These coins are all silver in appearance and are about the size of a U.S. half-dollar. Each has a similar reverse image [3] and if you look on the edge, you will see "one rouble" written around the rim. The first of these was issued in 1979, to celebrate the Games of the XXII Olympiad in Moscow in 1980, as written around the circumference of the obverse [4]: the Olympic symbol can be seen in the lower right. The main design features the same monument as the 10-kopek coin, plus Sputnik and the Salyut 6 space station (with docked Soyuz spacecraft and Progress cargo ship). Stylized stars can be seen in the background. The second coin in this group commemorates the 20th anniversary of Yuri Gagarin's flight [5]. A head-and-shoulders image of Gagarin is positioned under the anniversary dates (plus the Soviet symbol of the hammer and sickle) and in front of line-drawings of both the Vostok vehicle and Salyut 6 (again with docked spacecraft). Stylized stars complete the design. The 1983 issue celebrates the 20th anniversary of Valentina Tereshkova's flight as the first woman in space aboard Vostok 6. A head-and-shoulders image of Tereshkova is placed in front of what appear to be searchlights, plus the obligatory stars [6]. The dates of her flight are noted around the bottom. The 1987 issue honors Konstantin Eduardovitch Tsiolkovsky (1857-1935). Widely regarded as the father of space travel, Tsiolkovsky wrote many theoretical papers on space travel, and is famous for the quote "the Earth is the cradle of humanity, but mankind cannot live forever in a cradle". For this coin [7] a somewhat austere depiction of Tsiolkovsky sits in front of a stylized rocket (and what appear to be orbit-lines), plus more stars.

For the International Year of Space (1992), the Bank of Russia issued a 3 rouble coin, the obverse of which features a floating female figure in front of a distant Earth and yet more stars [8]: the significance of the year is noted in the text around the circumference. The reverse features a particularly fine rendition of St. Basil's Cathedral in Red Square [9]. This coin is silver in appearance and slightly larger than the 1-rouble coins (its about half-way between a U.S. half-dollar and an Eisenhower dollar): the words "three roubles" appear around the rim.

This year (2001) saw the release of a pair of coins to commemorate the 40th anniversary of Gagarin's flight: both were issued on April 12th, the same day as his flight in 1961. The first of these is the 2-rouble coin, which is silver in appearance and is just slightly larger than a U.S. nickel. The obverse features an image of Gagarin in military uniform [10]. A shooting star is shown to the left and "12 April 1961" is written to the right. Gagarin's signature, at the bottom of the design may appear a little odd – the first letter, which looks like our "T", is actually the hand-written form of the Russian "G" (or " Г "). The reverse of this coin depicts a floral design [11]. The accompanying 10-rouble coin is particularly nice, as it is one of the many "bi-metallic" coins that have been issued for this denomination by the Russian bank. This coin is made from two distinctly different metals: a silver-colored inner round (about the size of a U.S. nickel) is mounted in an outer ring of gold-colored metal. The resulting coin is slightly smaller than a half-dollar and has the words "ten roubles" struck into the rim. The obverse features a head-and-shoulders image of Gagarin in his space suit with his signature below [12]. "12 April 1961 Year" is signified around the circumference and the obligatory stars are placed at the junction between the two metals. Again, the reverse features a floral design [13].

These coins offer the collector a fascinating glimpse into the history of the Soviet/Russian space program, as depicted to the citizens of the country in their circulating currency. It should be noted that the



images presented here really do not do these coins justice – scanning coins, as it turns out, is extremely tricky. While some of these coins may be slightly difficult to track down, they do not command prices that are beyond the range of most space collectors. The complete set of coins in at least "uncirculated" condition (that is, sent out to a bank, but intercepted prior to ending up in someone's pocket) can be put together for less than $25. A set in proof condition (specially struck examples, often with a mirror background and frosting on the raised design, such as the 3 rouble seen here [8, 9]) will be a few dollars more. Some of these coins (particularly the 2001 issues) pop up occasionally in the ebay.com auction site. Whilst not representing an endorsement, Internet contacts for two dealers known to occasionally carry these coins are given below. If you do contact these dealers, please mention this publication.

It should be noted that some solid-silver commemoratives of the space program were issued by the Soviet and Russian banks over the years; however these items cost considerably more to collect (usually about $30 each) and are beyond the scope of this article.

Internet contacts:

Mosiach's Coins and Collectibles:

http://www.moshiach2000.com

moshiach2000@yahoo.com

J.B.R.C. Inc.:

alabamian@webtv.net

My Introduction to Motor Making

By Darren Wright
Ozark Propulsion Labs

It's just amazing how many aspects of rocketry there are. Anything from airframe construction to electronics; from fiberglassing to odd-rocs. Some people specialize in one aspect of the hobby. My business partner is an electronics wizard; that's the part he loves. Me? Oh, I just dabble at everything. (But I don't do good paint work!)

About a year ago, I was reading HPR and saw an ad for CP technologies motor making book and video deal. I bought it and found out some interesting things on making experimental motors. I quickly realized that this was by far the most daunting (and dangerous!) aspect of the hobby. A poorly designed motor turns into a rather large bomb quickly.

The CP Tech book deals with motors made with AN (Ammonium Nitrate) encased in PVC tubing. Sounds ok, but something told me to hold off. I got some chemicals and made some very small motors using aluminum tubing. I had some success, but was not terribly happy with the results. So I put the whole thing on the shelf to concentrate on a few other projects.

In June of this year, I won some 3" experimental motor casings on rocketry online (http://www.rocketryonline.com). They were the exact sizes of Kosdon cases, so I was not expecting to use them as "experimental" cases, but just to put some Kosdon loads in there. One of my good friends, Ted Proseus, was already having great success with smaller motors. So I called him up and said "How about an L motor?" We did the math and figured that it would not be too hard. So we set up a date, I ordered the chemicals and down I went for a weekend of motor making!

I arrive on Friday night, and I quickly realize a few things: The motors we are making are MUCH simpler than AN based propellant, and significantly more toxic. Our motors are basically four things:

1. HTPB, a rubber binder to hold everything together and serve as a fuel.
2. HDI, the curative for the rubber to make it hard.
3. Aluminum, to serve as a fuel / burn stabilizer.
4. Ammonium Perchlorate, the oxidizer.

It's that simple!!!!! Now, these motors do not have the ability to keep very long because there are no stabilizers or long life curatives. No big deal… I burn motors pretty fast anyway!

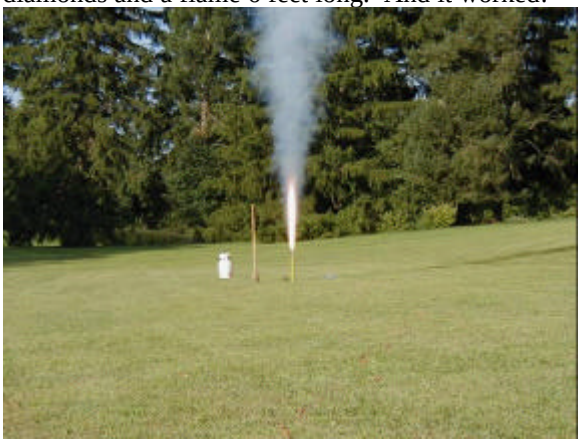
So, we start the whole mixing / packing process and make the grains for a 3500ns L motor with an orange / white flame. We also make a 2500ns K motor with some Copper Oxide for a blue flame. Of course I make a little extra propellant and we burn that after the grains are prepared.

The next morning we go and check, and the grains are cured perfectly! I cut them down to the proper size, drill out the core to the proper size, and assemble the motors. There are some more shavings to burn, so of course we light them up before getting in the car to travel to our test site.

So we all climb in the car and head over to a willing farmer's field. Ted has a smaller 54mm J motor that he is going to fire, so he digs the hole and place the motor. 5-4-3-2-1-ignition! It's one thing to listen to a big motor in a rocket traveling away from you… it's loud! It's totally different listening to a big motor being static fired when it is not moving. The J motor was like 3 seconds of thunder!

Now for my 2-grain 2500ns 3" Blue K motor. I dig the hold and load the igniter, just hoping that my new case is not going to blow. I listen to the countdown and push the button. WAHHHHHHHHOOOO! 4.4 seconds of fun, and a wonderful blue flame. Do the math and it comes out to about a K800 or so.

And finally, the 3-grain, 3500ns 3" L motor. The igniter is inserted, and the button is pressed. The sound that emerges from the throat of that beast was unimaginable. The ground actually shook for 4.5 seconds. There were at least 4 feet of mach diamonds and a flame 6 feet long. And it worked!



We went home to celebrate and mix more propellant. I decide I want to speed up both propellants a bit with Iron Oxide, a burn rate catalyst. So I mix the propellant with some in and we pack the motors again.

On Sunday, we build the motors and head over to the MD/DE launch. We decide to fire the blue motor first, so we connive our way past the RSO, and dig a hole. The LCO counts down a pushes the button WAHOOOOOOOOO… POP! Oh no! The rear closure failed. Guess we sped it up a little TOO much. That does not give me a good feeling about the L motor. We examine the damage, and it's not

too bad. The end of the casing bent outward, like a trumpet. No big deal, it can be cut down a little.

So with out nerves jittery, and against the bemusings of the other rocket guys out there we take the L motor up. I was a little more confident of this motor, because the propellant was slower to begin with than the blue propellant. Once again, the RSO tries to turn us away, but some kind words and promises of free reloads allow us to setup the motor. The LCO counts down, and hits the ignition. 1/10 of a second later, 6 feet of mach diamonds and another 6 feet of flame emerge from that case, and burn for 3 seconds. Success!!!

Since then, I have made a red propellant, a sparky propellant, and a purple propellant. I have made a load for the Kosdon 54mm 2550ns and APS 54mm 3300ns casings. I have made a bunch of smaller 38mm stuff. My next task is a 6000ns baby "M" motor. I am quite confident that it will work fine.

And finally, for the October 19 launch at Rhodesdale, MD, I will be static firing a 4.5" 21000ns O motor.

Hope to see you all there!

"Book" Review: Building Skill Level 1 Model Rockets Video Book By Timothy S. Van Milligan

Review by Joe Libby

I recently purchased some body tubes and nose cones from Apogee Components (www.ApogeeRockets.com) and soon after received an email from Apogee's owner Tim Van Milligan offering both his Designers Resource Pak *plus* his educational Video Book, Building Skill Level 1 Model Rockets, for only $9.00, so I thought I'd check it out.

Shipped on a CD Rom, the Video Book is basically a PDF file with embedded Quick Time videos. All you need is Adobe Acrobat Reader and Quick Time, both of which are included on the disk in case you don't have them already. As such it will run on both Mac and PC formats. Also, it runs right from the CD, so you don't have to load it onto your hard drive if you prefer not to.

While the level of presentation is indeed quite basic, focusing on Skill Level 1 Model Rockets (NOT to be confused with Level 1 High Power Rockets), I did pick up a few tips and learned a few techniques. Plus it was a very clever format. You just scroll page to page, clicking on the appropriate image to run a short video concerning the topic on that page.

The following is a list of topics:

A Bit of Model Rocketry History
A Definition of "Skill Levels"
Construction Videos:
1 - Marking body tubes
2 - Drawing lines down tube length
3 - Drawing lines around tube circumference
4 - Drawing lines around tube circumference (2)
5 - Removing, squaring, & attaching fins
6 - Cutting your own fins
7 - Sealing balsa fins to make them smooth
8 - Applying fillets to the fins
9 - Attaching the launch lug to the tube
10 - Joining tubes together
11 - Attaching centering rings
12 - Assembly of the motor mount
13 - Installing the motor mount
14 - Making a shock cord mount
15 - Types of nose cones / attaching shock cord
16 - Attaching streamers to nose cones
17 - Assembling & attaching parachute
18 - Painting the rocket. Part 1
19 - Painting the rocket. Part 2
20 - Prepping the rocket for flight
21 - Types of rocket motors
22 - Loading rocket motors
23 - Installing the igniter
24 - Getting ready to launch!
25 - Launch!
26 - Out takes
27 - Cutting big body tubes
28 - Tour of Apogee Components

Overall, I liked this product. I thought it was cool even just to put a face and a voice on Tim Van Milligan, from whom I'm sure many of us have purchased components. It was also helpful to see how someone else does it. For the most part, it reinforced what I already knew, but it was nice to see that I do what an "expert" modeler does, too. I did pick up a few tips here and there. For instance, I have never used wood filler to seal fins before. However, he didn't mention papering or the use of CA, which probably adds strength as well as a good finish. He also used white glue exclusively, and just mentioned plastic cement. He did not discuss wood glue, CA, or epoxies. I suspect his focus was to keep things simple, though, as the target audience is beginners (but he does talk about all those adhesives in his Model Rocket Design & Construction book, which I'm reading now). In total it took me a little more than an hour or so to go through all the videos.

To conclude, I feel this would be a helpful guide for a real beginner. However, I don't think it would be very useful for anyone with even a moderate amount of experience. Still, I'm sure there are some

modelers who will find even the basic tips helpful. You can never be too good at the basics.

Q & A

Simulating Clusters of Tubes

From: Joe Libby
To: John Coles

Hi John,

Sorry to hear about your computer problems. BTW, what's Luddite?

I have a question for you. Two actually. Take your time - I'll be down the shore for the next week (sans electronics!)

1. How does one sim tube fins on RockSim?
2. As we discussed at meeting, how does one best simulate the placement of body tubes in parallel/cluster arrangements. And what about the multiple nose cones?

So I guess that's really 3 questions.

Or 4, if you count the Luddite one.

Joe

Hey Joe,

Thanks for the sympathy. I'm up and running again at home, but still need to finish loading applications. When I start my vacation on Friday, the highest form of technology I hope to see is a propane camp stove!

From the University of Colorado - Denver web page: "The term Luddite has been resurrected from a previous era to describe one who distrusts or fears the inevitable changes brought about by new technology. The original Luddite revolt occurred in 1811, an action against the English Textile factories that displaced craftsmen in favor of machines. Today's Luddites continue to raise moral and ethical arguments against the excesses of modern technology to the extent that it threatens our essential humanity."

The movement has been attributed to a man by the name of Ned Ludd, hence the term "Luddite." There are many web sites on the subject - it's amazing the things that people are passionate about. So just as some people have to rush out and buy the latest piece of technology as soon as it hits the market, the neo-Luddites are essentially an "anti-technology" group.

To answer your other questions:

1) Simulating tube fins (and ring fins as well) is actually quite straightforward for RockSim. A denizen of r.m.r. by the name of Bruce Levison has actually published a pair of papers on the Apogee Components web site. I've taken the liberty of converting them into MSWord and attaching them below. [*Due to space considerations, I didn't reprint them here, but read on as John summarizes them for us – JL*]. They may also be viewed directly at:
http://www.apogeerockets.com/simulating_tube_fins.asp (for tube fins)
http://www.apogeerockets.com/education/newsletter27.asp (for ring fins)

The bottom line is that a *tube fin* is probably best simulated by using three flat fins with the same shape and area as the longitudinal cross sectional area of each tube fin, and a thickness equal to the wall thickness of the tube. Therefore, a six tube fin model would be simulated with 18 flat fins, a seven tube fin model would use 21, etc.

For a *ring fin*, the three or four fins which hold the ring fin on are created in the typical fashion. The ring fin itself is then simulated simply as six flat fins that have a span equal to the radius of the ring fin and an equivalent height. Again, the fin thickness is equal to the wall thickness of the tube used for the ring.

2) In the Barrowman equations, the reference area used to calculate the CP is chosen as the base area of the nose cone. So in your case of a 24mm sustainer with two 18mm boosters, the equivalent diameter would be 35mm:
18mm diameter => 254.47 sq mm area
24mm diameter => 452.39 sq mm area
Total frontal area = 24mm + 2x18mm = 961.33 sqmm2 => 35mm diameter

This drops the CP further back from where your simulation puts it – allowing less added nose weight to keep the rocket stable.

Your method of using a larger diameter tube with the length of the boosters works fine for simulating the boost portion of the flight, but I'm still trying to work out a means to trick out RockSim into dropping parallel boosters at burnout. It may require v5.0 to make it happen, if at all.

Hope this helps,
John

Pumpkin Seed Effect

From: Joe Libby
To: Randy Culp

Hi Randy,

I was directed to your site (http://www.execpc.com/~culp) by Tim Van Milligan's recent E-Zine. Excellent info. I had also personally made a timeline (on paper) but yours is more complete and up to date.

As for the glossary, again excellent. A question and a comment. First, what is the pumpkin seed effect (you refer to under base drag)? Second, is there a way you can hyperlink your q.v.'s? It's not a big deal to scroll down, but it would be a nice touch for an otherwise excellent glossary.
Thanks!
Joe Libby
SoJARS (South Jersey Area Rocketry Society)
NAR Section #593
www.sojars.org
PS: as editor of the SoJARS newsletter "Altitude!" I'd like to mention your site in our next issue as a good source of info for our members to check out, if okay with you. Feel free to go to our site. We archive our newsletters in PDF format there, too. We also have a links page and, if you desire, can add your site (if our webmaster & prez agree).

Hi, Joe -

Thanks for the comments and info. I'll check your site out after I get back from Japan in about a week. Of course you're welcome to mention my site or use any of the info as you see fit, I regard it as public domain.
The "pumpkin seed" effect is the reason boat tail designs are favored for rockets - that is, designs where the tail of the rocket is tapered down toward the back. By doing this, the air pressure on the rocket pushes not only inward toward the center but also applies a forward force. It's like taking a wet pumpkin seed and squeezing the back end of it between your fingers until the seed shoots out, hence the name. This has a net effect of reducing the drag coefficient of the rocket. The classic example of this design is, of course, the V2 rocket.

Good suggestion to link in those references. When I get a chance I'll add that in.
Regards,
Randy

FYI

MD/DE Launch October 19 – 21, 2001

By Art Treiman

Dear Sojarians...

I received this email from MD/Del Tripoli. The launch site is about 2 to 2 1/2 hours south of our field. They are a class act and run good launches. This "large launch" should be great. Please note that if you want to fly above a G motor you must also be a member of NAR or Tripoli and certified at that level (or be going for your cert).

Art

Hello everyone,

As local contacts for regional NAR sections I would like to invite you and all of your section members to a large launch sponsored by Delaware Tripoli and Maryland Tripoli to be held October 19-21, 2001 at the Rhodesdale, MD site. All impulses through N are welcome, and provisions will be available for the smallest through the largest projects.

Waiver is 16,000 feet for all three days. Friday is TRA experimental, and Saturday and Sunday are TRA regular. Current NAR members are automatically covered by TRA insurance. To fly on Friday you do have to be a member of Tripoli certified L2 or higher. Of course spectators are welcome any day.

We anticipate enough NAR members to be present to allow NAR certifications in addition to TRA certifications. We run safe, fun launches. Please join us at this great site for a big kick-off to the local flying season. Preregistration is requested if possible. FULL DETAILS ARE AT:
http://www.detripoli.org/launch_dates-frame.htm
Thank you,
Ted Proseus
TRA6674 L2
Tripoli Delaware
http://copland.udel.edu/~tproseus

Rocketry Websites of the Month

By Tom Mitchell

http://partners.nytimes.com/partners/aol/special/sputnik/

The New York Times retrospective on Sputnik. It's interesting that back in 1957 the newspaper published the times when the satellite was overhead, but today they don't even mention the launch!

http://www.starshipmodeler.com/

I found the NY Times site through this one, which is a pretty cool site, too.

Finally, it's amazing what you can find on the Internet these days. Case in point, FREE ROCKETS! OK, they're not flying rockets, but they are model rockets. Free paper models you can download and print. You certainly can't beat the price! Check out Sven Knudson's nice index at:
http://www.ninfinger.org/~sven/models/papermodels.html

FAA FAR 101 Regulations

By Russ Mozier

The link below was brought to my attention by a fellow kite flyer. These are the actual FAA regulations effective July 2001. They are interesting to say the least. The ones that pertain to rockets may add some insight and humor to the next newsletter, or you may just want to forward the link to the members for some light reading.

http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_14/14cfr101_00.html

Other Websites of Interest

By Joe Libby

http://www.execpc.com/~culp/space/timeline.html

Randy Culp's timeline of space exploration, starting with sputnik and as recent as Mr. Tito's $20 Million "tour" of the ISS.

http://www.execpc.com/~culp/space/glossary.html

Randy's Glossary, from 3FNC to Zipper. [*See also Q&A Section – JL*]

Meeting Minutes

24 July 2001

By Joe Libby

Present

Art Treiman, Barry Berman, Steve Bastow, John Coles, Joe Libby, Adrian Liggins, Tom Mitchell, and a few others – I didn't have the sign-in list.

The meeting was opened at 7:00pm.

Orders of Business

June 2001 minutes were approved.

Treasury Report

John reported $117 in cash and $652 in the checking account.

Upcoming Launches

Date	Theme
19 August	OddRocs
16 September	Pending approval

The rain dates are 26 August and 23 September, respectively.

Launch and Failure Debriefing

It was requested by GCC that we NOT PARK in the spot at the entrance to the Garden. Also, LCO/RSOs are reminded to double check motors and delays, especially on multi-stagers. Steve found at the June launch that someone had recorded a non-0-delay motor for their booster stage on the launch card. Fortunately he just wrote the wrong thing and had the right motor type installed.

Model of the Month

A couple nicely crafted models were presented. The winning design was an Intruder. Sorry, I didn't catch who's it was.

Lecture Calendar

TBA

Newsletter

The latest issue, the July/August edition, was available hot off the press. This issue featured a change. Instead of the President's Report and Editorial on the front page, a story by Barry Berman was presented. For future issues we hope to run stories by members on the front page as well.

PR Committee Report

No report as Pat was not here.

Discussion

Instead of a formal presentation, Adrian Liggins passed around and told us about his Russian Commemorative Rocketry Coin Collection.

Other Business

Joe Libby reminded us about Mike Rossbach's Egg Harbor Township Police Athletic League Rocketry group. He passed around directions to their launch site at EHT High School and dates of upcoming launches.

Tom Mitchell suggested we might want to put a "Website of the Month" in the newsletter, and told us about a site that linked him to an old New York Times article on the original Sputnik Launch. [*See above – JL*]

28 August 2001

By Art Treiman

Present:

Art Treiman, Joe Libby, Tom Mitchell, Adrian Liggins, Bruce Canino, Robyn Paullin, Lisa Paullin, and Ed Romani. Welcome to Ed, who came all the way from PA! Art Treiman opened the meeting. Art announced we had three new members at our last launch. Welcome to Dan Toomes, Brian Owen, and Bill Baker!

Treasurers Report

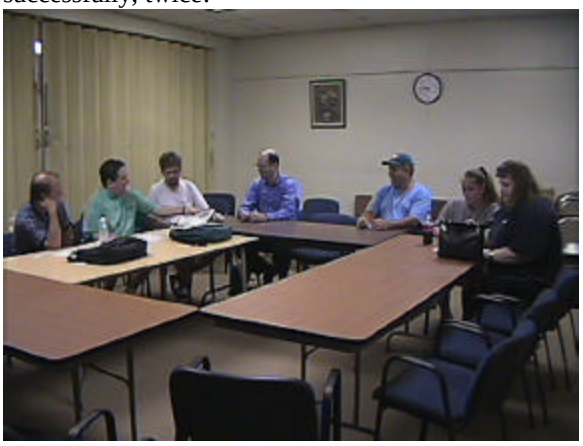
Deferred, as Treasurer John Coles was absent.

Future Launch Dates

Pending. We are waiting for GCC to get back to us. The October launch will feature a Marshmallow Much contest (Tom Mitchell's idea!). Details to be forthcoming. [*See Page XX – JL*]

Launch and Failure Debriefing

We had a terrific launch last month. Although there was some drizzle initially, wind was zero! Among other highlights, Art launched his Estes Dude and Joe Libby launched his parallel stager successfully, twice!



Newsletter

Joe Libby reported the deadline is coming up for the next edition. Any contributions are welcome as this issue is still a little thin. Apparently this year's Rockwell Award winner was NIRA (again!), not SoJARS' Altitude!

Web update

Pat Flanagan is in the navy and there will be some bumps in the road while Art and new Webmaster Paul DeCraene (thanks for taking this on, Paul!) get things squared away. Pat will be in basic training for 9 weeks and then hopefully he'll continue, although he is not sure yet where he'll be stationed.

Lecture Calendar

Lectures from here on will be informal at each meeting. If anyone wants to talk on a particular subject feel free. Some discussion was spent on this topic because we all feel the lectures are valuable. The problem is that attendance varies from 5 to 20 and we don't want a speaker to come and have light turnout. People seem to enjoy the impromptu sessions that have been developing the past few months.

Social Event Plans

Berman & Bastow- shelved till fall

Equipment update

New pad, two new controllers

Kingsway School field status update

Kingsway rejected our application. We talked about other field options (some distant prospects, but nothing in near future). Everyone is urged to keep looking for a big ol' field!

GCC field update

After some discussion, it was agreed that, conditions permitting, we could fly E powered motors. Depending on motor type, max liftoff weight for these motors is around 1.5 pounds. The max weight will therefore be determined by the motor.

Discussion

Newcomer Ed Romani (welcome Ed!) and Bruce Canino gave tonight's impromptu talk. Both attended NARAM and had very different perspectives. Bruce has been to many NARAMs, going back over 10 to 13 years (I think his first NARAM was either #30 or #33). Ed just joined our hobby (didn't PT Barnum say "there's a sucker born every minute!") and this was a new experience for him. It sounds like NARAM was a very hot but enjoyable affair.

Other Business

Art mentioned that the Canadian Air Force demonstration team, the "Snowbirds," (their version of the Blue Angels or Thunderbirds) will be at the air show at McGuire AFB September 15th and 16th. Art saw this group as a kid. Unlike the American teams (which fly 6 aircraft), the Snowbirds have 9 planes in the air.

Rocket of the Month

Tom Mitchell's beautifully done Estes Mercury Atlas edged out Adrian Liggins scratch built (from Pete Always plans) Vostok. Well done, guys!