MASA Planet

Volume 9, Issue 5 **September 2006**

Taylor-Made

Fleet Finishing

Jeff Taylor

To me, one of the hardest parts about building rockets is to decide how to finish it. Sometimes I like the way that the manufacturer has finished the rocket on the package using the stickers or decals that are supplied, and sometimes I don't. Sometimes I will finish building a rocket and it sits there for a very long time wearing nothing but primer, while I go through paint schemes in my head. More often than not, what I imagine it to look like and what it eventually looks like are never quite the same. But that will hopefully change with practice, particularly as I learn how to use my airbrush.

The picture on page 6 shows a few rockets that I had finished a little differently than how the manufacturer suggested.

Estes Big Daddy

This 3" diameter E power rocket was finished with an iridescent electric blue paint that was applied with my airbrush. My original idea was going to have yellow and orange flames on it, which I botched up and had to redo. I had applied the blue and masked off the flames, but when I applied the flame color, I made the rookie mistake of applying way too much paint at one

Taylor-Made, continued on page 6

Also in This Issue

Build-N-Fly

My Level I Certification

Black Brant + H128 = Fun!

Carol Marple

The Beginning

My first experience with rocketry was in May of 2004, when I helped Ted at an INSciTE Rocket League launch. I had a lot of fun watching the kids launch and recover their rockets, but I didn't know much about the model rocketry hobby. In February of 2005, I attended my first MASA launch (in White Bear Lake). I was thinking about coaching a Rocket League team, and I thought that I better build a rocket (or two or three) so I knew how to help the team with their rocket. The first rocket I built was an Alpha-3, which didn't seem too exciting. For my second rocket, I decided to build a Fat Boy. I worked on the Fat Boy for a few weeks, sanding and sealing the balsa fins until they were as smooth as glass, building the fillets until they were just right, and picking out the perfect paint color. I wanted this rocket to be as perfect as I could make it.

Level I, continued on page 2

Level I, continued from page 1

Somewhere during those few weeks, I realized I was hooked.

In June of 2005, I attended the MASA launch at the Nowthen site, and I saw my first high power rocket flight. Wow! Now *that* was cool! I considered the possibility of being able to launch big rockets, using big motors. Hmmm, maybe someday...

Carol, Black Brant, nephew Ben.

A month later, I received a PML Black Brant VB kit for my birthday, along with a card that said, "Rocket Girl -- whenever you're ready, I hope you shoot for the stars."

Suddenly, 'someday' was closer...

My Black Brant kit sat where I could see it every day. I built other rockets, and with each low power rocket I built, I thought of starting to build the Black Brant.

Some days it was a reminder of where I was at in the hobby, but even more, it was a reminder of where I wanted to go.

Level 1 Kit Construction

I started building my PML Black Brant VB kit in March of this year. I carefully inventoried the components, thoroughly read the instructions, test fit the components, gathered my building supplies, and took pictures before beginning construction.

I built the kit per the instructions, with a few upgrades necessary for a successful flight. This kit features a Quantum Tube (no spirals to fill!), Piston Ejection System, and G-10 Fiberglass fins, with through the wall construction. I added a LOC Precision MMA (38mm to 29mm) so I could use an H128 motor, a PML Motor Retention System, rail buttons, an easy-connect swivel on the parachute, and a Corn Abatement Buzzer (a simple personal security alarm, purchased at Circuit City).

Once construction was complete, I sprayed 3 coats of sandable primer (sanding between each coat), in an effort to fully cover the grey Quantum Tube. I then painted the entire rocket with Rustoleum Silver Metallic paint as a base coat and accent color. I masked off the fins and 3 accent stripes at the top of the rocket, and painted the rest of the tube with Rustoleum Metallic Red. After letting the paint dry overnight, I added two coats of Rustoleum Clear Coat.

I modeled my (nearly) completed rocket in both RockSim and wRASP to predict the altitude and determine the proper delay charge. Both programs predicted nearly the same altitude, and the delay charge was predicted within one-tenth of a second between the two programs.

I planned my Level 1 Certification flight for the August 2006 launch. I had purchased my motor -- an AT H128 White Lightning, with a medium delay-- at the Tripoli launch in July, and I was eagerly waiting for the chance to use it (thanks to Ted for holding it hostage, err, I mean, keeping it!). I completed my paperwork, made arrangements with my witness (thanks Alan!), and began hoping for good weather.

Launch -- Level 1 Certification Flight

I arrived at the launch site around 10:00 a.m., only to find that we had to wait for the clouds and fog to dissipate. While we waited for the weather to clear, my 6-year-old nephew, Ben, prepped and launched a Totally Tubular, a Deuce's Wild, and a Big Daddy (his first D-motor launch!). A short time later, it looked like the clouds were beginning to break and I was told I could start to prepare for my launch.

Photos by Jeff Taylor and Alan Estenson

Ignition!

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MEETING SCHEDULE

THURSDAY, OCTOBER 5
Location: Science Museum of Minnesota
Time: 7 PM to 9 PM
Topic: Baby Bertha kitbash build session
Notes: Classroom 11 & 12
For those who want to participate in the kitbash event and fun contest, Baby Bertha kits will be available for purchase at the meeting for $5 (one kit per person), or you may provide your own kit. More details yet to come.

THURSDAY, NOVEMBER 2
Location: Science Museum of Minnesota
Time: 7 PM to 9 PM
Topic: Rocket web sites--Rick Vatsaas
Notes: Classroom 11 & 12

DECEMBER HOLIDAY PARTY
Location: Buzz & Kathy McDermott's house
Time: TBD

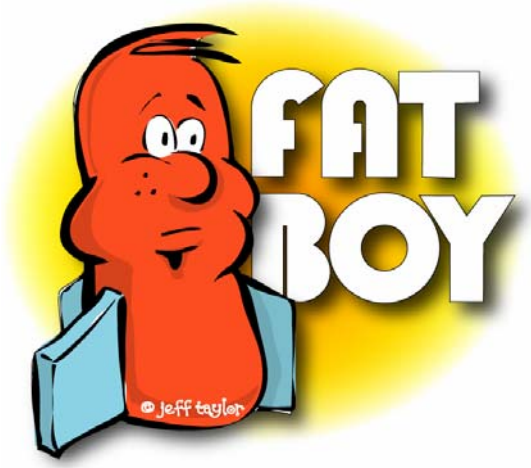
LAUNCH SCHEDULE

NOTE: TIMES AND LOCATIONS SUBJECT TO CHANGE! CHECK THE WEB SITE FOR UPDATES

SATURDAY, SEPTEMBER 23
Location: Nowthen.
Time: 9 AM - 3 PM
Theme: Clusters!
Events: Fat Boy duration contest.
Waiver: 5500 feet MSL (~4500 feet AGL)

SATURDAY, OCTOBER 28
Location: Nowthen.
Time: 9 AM - 3 PM
Themes: Missiles of October; Staging
Waiver: 5500 feet MSL (~4500 feet AGL)

SATURDAY, NOVEMBER 18
(ONE WEEK EARLIER THAN NORMAL!)
Location: TBD.
Time: 9 AM - 3 PM



Editor's Note

Thank You for Your Support

Ted Cochran

You'll notice some new artwork in this issue of the *Planet*: Jeff Taylor has turned his considerable artistic talents towards providing some fun graphics, to say nothing of an article and a lot of photographs, for our viewing pleasure. Thanks Jeff! Also thanks (and congratulations!) to Carol Marple, for her first *Planet* article on her successful Level 1 certification and to Rick, Andy, and Alan for their contributions.

I've been editing the *Planet* for almost five years. It would not be possible without a steady stream of contributions from club members and readers.

Ted Cochran

Editor

Alan Estenson

Glen Overby's I-powered Nike Smoke lifts off.

Outreach

Diversity Week Exhibit Attracts Engineers

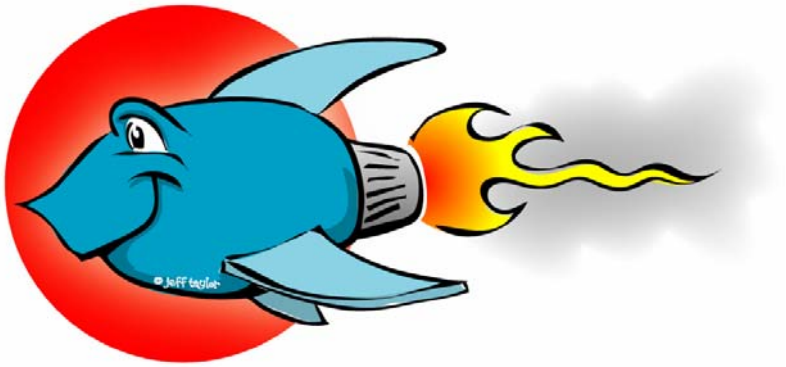
Who'd a thunk it?

Rick Vatsaas

On August 17, MASA was represented in the 2nd Lockheed Martin Diversity Week Hobby Show. Rick Vatsaas, Mark Nelson, Stuart Lenz, Dave Erickson, and Robin Bjorklund participated (Mark also ran a table for his Beekeeping hobby). The Sport Rocketry table featured the following:

- Motor casings ranging from 13mm to 38mm
- Model Rockets, Mid Power Rockets, Level 1 Rockets, and Level 2
- Rockets.
- Video Monitor showing the 2005 G Harry Stine Launch
- TARC Display
- Parachutes
- Homemade rocket components

Turn out was excellent and we usually had a big crowd around the table. A number of people inquired about visiting a MASA or MN-TRA Launch. We had lots of good questions and many people wanted to tell us their own rocketry stories.



MASA members display a variety of rockets, giving a whole new meaning to Diversity Week!

Outreach

Rocketry in the Chippewa Valley

Summer fun in Eau Claire, WI

Andy Heren

This summer the University of Wisconsin -- Eau Claire held their annual Summer Institute. One session is held in Chippewa Falls in June and one in Eau Claire in July. They are held Monday through Thursday for two weeks. These are special interest classes that students can take (they are actually classes to get kids out of the house because they are bored already and mom and dad don't know what to do with them) This is the second year that a class on model rocketry has been offered. Last year it was in the Chippewa Falls Institute only. I taught two sessions at each location.

During week one the students built the Estes Viking (Students in Wisconsin cannot understand why someone would design a rocket called the Viking, yet give it Packer colors. I try to assure them that the designers were not thinking foot ball when it was designed.). I am always excited to see the interesting paint designs that students have. It is also a learning experience for many of them, having never used spray paint. In week two they built the Estes Alpha. During each week we built on Monday and Tuesday, painted on Wednesday, and launched on Thursday. While waiting for glue to dry, students learned about the model rocket motor, how rockets work, and the NAR Safety Code. They also learned the history of NASA and the space program. I also used the internet to introduce them to many rocketry websites (Including the MASA website!). I also gave out some Estes and Quest catalogs to get those interested really hooked on our hobby! I also showed many of the rockets I have built to let them get an idea of the sizes and designs of the many kits out there.

The first Institute in Chippewa Falls brought 32 students. There were 19 in the first class and 13 in the second. That first Thursday was pretty calm when the first group launched their Vikings at 8:45 A.M. Only one drifted onto the school roof. In the second class, when we launched at 11:00 A.M., the wind had picked up and had changed direction a bit. We had a couple more land on the roof and we moved our launch pad to another location. At the end of week two, we launched the 32 Alphas with virtually no wind. Such beautiful launches and parachute deployments! We had only one misfire, and its cause was the alligator clips touching.

In the Eau Claire Institute I again had two classes with 19 and 13. At the end of week one we had, again, spectacular launching weather with very excited students launching their rockets. All recovered nicely with only one Viking on the roof. Week two brought even better weather (after a previous day's rain) in which we had a larger audience to watch us launch the Alpha's.

In all, I helped 62 kids build and launch two rockets, many of them first timers. I greatly enjoyed being able to teach a class that covered rockets only. I am looking forward to teaching three sessions next year.

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time. The flame color sagged and sucked up underneath the tape. After that fiasco was cleaned up and sanded off, I repainted the blue. I have flown it several times with just the solid blue, but eventually I will add something to it -- either flames or some other design.

Estes Outlander

I really like the Outlander's shape, and the suggested blue and red paint scheme is pretty neat, but I wanted to do something a little different. I opted to base my paint scheme on an Apollo LEM, complete with the gold foil insulation. Construction was basically by the book, except that I upgraded the hinges on the legs. For the gold foil insulation that I wrapped around the large external tanks, I simply used a gold Mylar balloon. I cut the balloon into pieces that would fit the tank, and then I crumpled the pieces up real tight then smoothed them out again. That gave the insulation's wrinkles more of a scale look. I made my own water slide decals on my computer using Adobe Illustrator and printing on special water slide decal paper designed for laser printers.

Estes Big Bertha

This was my first flame job that didn't go down in flames. I wanted a black rocket with fluorescent flames. Fluorescent colors don't seem to cover other colors too well, so I had to paint the flames first, then add the black. Using my airbrush, I put fluorescent orange around the middle of the rocket. Then I sprayed fluorescent hot pink closer to the front, gently blending it into the existing orange. After that, I sprayed fluorescent magenta even closer to the front, blending into the hot pink. And finally I put fluorescent purple on the nose cone and blended it into the magenta. The flames on this smaller diameter rocket would have been too much work to mask off with tape, so I traced the flame design onto clear contact paper, cut it out with scissors, then wrapped it around the rocket. I sprayed a touch of blue up front, and then covered the rest of the rocket with black paint. After removing the contact paper that masked off the fluorescent flames, I sprayed clear coat over it all to give it a high gloss look.

Flis Kits Acme Spitfire

With the name "Acme", who doesn't immediately think of Wile E. Coyote using rockets to help him try to catch the road runner? "Nuff said about what inspired me to paint this one red.

Estes Renegade

I had read a few articles about how the larger tanks on the Renegade's booster were too close to the body tube and sometimes interfered with the booster separation. To fix that I made some balsa standoffs to mount the tanks about a quarter inch outward. I thought of this paint scheme while sitting at MSP one day while on a business trip. I sprayed the entire rocket with Testors Aircraft Gray spray, and then brushed on red acrylic paint on the tail fins and smaller tanks on the booster stage. Using Adobe Illustrator again, I made up the decals to model it after a Northwest Airlines plane, complete with Spongebob and Patrick in the cockpit.

Up next in the paint booth: An Estes Executioner and a Flis Tres.

Plans

The 2TH DKR

Found Parts Rocket

Andy Heren

I was wondering what exactly qualifies as a "found parts" rocket. Is it made with part that you just happen to find? Or can they specific parts that you "found" after a careful search? Another question I have is how many actual rocket parts can it have to be a "found parts" rocket? You can decide if my rocket really qualifies as a "found parts" rocket, or if it is just a rocket using many different parts.

For many years, I have looked at those Tootsie Roll banks at Christmas time and thought that they would make great body tubes. At the April MASA meeting the topic was "found parts" rockets. While the meeting progressed and Mike showed the many items that can be used to make rockets, I got my idea. I would build a rocket out of "found parts" that would have a central theme -- Candy. In the months since, I have been mulling ideas over in my head and have finally built my rocket.

All parts of the rocket have to do with candy and have come from candy containers except for a few parts. The motor mount is a piece of an Estes Viking body tube. I cut the centering rings out of a thick paper board. I also used a regular motor hook, and shock cord of Kevlar and elastic.

For the body tube of the rocket I used two of the Tootsie Roll banks. I cut out the bottoms and connected them with a coupling ring. The coupling ring is a rolled Jujifruits box.

The fins are made of three candy boxes reinforced with the paper board (I opened both box ends and glued the paper board inside of the flattened box). I used Junior Mints, Dots, and Milk Duds boxes. I strengthened the fins with reinforcement tabs made of Sugar Babies, Twizzlers, and Mike and Ike boxes, respectively.

The launch lugs are made of Pixie Sticks. Actually, I tried rolling and gluing one Pixie Stick inside the other to make a stronger lug, but that didn't work. It was still too soft and they are difficult to roll inside one another. Instead, I just wrapped the Pixie stick around regular launch lugs.

The nose cone is an egg shaped M&M's character who has a clear top filled with mini M&M's. I used 30 minute epoxy to glue the character to the top lid of the Tootsie Roll bank. I chose 30 minute epoxy for one main reason -- it was a raffle prize from NARCON 2004 and it is the only epoxy that I have.

The14 inch parachute is made of parts of nine Jelly Belly bags. I cut the portions and taped them together.

Here is the irony -- the parachute strings are made of dental floss (Johnson and Johnson Berry Mint). The one thing in the rocket to fight the cavity causing ingredients!

I finished it during the last week of my Summer Institute class. The kids in the class were quite adamant that I finish while we were in session so they could see it.

I used some old methods from the Handbook of Model Rocketry to test for stability. I had to add a little weight to the nose cone. I didn't have any clay, so . . . I used 5 mini Snickers.

For my first flight I used a B6-4. This was definitely not powerful enough. I will have to use a C6-5 or maybe even adapt it to use a D.

To recap, I have made a list of parts that are "real" rocket parts and those which are "found," or definitely not designed to be used as rocket parts.

"Real" Rocket Parts

Motor mount tube
Motor retaining hook
Kevlar cord
Elastic cord
Launch lugs (2 one inch lugs)

"Found" Rocket Parts

Body Tube -- Tootsie Roll banks (2)
Fins -- Junior Mints box
Dots box
Milk Duds box
Fin Reinforcement Tabs -- Sugar Babies box
Mike and Ike box
Twizzlers box
Coupling Tube -- Jujifruits box
Launch Lug Wraps -- Pixie Sticks
Nose Cone -- Plastic, egg-shaped M&M's character mounted on plastic bank lid
Parachute -- 9 Jelly Belly bags
Shroud Lines -- Dental Floss
Centering Rings -- paper board
Eye hook and swivel for parachute

This is the first rocket that I have designed from scratch. I enjoyed all the thinking and planning that went into it. I have already started designing the next on my list. It will be...well, that will have to wait for another time.

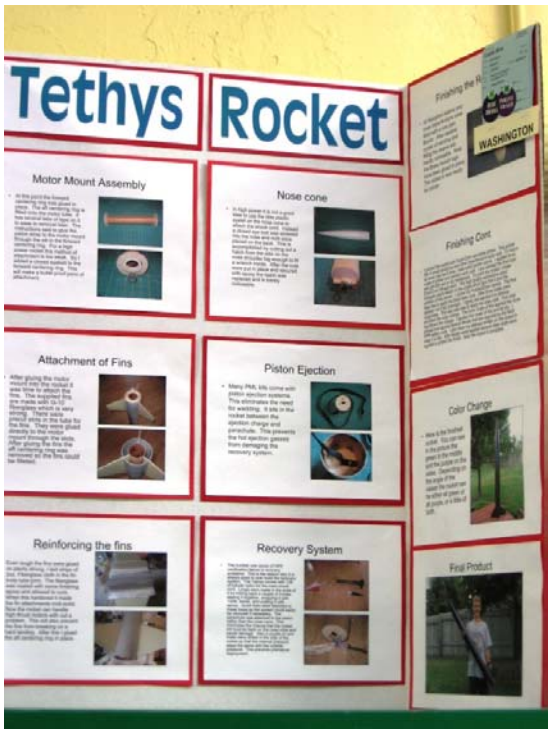
Outreach

4H Aerospace

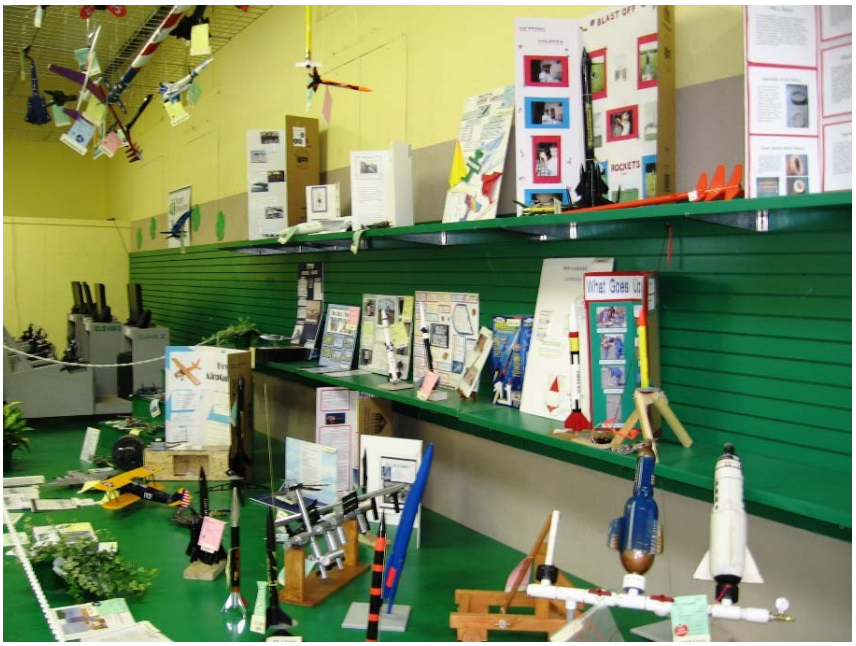
Caleb Boe wins purple at the Minnesota State Fair

Ted Cochran

I was once again a 4H Aerospace Judge at the Minnesota State Fair. I judged about 3/8 of the exhibits, which were the usual collection of rockets, historical aircraft models, and miscellaneous aeronautical projects. One of the exhibits I didn't get to judge was Caleb Boe's project on his Jr. Level I PML Tethys. This was a fine exhibit, and won a Purple Grand Prize ribbon! These are awarded to less than 10% of all of the 4H projects, and represent the finest work that we see.



Congratulations, Caleb!



Level I, continued from page 2

Alan inspected my rocket, asked the necessary questions, and gave my rocket a "thumbs up." I then began to assemble my motor, with Alan witnessing the assembly process (and patiently answering all of my questions). The motor was loaded into the rocket, the CG was checked, and the final inspection was complete. It was now time for final launch preparations.

Beautiful ascent!

I took a short break while waiting for Alan's Quad Pod to become available. Once it was open, I completed my launch card and made my way to the launch pad. My rocket was loaded onto the rail and after a few last-minute checks, the beeper was activated and the igniter was hooked up. I returned to the launch line to nervously wait my turn.

Mark Thell began the countdown, and after what seemed like hours (it was probably 2 seconds), the motor ignited and my rocket took off. The flight was perfectly stable, nearly straight up, the parachute deployed just past apogee, and the rocket gently touched down on the field, approximately 250 yards south of the launch line.

Soft landing!

I'm pretty sure I didn't take a breath from lift-off until touch down.

Once the range was open, I walked to my rocket (accompanied by Alan, my nephew, and a few excited friends). Alan inspected my rocket, which had no damage at all, and declared the launch, flight, and recovery a success! It was official... I had my Level 1 Cert!!!

A few people have said, "Now you can burn money like the rest of us." All I can say is, "Level 2, anyone?"

Success!

The *MASA Planet* is the official newsletter of the Minnesota Amateur Spacemodeler Association, Section 576 of the National Association of Rocketry. It is published bimonthly as a service to its members. MASA authors and photographers retain rights to their submissions, which are used by permission. The *Planet* is available in ***color*** on MASA's web site:

http://www.mn-rocketry.net/masa/

Submissions may be made to the editor at: masa.planet@mn-rocketry.net. (Volunteer quickly, lest you be asked to edit the Planet!)

If your email address, U.S. Mail address, or phone number changes: Please send notice of your change to masa@mn-rocketry.net. Include your name, old email address, and new address. We depend on email for communicating important information. When an email address starts "bouncing", we lose contact with you.

Welcome new members!

Jacob & Rick Rider
Dan Brudvig
Rico Lorenz
Larry, Joel & Harlan Brand
Ronald Hodgman

Notable Flights

Carol Marple, Level 1 certification (see page 1)

Alan Estenson

Alan Estenson caught all five Comanche 3s at the start of the Annual Comanche Drag Race

MASA Planet
4235 Dupont Avenue South
Minneapolis, MN 55409

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