



# M.D.R.A. Report

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Cover: Jerry O'Sullivan's Nike on 3, 75mm M motors. Photo by Shirley Coggon.

## Editor's Corner:

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### Homeland Security and You.

There has been a lot of talk about the new Homeland Security law that passed and how it will affect us, the rocket community. This along with the case that NAR and TRA have going with the BATF. Some people don't want to be on the "radar", others don't want any involvement from the Government, and still others are afraid we won't be able to fly in the near future.

I understand some don't like it, but to break the law is just stupid. If you don't agree there is a way to get the ear of your congressperson, or to have it changed. It also reflects on the Hobby and the people in the hobby, that we are not intelligent enough to work out our differences in a civilized way. Breaking the law just gets you a bunk, three squares and a close friend called Bubba.

This is your choice to make. Unless the NAR/TRA case is settled before May, if you want to handle large motors after May 23, 2003 your going to need a LEUP permit. It's that simple. So if you don't want to be on the "radar" or like having the Government looking over your shoulder, then leave the hobby and find something like, knitting, as far as I know there is no permits needed for that.

Getting a LEUP is not hard, I think it's easier to get then a drivers license, you don't have a written test or have an instructor watching you drive a car. You fill out the form, and get a FREE fingerprint, picture and send it in with the fee then sit back and wait for it to arrive in the mail.

The BATF and Government are not saying "NO" you can't fly rockets anymore, they are just asking for us to get a permit so we have accountable. Life is too short for this and Rocketry is too much fun to let this be a problem.

See you at the field.

## Annual East Coast CanSat Launch

### Purpose of Program

The CanSat program challenges innovative students to get hands-on experience in the life-cycle (one year or less) of a space project. Each CanSat team will design and build one or more satellites, and travel to the launch site to supervise the

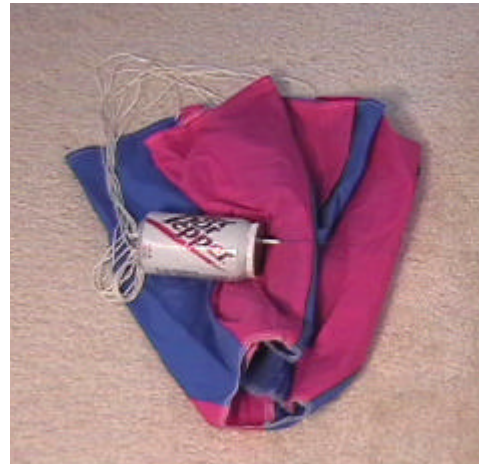


Figure 1 CanSat

preparation and launch. They will collect any telemetry data and safely recover their CanSat.

### How the Program Works

The program is designed so that the students will start developing CanSats in the fall semester and complete the development during the spring semester. In the fall, the students develop a mission proposal and submit it to volunteers at NRL who will review the proposals and respond with any recommendations for improvements to the mission. No proposal will be turned down. The students will develop and construct one or more CanSats during the fall and spring semester. During the month of January, NRL will work with the Maryland/Delaware Rocketry club and select a weekend in April for the launch event.

The event weekend will occur over a three day period starting Friday. A tour of the NRL facilities will be given on Friday. Attendance is not mandatory. Saturday and

Sunday will be dedicated to launching the CanSats. Two days allows for rain delays. If all the days are rained out, a fall date will be set to allow the students to try again.

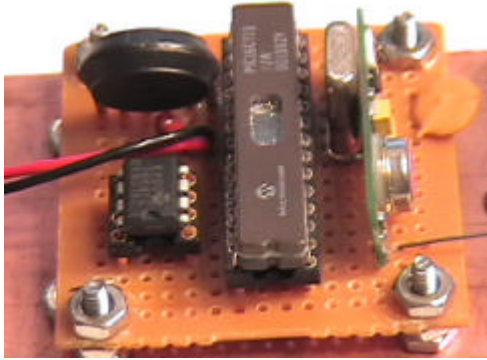


Figure 2 CanSat Structure

At the launch, canopies will be setup along the flight line to allow the students an unobstructed view of the rocket launch. This allows the students to operate any ground equipment for their CanSat. Flights will occur from 10 am to about 4 PM. Afterwards, the students will assemble at another larger canopy and give informal presentations to the other students, instructors, volunteers, and other rocketeers. If all the students were able to fly on the first day, then they would be allowed to fly again on the second day.

Each student will get a t-shirt with various logos. Certificates and awards from the Galaxy Explorers will be given to the students. The Galaxy Explorers is a nationally recognized educational program.

The NRL Rocket Club and Amateur Radio Club will provide the volunteer labor. The rocket club members will review the proposals. Field operations will be provided by the Maryland/Delaware Rocketry Association.

### CanSat Requirements

As there are constraints in the development of real satellites, there are constraints imposed on the CanSat. The constraints should challenge the students in their design.

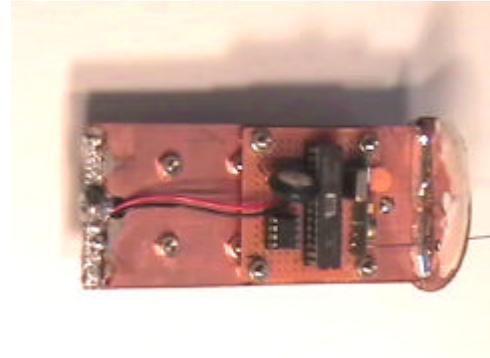


Figure 3 CanSat Electronics

1. The CanSat shall be built to fit in a standard 12 ounce soda can such as "Coca-Cola" or "Pepsi." The diameter is 2.6000 +/- 0.005 inches.
2. No parts of the CanSat shall extend beyond the surface of the soda can until deployed.
3. The CanSat shall weigh less than a full can of soda, 350 grams.
4. The CanSat shall operate off of battery or solar power.
5. The CanSat can use RF communications. CanSats with RF transmitters shall have properly licensed operators.
6. A parachute shall be properly secured to one end of the CanSat. The size of the parachute shall allow the satellite to float at an operable altitude for no more than 20 minutes. Minimal float time will be five minutes.

### The Rocket

The rocket is a modified Loc/Precision EZI-65. The lower airframe is modified with an extended 54mm motor mount to support hybrid motors. A vent hole is drilled into the side for nitrous venting. A bulkhead and coupler are glued to the top end of the lower airframe. This is done to eliminate any zippering of the lower airframe. The length of the lower airframe is 34 inches.

The upper airframe is a 34 inch airframe cut in half. A Loc coupler will hold both halves together. The altimeter is mounted in the coupler with bulkheads on each end. A small key switch is mounted in the center of the

coupler. One half airframe is attached to the coupler and will hold the main parachute. The other half of the airframe will be attached to the coupler and hold the CanSat. The airframe halves are secured to the coupler with PML rivets.



Figure 4 CanSat Rocket

A shock cord is connected between the upper airframe and the lower airframe.

The CanSat with its parachute is dropped down the upper airframe above the coupler. The nose cone with its small parachute is placed on top. A short piston is also attached to the nosecone and rests above the CanSat.

When the rocket is launched and reaches apogee, the altimeter fires an ejection charge and deploys the main parachute. When the upper airframe faces downwards, the nose cone and CanSat falls out. The CanSat floats back to earth.



Figure 5 Lower and upper airframe

### Status

Currently there are two schools with a total of five CanSats. There will be at least five CanSat launches. St. Mary's Technical School in Leonard Town will fly two

CanSats. Landon School in Bethesda will fly three CanSats. Each CanSat will have its own rocket. The projected altitude is 4000 feet. The CanSats will be in the air for at least five minutes.



Figure 6 CanSat Rocket Parts

The Galaxy Explorers program will be incorporating the CanSat program and making it a national program. Details are being worked out. Check out <http://www.galaxyscouts.org> for details.

For information on the CanSat program, go to <http://members.cox.net/igalysh>

*Ivan Galysh*

ESL #54

Central Sod Farm, 9/21-22/02

The summer launch season wrapped up at the Central Sod Farm in September, thanks once again to the hospitality of the Warpinskis. With the onset of winter staring us square in the eye the warmth of these summer days will fuel us through the cold windy launches that lay ahead.

Saturday, 9-21-02, was the normal set up day starting at noon and after a quick and efficient set up we were off and running. Mike DeBay launched twice with his Arreaux on an E-18 and his Explorer on a D.W. H-100. Both for good flights. Kathy Gilliland launched her Two the Stars on a K-450. A high flight followed the crushing lift off that

this motor produces. Eric Hall was playing with some smaller rockets and motors with his Silver Fox and Gray Thing on G motors and then got together with Darren Wright on a small group project called Rhino Dump on a H-242. With a name like that even a crash can't hurt it.

Scott Hayes launched 5 rockets in the D to G range. Richard Hickok also launched 5 rockets in the A to G range. Tom Hier took to the air twice with his Mini Magg powered by an H-135 and an I-145, respectively. Jeff Hooker flew three times with his Mustang on a G-35, G-Force on a G-80 and his Eclipse on an I-211. Bob Lussier flew his Mini Magg on a G-125 for a nice flight. Speaking of nice flights Neil McGilvray, yours truly, had a great flight on Orange Crush flying on a L-1800 blue motor. The 7.5" diameter rocket tore off the pad and arched in the complete opposite direction that every other rocket flew. This was only the beginning of the problems or was it closer to the end? The arch continued into an accelerated date with the planet Earth in the woods. After exhaustive and repeated attempts the rocket was never recovered. At least when you get to pick up the pieces there is some closure.

Kevin McHugh flew three rockets in the C range. Jerry O'Sullivan kept things exciting with his flight of High 5 on a D.W. J-300. Wayne Parker was airborne 4 times in the F and G range with his rockets Venus, Whiplash, Barracuda and Cheetah. Doug Pratt launched his Tomahawk on an I-110. Karl Schuler looked skyward six times flying in the C to G range. Fred Schumacher had one flight on his Overkill 4, which looks exactly like ever other rocket Fred owns called Overkill. The only Overkill I can see is the over use of the name and the design. Enough already, I can't take it any more. Just kidding, I really enjoy seeing the same rocket go up time after time after time after time after time after time, no matter what the size. By the way Fred flew Overused on a K-450.

Dick Stafford flew 5 times on Nike Smoke with a F-23, Big Brute on a G-35, Mini Mojo Fat Boy on a H-123, Lobbin Bonnin on an H-123 and his Snipe on an E-9. All for nice flights. Charlie Stone flew twice in the A and C range. Nikki Taylor flew twice with her Nike on a C-6 and V-2 on a D-12. Bob Utley continued in his quest to do

something different with some different stuff. This chapter included his Gay American on a H-100 made with Zinc Dust and then with Zinc Oxide as the fuel. The results were less than notable and will not be published in any reputable journal.

Brenda Wallace flew twice with her Max Big Bertha on a E-30 and her Lil'Nuke on a F-80. Dave Weber achieved flight number 141 with the successful recovery of Tuber on a G-75. Dave also flew Sticker Shock on an I-285. The team of Dave Young and J.R. combined with help of Bob Utley to get the big Patriot into the air on a L.D. L-1800. A nice flight followed by a marginal recovery that sent the rocket back to the shop of the millionth time. Fiberglass that bird Dave!!

Sunday 9-22-02 started out for me early looking in vain for the remains of Orange Crush. Between the dogs, the heat, the thorns and the lack of a crash site I gave up hope of a decent burial. The day began on a more positive note for the rest of the gang.

Andrew Bronfoin flew his Annihilator on a J-650 for an impressive flight. Carl Bryant took to the skies twice on his Strong Arm and Initiator, both powered by F-25's. Our fearless leader, Dave Bullis, was putting up some small stuff on C power earlier in the day. Dave was working with some of our younger members, nurturing them along in the ways of letting nothing stand in your way. Not even underpowered rockets or gravity. Dave finished up his day and the rocket, Instant Access, with a flight on J-340 of his own making. Lift off was nominal, to the top of the rod and then the questionable thrust to weight ratio took over. Gravity isn't just a good idea, it's the law!

Doug Cameron decided he had one to many rockets with his launch of a minimum diameter 3X Cluster on three G-80's. Can you spell "See-Ya"? Jim Cox Flew six times launching everything from his Cow motif Cowmooflaged V-2 on D and E power to Mini BBX on an H-130. Bill Davidson got off one flight with Lil Bit on an I-220. Gary Deaver launched his Tomahawk on an I-225. Ivan Galysh was back at wrestling with the complexities of Hybrid Motors with his Black Brant Cansat powered by a J-270 Hybrid. Mitch Guess flew four times spanning D to I power. Scott Hayes got in 5 flights and got 5 rockets back powering his

fleet with D to H motors. Richard Hickok flew 27,691 times on C to E power. Richard is typically wears the deepest path out to the launch racks. Tom Heir flew his Amraam 4 for a nice flight on a J-280. Keith Holt got in 4 flights with his Arcas on G-40 and G-80 power and his John Deere Green on an H-360. I keep forgetting what color that rocket is, maybe it's me? Tom McDonald took his ASP to new heights on an I-220. Sean McAndrew was demonstrating some of his most recent creations on this day. Sean flew a K-1500 in his Patriot (Advanced Capability 3) rocket. Sean also static fired a H-100 Smokey and J-300 Smokey motor.

Neil McGilvray, recovering from the previous days loss, flew Comfortably Numb on a K-1000 and Udder Madness on a L-1700. Both flights went off as planned and were even recovered as planned, beyond some peoples expectations, (Bob and Fred). Bart Merkley launched 3 times in the G and J range. Most notably with his Sentinel on now rare J-350. Rick Oasen launched his Spy In the Sky on an I-211, an equally rare motor in these post Areotech days. Dave Olson beat Richard Hickok's launch count by 3 as Dave made his way to the pads 9 times. Dave launched a single, 2-stage and three stage Comanche, his Initiator 3 times and his Air Spike 3 times. Wayne Parker launched 5 times in the C to G power curve. Mark Polansky and his girlfriend Shannon combined for a Black Brant flight on a D-12. Ted Proceus got 2 birds into the air and performed two static firings. Ted flew his Tomahawk on a D-15 and his Javelin on a H-220. Ted tested his H-100 and J-500 that we can anticipate to see in a rocket real soon at a launch near you. Rob Roberts, (what was his mother thinking?), looked upward 3 times on G, H and I power. Tom Rozman launched his Silver Bullet on a J-350 and his Small Endeavor on a H-123. Fred Schumacher bored the crowd to tears by recreating the same flight on the same rocket with the same motor as the day before with the same results. There is no sense in even mentioning it here as you can see the same thing anytime Fred launches with us. George Sechrist, still in a holding pattern waiting for the right opportunity to launch his N-2000 level 3 attempt stuck to the small stuff. George launched 4 times with his Viper IV with 4 D-12's, Initiator on a

G-35 and F-52 and his Mosquito on a H-112 for a high twirling flight.

Robert Taylor launched his Green Goblin on a J-350 for a nice loud smokey flight. Tom Thompson got his Mini BBX off the ground with a G-125 for a cracking fast flight. Fred Wallace was able to take some time off from his TAP duties to fly three times. Fred flew his Yo-ATF Special on 2-H-200's, his Bigger Bertha on a J-350 and his Mag-It on a I-230. Dave Weber was setting records and saving motors as he flew three times. Dave launched his V-2 on an I-211 for a nice flight. Dave also attempted an air start of his Archer on an I-500 and two G-80's. I don't remember the G's lighting, I may be thinking of Fred Schumacher's numerous air starting attempts. Dave finished up with another record flight of Tuber on a H-100. This was flight number 142. Darren Wright flew his Explorer on a G-80 and static fired an H-100 and M-2500 successfully, getting ready for the big field launches coming up. Last but not least, Larry Zupnick flew his Black Widow on a screeching high flight powered by a J-415.

This launch concludes the MDRA Summer Season at the Central Sod Farm. Our thanks and gratitude goes out to the Warpinski's and their generosity for use of the land. Without people like this the rockets stay on the ground, which isn't a bad idea for some people – not mention any names but one is typing this report. Keep you eyes on the website and get those rockets ready for the future launches. Fly them high and recover them low.

*Neil McGilvray*

ESL #55

Price MD, 10/19-20/02

Having one of our more unusual summers in recent memory, as we actually got in 4 launches, behind us the MDRA sights were turned to the opening launch of the Big Rocket Season. There were many that have been chomping at the bit to get those big birds into the air on the big field with plenty of room for recovery. One of the beauties of Higgs Farm and the adjoining farms is that there is normally no way you

can loose a rocket regardless of the wind direction. Granted there may be a brisk walk involved, but that is just the nature of the beast. Like all things in life you learn from your mistakes and miss-perceptions. Like on the X-Files, "The Truth Is Out There". On this weekend many of us learned the "Truth."

ESL #55 was divided up into 2 basic launch sites due to the numbers of M and higher Projects scheduled to be launched. It was the first time that we had an Away Cell for the M projects and a Way Away Cell for the monster projects, O and above. The "normal" site was about 500 yard away for the L and lower powered rockets. While I spent most of the weekend at the Way Away Cell and mindlessly wandering the countryside trying in vain to locate a missing member of the herd, I will still provide flight descriptions wherever possible. I won't allow never seeing the flight to get in the way of a good story.

Saturday started on the windy and cool side, nothing new to the Eastern Shore. That did not deter the throngs of enthusiastic rocketeers that came determined to burn some AP. Bruce Barkoff launched his ¼ scale Patriot on a H-180 and Drew Barkoff launched his Corkscrew on an C-6. Ivan Barnsely was stretching his wings and moving toward the Dark Side by launching, (dare I type the words?), composite motors. This is a departure for Ivan as he is the King of Black Powder. Ivan launched his Upscale Midget on a cluster of D-12's and C-11 motors, then it was on the real deal. Ivan had four other flights flying his Couch Potatoes Delight on a H-180, Auction Block Special on an I-205 and Loud As It looks on an I-285 Redline. Daughter Jeanie got in on flight on her Hat Trick powered by a G-33. You go girl! There is no doubt that when she becomes of age, Jeanie will be Tripoli's youngest female level 3 flier. Better start saving for that N-2000 now Ivan.

Dave Bathras flew his Corporal on a K-450, of his own making, for a nice flight. Gad Bee flew three times in the D, E and F range. Doug Cameron cracked the sky with another one of his high altitude, minimum diameter rockets. Today's attempt at loosing the rocket was bestowed on his PML Nimbus powered by a J-285. Radar reports it is still in orbit, scheduled to crash on the African Plains later this year. Josh Cara had

two C-6 flights. Clark Carrington launched his Cirrus Dart on a G-35. Paul Carrington launched his Mustang on a F-50 for a straight, high flight. Mike Casey blasted his Eclipse off the pad on J-300 power. Abbie Courtney had one launch on B-6 power. Chris Cox had two flights on his Cowmooflaged, cow motif V-2, powered by an E-9 and his UFO on a C-6. Jim Cox clustered 4 D-12's for an interesting flight on his aptly named Wild Thing. Richard Custer, never to let aerodynamics get in the way of rocketry fun, launched his Virginia Fried Chicken on a G-80. This rocket, if you could call it that is reinforced rubber chicken with a motor rammed right up it's....maybe I shouldn't go there. There might be some strange Freudian interpretation here.

John Davies launched his Zephyr up on a G-40. Glenn Davis was flying on E and F power on his Hawk and Cirrus Dart. Mike deBay was flying and testing on this overcast day. Mike flew his Arreaux on a F-20 and static tested two successful H-100 Blue motors. Rick DeForce had two fights on D and F power. Edward Enyart looked skyward twice with his G-Force on a G-80 and his Loc IV on a cluster of G-80's. Marta Galysh certified Level One on her EZI 65 powered by an I-130. Congratulations and welcome to High Power. Glen Gardner had two neck cracking flights with his No-Name and F.U.D., both launching on J-330's. Kathy Gilliland and Nick Klepp combined for two C-6 flights on Nick's Goliath and Dart. John Gramick launched his Bull Pup 2.1 and Stealth Jr. on F and G power respectively. Sean Guilday cranked one flight off with his Woosher-1 on an I-285 Redline for a nice flight.

Mike Harris became another member in good standing as he certified Level One with his Periwinkles Pride on an H-153. Congratulations and welcome aboard. Richard Hickok wore a path out to the A rack with his six flights of the day on A to G power. Abbie Leader launched her United Sates on a B-6. Chase Linter tore up the A rack with his A-10 powered Gnome. Sean McCorkle put up his Phobos on a H-138. Tobin Miklas worked his Small Endeavor through the stout northwest wind on an I-170. John Novalis saluted to his Liberty 7 on J-350 Power. Warren Pelton launched his Phobos on a H-242. Ed Romani had three flights on F, H and I

power. Mike Rossbach also had three flights with his Nike Smoke, Phobos and Ariel on G-40, G-80 and H-123 motors. John Soltysik lit up the sky with his no name rocket on a J-285. Mark Stackpole had his G-wiz whizzing on a G-200. Kapow!!!! Dick Stafford flew three times with his Dust Devil on two E-9's, his Saucer 10.25 on a G-38 and his Archer on a G-80. Andrew, James and Mathew Szypula combined for 6 flights in the A to F range. David Thompson had two nice flights on his Amraam 3 powered by an I-161 and his air starting Magnum on a K-700 and two H-100's. Tom Thompson took to the air three times on a variety of power plants. Tom launched his Eggs In One Basket on an I-175, Weezer on a J-330 and his multi-motored Clusters Last Stand on a K-1100, 2 J-330's and 2 I-161's. Zachary Walston launched 5 times on A to C power. Wade Winazak made his annual appearance and launched his Airwave on a H-153. Dave Young decided that he needed to re-repair his multi-repaired Patriot and flew it on a L-1200 ML motor for a beautiful flight. Then he tried to recover the rocket. One day Dave will learn that it is wise investment in time and effort to fiberglass the larger size tubes and they will take the punishment of a hard landing.

Then there was the Away and Way Away Cells. Norwood Truitt started off the day at the Away Cell with his Nike Rocket powered by a M-2000. This was an interesting flight, as the motor appeared to spit each motor liner as it ascended into the sky. Unbeknownst to us mere mortal Rocketers on the ground the winds aloft were blowing over 60 MPH above 4000 feet or so. This caused an unanticipated weather cocking of the larger rockets as they passed through the windy level. It also played hell with apogee separation causing an unanticipated extreme deceleration and this caused the nose cone to come off prematurely. On a normal day this would be fine but with mains out at 6000+ feet it meant the big rockets were disappearing over the horizon, beyond all belief. This is what happened to Norwood's rocket and after an exhaustive effort it was found many miles away behind a huge sand pile. The nose cone was not recovered.

There were many other flights at the Away Cell, however the rocketeers flying there failed to fill out flight cards and get

them to the LCO. I guess you know who you are and what you did and that will have to be good enough. \*Just as a reminder that filing a flight card is part of any launches normal operating procedure, the MDRA is no different. They allow a way of documenting the course of events, total Newton Seconds expended at any given day and launch (something we are very proud of) and it gives us a way for your flight to appear in the MDRA News Letter and be dragged through the mud by our rouge journalists. So remember keep those cards and letters coming. If there is any doubt, bring them to the LCO, that is where they are all collected and all the announcements are made for the A, B and C racks as well as the Away Cells.\*

The Away Cell was supported by the now famous and well-used Dave Bullis fabricated 20-foot tower. Dave also has been a busy beaver designing and building the big brother to the 20 footer. Dave spent a good part of the summer creating his 30-foot tall behemoth. This launch system is so massive that it requires it's own air compressor and pneumatic winch to raise the tower. The tower worked flawlessly and is a welcome addition to the ever-growing MDRA infrastructure. It seems like yesterday that a K-550 was a major event. Now we have igniters almost that big and need this size tower to support the launch of the big rockets that roar off this tower. You have got to love that!

Then there was the Way Away Cells. Looking back on the launch it seems that this was a accurate description of the Cell as it seemed that is where the rockets ended up, Way Away, upon recovery. Fred Schumacher started off the day with a very complex project that he called Over Kill 12. The rocket was about 17' tall, 12" in diameter, 250 pounds and was powered by 5 motors. Fred had a lot of help with this project, as most people require with projects of this magnitude. Bob Utlely lent assistance in motor production and development. The central N-5000 provided the initial thrust off the pad. Upon first motion sensed by a G-Wiz two L-1200's assisted in the initial boost. After the deceleration effect of motor burn out was sensed by the G-Wiz the final two M-2000's were to fire. All worked well up until this point. The rocket had entered the previously unknown wind layer at 4000 or so feet and had begun to lay over somewhat.

Only one of the M's came up to pressure and this was not enough power to propel the rocket in an upward trajectory. The rocket continued on a long arch until the onboard electronics sensed that it returning to mother Earth. The apogee charge was fired in the windy zone resulting in nose cone separation and the deployment of the 26' main parachute. Fred's rocket must of liked what it saw with Norwood's flight as the 250 pound rocket joined the temporarily MIA. The sad commentary on this flight is that Fred had teamed up with Ozark Aerospace's Darren Wright and Eric Hall to act as a test bed for the soon to be released ARTS system. They had onboard GPS and down link telemetry to track the exact location of the rocket. When the Nose Cone separated at apogee all eyes "thought they knew exactly where it was". Which brings up another law of rocketry. The rocket or its associated pieces ALWAYS float farther away than you can ever imagine. Double your estimate and widen your search arch. After a couple of hours searching for the nose cone, it was decided to use the GPS that was onboard to locate it. But as Murphy's Law would have it, all the time it was mindlessly transmitting wore the battery down and the GPS became as useless as a nipple on a fire hose when they tried to acquire the signal.

The rocket was another story. The big bird was located over two miles away in a nice green field undamaged. It did take the better part of an hour and a half to find it, but the recovery effort was successful. This is yet another example of how the MDRA continues to up the ante in that big poker game we call HPR. Hats off to Fred and his fantastic effort. *A late report just in: After 8 weeks in the field the nose cone and it's electronics was finally found and recovered. As suspected, it was nowhere even close to where all the eagle eyes thought it went down.*

Jerry O'Sullivan was the next to roll out a monster project. Jerry once again demonstrated his superior craftsmanship abilities when he unveiled his Fabulous Flying Furniture, a two-stage 12" diameter Nike Terrier booster to a 7.5" diameter Nike Smoke. Even up close it looked like the real thing down to the air foil design fins and scale paint / decal job. The Gates Brothers have nothing on Jerry when it comes to

scaling big projects. This project was to be another of his continuing association with Ozark Aerospace Motor Division's Darren Wright. The power plant for this flight would be three 7,600 ns 3" diameter full M-2800's in the booster and a M-4000 in the sustainer. After the normal field prep and raising of the rocket on the tower all systems were go. Jerry also teamed up with his long time electronics partner Bill Schworer, who was providing RDAS downlink telemetry and GPS location. The booster and the sustainer were to be recovered by Black Sky AARD (pyro-release) systems. This was one complex project. The count down worked its way to zero and all three of the M-2500's came right up to pressure and kicked the 200-pound project right off the pad. All three flames combined for one massive plume behind the rocket as it screamed skyward. Then.....That pesky 60 MPH wind shear reared its ugly head and quickly turned Jerry O'Sullivan's Fabulous Flying Furniture into Jerry O'Sullivan's Fractured Flying Fragments.

Look out below! Pieces of the rocket and associated parts seemed to be fluttering down everywhere. Closer examination on video showed that sustainer came loose from the booster as the rocket entered the wind shear altitude. The rocket took a sharp right turn then the sustainer leaned way over, separated and the booster slammed into it. As feared by Jerry, the inter-stage coupler was the weak link. However, considering the radical turn the big rocket was taking in the wind shear survival was questionable. This definitely qualifies as a really cool flight. It is the price we pay when we push the envelope. But that is what rocketry is all about. Bigger, faster. Jerry vows to be back with this project again and fly it in its 3-stage configuration. More lessons learned.

The third big project of the day at the Way Away Cell was, yours truly, Neil McGilvray's 400 pound, 19.5' tall 12.75" diameter P powered Cow Rocket. This rocket had previously flown on a 30,000ns O motor and this flight was to take place on 55,000ns Ozark Aerospace propellant, made by team Moo member Darren Wright. The motor casing was a custom 6" diameter, 58" long creation of team member Jeff Taylor of Loki Research. The motor was designed to be somewhere between a P-

9,000 and a P-12,000. The final determination would be made after review of the data. The launch platform was the 30' pneumatically actuated tower by Dave Bullis. Fred Schumacher provided transportation. Bob Utley, Pete Bennett, Jeff Potter, Kevin Kelly, James Kelly and a host unnamed others provided ground support. When you get into a project of this size you truly appreciate the time that your rocket friends spend helping you get the beast together and into the air. They take the time away from their projects to grin and bear it through the tension that always seems to be associated with doing something that has never been attempted before. A special thanks goes out to all the helpers on all the big projects, with out you guys and gals these rockets don't get off the ground. Sometimes, maybe it's better that they stay there.

The booster alone with the motor weighed in a 220 pounds. Getting it on the rail was a job in itself. This was definitely a case where many hands made the going light. Once the rocket was assembled on the tower it was time for the raising, arming of the electronics, interviews with Ray Halm of Way Cool Productions and thanks to the helpers. Being the first P motor attempt at an MDRA launch to say the anticipation and butterflies were running high is an understatement. You always have to wonder what you were thinking when you build a 400 pound Cow motif rocket to be flown on a P motor on a farm in Maryland. Oh well, too late to worry about. The launch criteria had been met, it was daylight. Start the count down and push the button. The P motor came right up to pressure and lifted the rocket steadily off the pad. The long blue flame kept accelerating the rocket into the sky. The burn lasted approximately 6 seconds, which provided all of the on lookers one heck of a show. It is not often that you get to see a project like this at a local club launch.

The rocket passed through the wind shear with some weather cocking into the wind as it continued to its final 6,900 foot altitude. The rocket had begun it's arch and was still rolling when the apogee charges fired. The 100 feet of webbing between the booster and the payload section did not provide enough shock absorbsion to keep the nose cone on. All four shear pins broke

loose and the main was deployed at apogee. Better early then never. It did become disconcerting when you see 400 pounds worth of cow rocket, strung out over 250 feet with webbing and chutes drifting over the horizon. The math just doesn't seem to add up. "Mooston ...We have a problem." After what seemed like the "normal" frantic search down the backcountry roads of the Eastern Shore for two hours turned up nothing, the same question was asked over and over. "How do you loose a 400 pound Cow rocket?" The answer always came back the same everytime. "Leave it to Neil". Searching into the dark continued to turned up nothing.

The next question was what to do? Fortunately or unfortunately depending how you look at it, loosing rockets on the Eastern Shore is nothing new. We knew the drill. Dave Bullis got in touch with a fellow MDRA member Doc Bevans and the two of them along with Doc's trusty Dalmatian set off the next morning in Docs plane to search from the air. It wasn't long after they started their pattern that the rocket was spotted, laying 50 feet up in a large wooded area. Luckily it was relatively close to the road. Thanks to the help of Bob Utley, Fred Schumacher and Kevin Kelly we were able to lower the booster to the ground after a fight with the trees. Then came the fun part, pulling the remainder of the rocket, webbing and chutes out of the trees. We connected the 100 feet of payload webbing to another 100 feet of  $\frac{3}{4}$ " rope and using a tree as a pivot point dragged the rocket out of the trees. There was so much tension on the webbing and rope it would pull a four-wheel drive Toyota Tundra backwards while still in gear! But finally things started breaking free and the payload section, nose cone section and the rest of the twisted mess of webbing and chutes were down. The good news was the rocket was not damaged, as it was made from industrial fiberglass pipe. The bad news is the 28' main and 17' nose cone chute were trashed beyond repair. The things we do to put a smile on our faces. This will give me food for thought before we put the 8-grain P in the Cow.

While the recovery effort on the Cow was going on the Sunday launch continued. Rob Basinet flew his scratch built Little Joe on a J-400. Carl Bryant launched his Initiator on a F-25 and Strong Arm on G-40. Clark

Carrington got in two flights with his Arcas on a F-20 and ¼ scale Patriot on an I161 for realistic looking flight and smoke trail. Mike Casey Cranked his Eclipse on a J-400. Jim Cox looked skyward twice with Money to Burn on a J-280 and Mini BBX on a H-250 for a nice fast flight. John Davies had three flights on F, G and H power. Gary Deaver was seeing red with his two flights on I-285 Red lines. Mike deBay had a case of the blues with his flight on an I-300 Blue motor of his making in his Explorer.

Rick Deforce got in 6 flights in the C to J range. The most notable being his Level 2 Certification on a J-285 with his rocket called Viceroy. Congratulations Rick, your one step away from Level Three now, ask for a raise at work. Ed Enyart put up his Jayhawk on a H-240 and Thethys on a J-300. Mark Eureka had El Gordo flying on a F-39. Lew Garrow had Pull My Finger racing skyward on J-250 power, leaving a nice long trail of smoke. Alan Gorecki, Mr. Hawk Mountain, took some time from his stand to fly one of his products. Alan flew a Talon 3 powered by a J-80 for a nice flight. Augie Gray had two flights with his Sudden rush on I-161 power and his Harpoon on a cluster of motors. The Harpoon always is a crowd pleaser with its normal power plant of a K-700, but with the addition of two H-100's it was awesome.

Mitch Guess took time out from picture taking to get in 3 flights. I am sure just so he could take pictures of his rockets. Mitch has a picture featured in the November / December issue of Extreme Rocketry, check it out. Mitch flew his Graduator on an F-25, Rohini RH-75 on an I-170 and his Endeavor on a K-670. Sean Guilday was climbing further up the High Power ladder with his three flights. Sean flew his Big Daddy on a F-20, Funnel Roc on a G-64 and his big flight of the day was a Big Nuke on a K-500. It makes it hard to go back to the F's after you cross the K line. Paul Haberlein launched his Nike on an H-124 and his Mini Magg on a H-123. Tom Hier went out to the pads twice with his Amraam 4 powered by a J-420 for a nice flight and recovery. Tom also attempted a two-stage flight with his Quantum Leap on a J-280 to I-170. (Results unknown) Keith Holt was grinding them until he found them with his rocket called Gear Head powered by a K-450.

Tom McDonald lit the candle on 2 J-285's with his Eclipse and Aspire. Sean McCorkle launched 3 rockets E, F and G power. Russell Miller came to Certify and Certify he did with his Polsla Feniks on a J-360 for his Level 2. Congratulations Russell, keep climbing that ladder. You have one more rung to go. Russell also launched his Rosed To The Onax as a warm up flight with a H-240. Paul Naberlein turned some heads with his flight of a Nike Ajax on an I-425. Dave Olson had his Air Spike and Initiator in the air powered by an F-20 and G-35 respectively. Mike Plitt had his V-2 aloft on an F-12 and his Mars Lander looking for home, powered by a G-80. Mark Polansky was down from Pennsylvania with his appropriately named Bullet flying on a K-670. Ted Proceus had two flights and one recovery. Ted flew his Nike Smoke on a K-600 Tiger Tail blend and launched his Cherokee on a K-1500 that dialed in to 1-800-Kaa-Boom shortly after leaving the rail. Steve Reeves flew without his cape and let the Bull Pup 2.1 do his flying on a F-20. Rob Roberts was tinkering with H and I motors with his EZI 2 on I-150 and I-168 power. Rob also flew his Vulcanite on an H-82. Dennis Sauer was working his Amraam 3 on an I-170 and his Small Endeavor on a H-110.

Kevin Scrimgeour was back and forth 5 times with his T Jr. On a H-153, Gold Finger on a H-153, Big Red on an E-15, Stars and Stripes on a F-20 and his Phoenix on an I-205. Joe Sorrentino had his True Modelers Nike Smoke sailing north on a F-24. Mark Stackpole got in three flights. Mark flew his Butt Ugly But Outa Here on a J-700, Won't Die on a J-100 and his always dangerously named Orange Crush on a K-1500. With rocket names like this what is Mark trying to tell us? What does he really mean? Jim Strauss craned his neck twice with Raptor on an I-285 and Green Weenie on a cluster of one G-80 and two E-9's. Nikki Taylor flew her Nike smoke on a C-6 for a nice flight. David Thompson had his Super Big Bertha moving on a F-12. TAP Member Fred Wallace got free from certifying all the Level 3 guys, who didn't turn in flight cards, to launch his Bad Boy on a L-600 of his own creation for a nice flight. Darren Wright closed down the launch with his up-scale Monster Maniac on a L-800 for a beautiful flight. Darren had combined with fellow

MDRA members on various group projects throughout this launch and must have cast well over 200 pounds of propellant and was only able to save a measly L motor for himself.

This was by far and away the biggest launch, total Newton Second wise (approximately 237,000), that the MDRA has put on to date. This type of activity doesn't happen by chance. There is an extraordinary amount of time and planning that go into pulling an event of this magnitude off successfully and more importantly safely. Many thanks go out to all of those that had a hand in things; you know who you are and what you did. Most of all our gratitude can't be expressed sufficiently in words or compensation to Tommy Higgs and his family for allowing us to continue reaching for the stars. We don't always get there but have a hell of a time trying. Sometimes all we come up with is a handful of mud. For all of those that were unable to help, remember this is your club too. There is always room for an extra set of hands and a willing mind. Think about chipping in at the next launch you attend, the pays not great but the satisfaction is. Until next time, fly them high and recover them low.

*Neil McGilvray*

ESL #56

Price MD, 12/14-15/02

"O" well, it seems that another year has gone blazing by. When you rate time as a function of launch to launch the years move even quicker. Looking back on 2002 I would say that the MDRA had a good year. The size of the rockets is growing, as are the motors. You won't see me shed a tear as the ground shakes with some of the big birds climbing the tower on huge tail of fire and smoke. The membership numbers have stabilized around 180 or so. We have had participation from Maine to Florida this year. The HPR community knows we are flying and all the feedback I hear is all good. The main question you hear is "how can we do that", "how can we be like you". MDRA style rocketry is the wave of the future. And we are two years into a very successful and safe relationship of combining "Experimental" with "Commercial" motors.

The record speaks for itself. The safety speaks for itself. The vision has become reality and it will continue so long as we all act responsibly. Each and every member of the MDRA is a rocketry ambassador. Your actions, projects, successes and failures reflect on the group as a whole. The rest of the rocketry world is watching in envy to see what our next step will be. Let's continue in a positive vein. There are very few groups in HPR today that have it as good as we do, we are the fortunate few.

The last launch of the 2002 season was held where it all began, on Higgs Farm. Saturday was cold, windy, rainy and just plain lousy. Only one brave soul even dared to launch in that slop and it was our very own "Princess Prechlorate", Kathy Gilliland. Kathy braved the elements and the subsequent long walk to fly her Initiator on a G-40. As quick as the rocket was moving, floating away under it's small chute, us lazy men were convinced to leave our rockets in the vehicles to wait for better conditions. We closed the field down earlier to give some of the members the extra prep time that was required in the warmth of the hotel.

Sunday December 18, 2002 was a much better day, wind and cloud wise. "O" let me tell you what was launched and "O" let me tell who succeeded and who failed miserably. Arron Blizzard saluted his Sergeant rocket on a G-79, I-205 and H-110. Andy Brizen attempted his Level One three times, with no success. Keep at it Andy and fiberglass those rockets. It will help with the nuisance disassemblies. Jim Cox had his Silver Comet and Callisto streaking from the pads on G-35 and H-100 power. Paul Esker launched 4 times on a G-80, G-35, G-35 and a C-11. Justin Gleiter was punching a hole in the sky twice with his Falcon powered by a H-200 of his own making and his Osprey on a screaming J-1500. Justin likes to get his rockets out of Dodge quickly and he does just that. Tom Heir brought two rockets out to the pads and launched one, his Mini Magg on an I-145. Tom launched his Quantum Leap with a Kosdon J-450. The forward closure let go the first time and luckily chuffed the motor out. The second time after re-installation of the snap ring the motor worked fine and performed well for a satisfying flight. Keith Holt put his Gear Head into the air on top of

a long trail of white flame and white smoke from the K-550 power plant. Kevin Kelly got in two flights between helping some of the bigger project guys. Kevin and son James launched their Skywinder on a B-6 and the Weasel on an E-9. Mike Kitto had his No Fear flying on a K-640 with a Walston tracking system. As high and as fast this rocket traveled he certainly needed the help and after a fashion he did get the rocket back. Sean McAndrew did three static test of propellant he had been working on. His I-500 blue was tested twice and his J-300 Sparky load was tested once. Sean also flew two "Spool" rockets with no recovery device on an H-124 red motor and H-124 sparky motor.

Neil McGilvray flew his 6" diameter rocket anthem on a M-1500 blue motor of his own making for a nice flight to 8,900 feet. Dave Olson flew three times with his Initiator on an F-20, Excalibur on a G-80 and Airsane on a F-20. All for nice flights. Jerry O'Sullivan was able to resurrect his Nike Smoke sustainer from the previous launches tragic crash. Jerry combined with Bill Schwower with his RDAS GPS system and Darren Wright with Ozark Aerospace for the power plant to fly the Smoke on a M-1000 sparky motor. The motor performed as expected but the real star of the show was the 3-D GPS printout showing the X,Y and Z axis of the launch, flight and walk back to the pits. Technology is a wonderful thing. Wayne Parker flew twice with his Cheetah on a F-25 and Onyx on a G-35. Ted Proceus had a real nice flight with his Nike Smoke powered by his Tiger Tail propellant in the form of a K-700.

John Ritz was stretching his experimental wings on three flights. John flew his Forte on a yellow J-250. He went 11,000 feet on his Tempest powered by an orange colored K-600 and his big flight of the day was a high arching flight on a red M-1000. Rob Roberts was pushing Kn's up to 650 with his AN-H-130 and AN-H-135. Both motors produced powerful straight flights. Joe Ruzzi launched three times with his python on a D-12, Sand Hawk on a G-38 and his Excel on a H-328. All three flights were successful.

"O" speaking of successful, there is this guy named Fred Schumacher and his needling sidekick Bob Utley. Well it seemed that one day Fred decided he wanted to

wear big boy pants and fly an "O". Not just any "O" but a red "O". Bob being the wiser of the two, not by much though, had a formula that seemed to work great when Fred was wearing his little boy pants and flying K-450's and even a manly M motor. Bob had concerns but Fred stomped his feet and held his breath until Bob caved in and said ok, lets do it. "O" this is when the fun really began. The 6" diameter, 28,000ns "O" motor was cast and the rocket was finished. Fred and Bob where happy campers and were already dancing like little girls arm in arm, twirling in circles, flying P's and Q's in their minds. They had their "O".

Little did they know that the evil Physics, who they totally disregarded as a myth was waiting in the field on the day of the launch. Physics is a quiet fellow who stands in the shadows and only shows his face when it is too late. "O" what a sneaky guy, if he had only warned Fred and Bob. Confidence was high the day before and the day of the launch. Maybe too high. What could go wrong? Everything was in place. GPS units were installed and powered up. Altimeters were powered up and functioning. The motor, "O" the motor, was ready and willing to lift the 225-pound rocket on a glorious flight.

Physics just smiled his sinister grin. What did he know that Fred and Bob could have possibly over-looked? After all they were acting like the smartest guys on the planet. Soon it was time for the big show, Overkill 12 on an "O" motor. Physics was foaming at the mouth, he couldn't stand it any more and let out a scream to stop the launch but he was drown out by the roar of the rocket still sitting on the pad with a fully pressurized "O" motor. Fred and Bob looked on in horror. Why isn't it moving they thought, "O" h there it goes!! Finally the rocket began to sl"O"wly climb the tower. For a split second things looked hopeful. Physics knew better. As the rocket came off the tower the wind and lack of power knocked the 17-foot tall project to an unrecoverable trajectory. Physics knew how this story would end.

Fred and Bob remained hopeful as the rocket began to accelerate faster and faster. But it wasn't enough. The big bird continued in a sub-nominal arch that would make the apogee portion of the recovery ugly at best. "O" no, apogee came and went

with no separation and the rocket was rolling like it was late for a date. Ugly began to look pretty good at this point. Physics turned his head and began walking away; he had seen this movie before and never liked the ending. The nose cone was wondering why the rest of the rocket was still attached and why the ground was getting so big, so quickly.

Then a miracle occurred. Physics turned on his heel, this couldn't be happening. Off in the distance a lone ejection charge was firing. The nosecone was beginning to move from the rocket. The payload section was separating from the booster.

"This can't be!" screamed Physics, "I am absolute, I am pure science"

The rocket was beginning to behave like a good cat on the way to its potty house. But time and space were getting short and everything suddenly stopped. When the rocket woke up it was in pain with two fins broken off and a cracked body tube, but it was alive. The main was out but never fully deployed. The nosecone rolled in agony, having its Ozark GPS and telemetry ripped from its belly. The Ozark equipment was knocked unconscious having its battery wiring ripped off.

The rocket wondered where it was. This field looked very unfamiliar. Why wasn't I at Tommy's Farm like Fred and Bob had promised? They knew everything, how could this have happened? Physics laughed to himself thinking, "Clown Motors – when will they ever learn" as the recovery crew frantically went looking for the rocket. "They almost beat me...almost," he thought as he slipped back into the shadows. Be it ever so humble, there is no place like h "O" me. Fred and Bob were last seen putting their little boy pants back on as the headed out to pick up the pieces.

Rob Taylor had been chomping at the bit for months to attempt his Level Three. This would be the day. Rob was flying a minimum diameter rocket called Green Monster on an Ellis Mountain M-1000 long burn motor. The rocket was prepped and ready to roll. Roll it did as the slick bird kept climbing in excess of 10,000 feet. The rocket arched over and deployed the drogue, the 36" drogue on a 25-pound rocket. You could recover it on this! The rocket was last seen peacefully drifting to

the east. At this writing it unknown whether the Green Monster has been recovered. George Tiger launched twice on G-40 and G-80 power. Norwood Truitt attempted to launch his Camroc on a K-400 Tiger Tail. The forward closure appeared to let go and unfortunately burned the rocket to a charred cinder. Fred Wallace had been waiting for a couple of launches to get his custom scratch built rocket Bad Bor into the air. The winds had calmed and Fred decided this would be the day. Fred cast a L-1200 or so for this first flight on his fine rocket. During the power ascent the forward closure broke loose on the 98mm Aerotech motor casing, smashing it into the electronics bay and disabling the package. Unfortunately the rocket soon found itself buried five feet deep in the soft farm dirt. Fred has had better days.

Dave Weber was out to fly his Super Tuber for its second M powered flight. Dave had a 98mm M-1700 ML as a power plant. This rocket, like the small Tuber has tubes for stability instead of fins. Once again the rocket remained stable on it's way to almost 5,000 feet. Dave also launched his Merry Christmas rocket, which is an ornamental candle with fins and a motor. It was flown on a H-128 for a nice flight. Darren Wright waited until late in the day to loft his Extreme 54 on a J-800. The motor propellant was the same formulation as the big P-motor and performed as well. Nice blue flame on a nice high flight. Ray Wright had two flights. One was his small Amraam on a D-12. The second flight was his Level 2 Certification attempt. The effort was there but the recovery Gods were not handing out favors on this day. Ray will be back, as will we all.

This was the last launch of 2002. Thank you Tommy Higgs and family once again for the use of the field, we always find new ways to meet the neighbors. Thanks also go out to all of the members that stuck with the MDRA through the year. You guys and gals are what make the MDRA what it is today. The sky is not the limit. Think big, fly big and live big. Until next year, 2003, fly them high and recover them low.

*Neil McGilvray*

*WANTED: Newsletter writers, who don't have delusions of talking rockets. ED.*

## the Numbers

There were 4 launches during the summer at the Sod Farm. It really is nice to fly on grass, no ruts, no hills, or plants to step over, just flat open space. Of course it hot and only gets hotter as the day goes on. 5 launches at Price with at least one day of great rocket flying weather per launch, I still love flying there even when I don't fly a rocket.

With 1151 flight and 1182 motor used that's a new record. P motors had to be added to the flight log since Neil McGilvray wanted to fly one and Darren Wright couldn't help but make one. 25 M flight, 3 N flight, 2 O flights and 1 P flight to round out the top end. Most used motor is C (177), followed by G (175), and H (150). All that Black power and AP totaled 1,082,087 ns of power, that falls into the T range motor.

Scratch built seems to be the way to go at 461 models, Estes at 209 followed by 152 PML kits. David Weber flew Tuber a couple of more time for flight number 142, and I thought I was lucky getting 2 flights out of the same rocket. Richard Hickok for the second year in a row has the most flights 46 for the year, Allie and Kevin Scrimgeour are tied for second 36. Cert attempts where 6 Level 1, 7 Level 2 and 6 Level 3, there were more but were not marked on the flight cards.

Who burned the most BP is Richard Hickok, the most AP Darren Wright. 185 members in MDRA. 500lbs of chicken and 800lbs of hamburgers were consumed at the field this year, and it shows. OK so that's the numbers, next year I hope to have a couple of more P's and someone to out fly Richard, come-on kids trip him if you have to.

*Bob Utley*

## PERFORMANCE HOBBY

<http://www.performancehobbies.com>

Need parts for your rocket, tell Kenny and he'll bring them to the launches.

Almost anything you could need they should have. Phone (202) 723-8257, fax (202) 723-0010.

## NEXT ISSUES:

- How to use chutes from Neil.
- Launch report of Jan & Feb.
- Events for March & April
- Another last page funny.

## Things to keep in mind for the New Year or Do's and Don'ts at MDRA Launches

Do come ready to fly, double check your range box and project components before you leave the house. Short of Kenny, there aren't many rocket stores on the Eastern Shore.

Do fill out a flight card, this how we document the days activities, RSO your rocket, validate launch fee payment and write the launch report.

Do make sure the LCO has the flight card and no other person. In the past, recognition has been lost to some well deserving fliers because the LCO never received a flight card. No flight card, no launch.

Do pay your membership dues and launch fees. Like any organization the MDRA has bills to pay and up grades to make. Without money none of this is possible. Imagine a day without the proper launch equipment, without the port-a-potties, without a happy landowner. What would you have? 1,000 acres with no rocket activity.

Do prep your rocket in the Pit Area. Be ready when you start out to the pads to launch. Be considerate of others that that are burning valuable battery time in altimeters and other electronics. As well as those that are waiting for that all important certification flight.

Do volunteer to help run the launch. Every member has the responsibility to help. There is always a need to assist with registration, set up, break down, RSO and LCO. The people that you see running the launches like to fly rockets too. Get involved; it is your club also.

Do follow the landowner's directions and respect his decisions. The landowner is our best friend and we need to treat them that way. You don't fly much on an unhappy landowners property.

Do contact a MDRA Board member ahead of time for big projects, so we can help to accommodate your needs.

Do your homework at home, not on the field. Lets try to minimize the costly lessons learned on the field. A project is cheap when it is still a piece of paper.

Do come with a good attitude and open mind.

Do fly within your comfort level.

Do have fun.

Do fly safely.

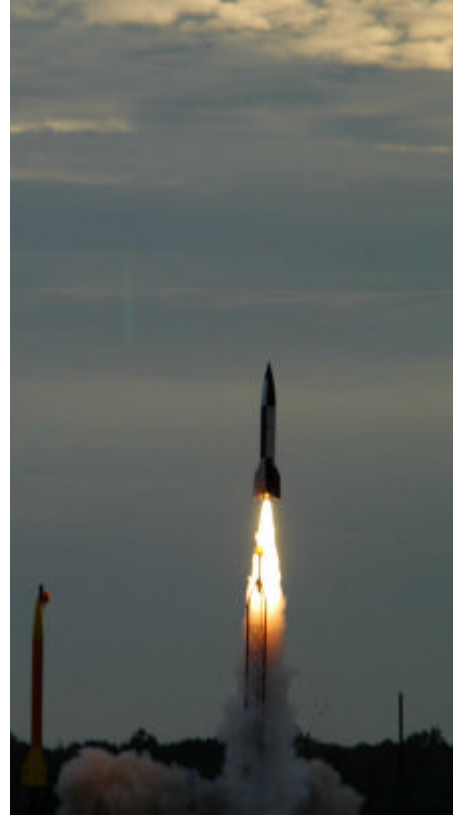
Don't even think about bringing or engaging in any non-rocket related activity without prior MDRA Board of Directors approval. This includes but is not limited to non-rocket ejection charge explosives, any type of fire works, any type of pyrotechnic device, air bags, motorized radio controlled vehicles such as planes and cars. The list can go on and on, however if it is not a rocket we do not want it at an MDRA launch, before, during or after the waiver. It's a small world and news travels fast. This includes all four fields, Higgs Farm, The Central Sod Farm, Rhodesdale and Coverdale. Violation of this policy may mean immediate removal from the launch site and revocation of all MDRA privileges and membership. HPR is an adult activity, all we asking is that you act like one.

*Neil McGilvray & Bob Utley*

Keep The Pointy End  
up and the Fierly  
End down.  
D. Bull is

<http://www.mdrocketry.org/>

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©J. O'Sullivan 2002

Jeff Taylor's Level 3 Rocket (V-2)



©J. O'Sullivan 2002

Fred Schumacher Overkill 12



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## Press Release

### Pratt Hobbies Announces Modular Launch System for Solid and Hybrid Rocket Motors

- One System can handle any commercially available sport rocket motor
- Expand the basic system with add-on modules as you need them

Pratt Hobbies is proud to announce the **M-RTLS, Modular Remote Tanking and Launching System**. This system will fill and fire any commercially available sport rocket motor, solid or hybrid. "Modular" means that you can start with a basic system and add more capability as your interests grow.

The **M-RTLS** is based on our successful **SureFire** launch system (which is still available). It has these features:

- Self-contained rechargeable 12v battery
- Battery test circuit and meter built in
- Audible continuity check
- Relay circuit delivers maximum power to the igniters
- Plug-in clips (spares included) are quickly changed at the pad
- Key safety switch on control box
- Light bulb tester included
- Everything packs into a convenient "toolbox"

There are four modules in the M-RTLS system.

Module 1 is the **Basic RTLS**, Remote Tanking and Launching System. This unit is similar to the SureFire, in that it has an onboard 12V battery, battery test circuit, audible continuity, and relay circuitry. All components and wires pack into a single "toolbox." The Basic RTLS has 100 feet of cable to connect to the hand controller. The Basic RTLS includes circuitry that will command filling and firing of hybrid motors, but it does not have valves or hardware, so it is used only for conventional solid rocket motors. The Basic RTLS module sells for \$110.00.

Module 2 is the **Valve Manifold**. This includes a solenoid fill valve, a solenoid dump valve, and hardware to connect it to a NOX supply tank. It plugs into the Basic RTLS, and makes a system that will fill and fire floating-injector hybrid motors. The solenoid valves are guaranteed not to fail under normal use. Fittings are included to attach to the

fill lines in RATT Works®, Propulsion Polymers® and West Coast Hybrids® motors. The retail price of the Valve Manifold Module is \$195.00.

Module 3 is the **Longwire** system. 100 feet of wire is fine for J motors, but the Safety Code requires 500 feet for larger stuff. This module uses a transmitter and a receiver on either end of a 500 foot cable. The transmitter plugs into the RTLS hand controller, and the receiver connects to the RTLS box at the pad. The Longwire comes with a 500 foot cable on a convenient winder spool. The system has been tested to 2000 feet and will probably do much more if anyone needs that kind of length. It will also work with any existing SureFire or RTLS system, and since it's self-powered, the launch battery still delivers full power to the igniters. The Longwire Module costs \$85.00. Custom cables of different lengths are available.

Module 4 is the **GOX Box**. This unit plugs into the ignition jacks on the RTLS. It requires a separate 12v battery. It includes a high voltage ignition box and a GOX solenoid valve and regulator. This module allows you to connect to a HyperTEK® fill stem assembly, and provides the high voltage required for ignition. The GOX Box retails for \$235.00.

Rocket modelers can select combinations of these four modules that suit the kind of flying they do. For example:

- A **Basic RTLS** will fire conventional solid rocket motors up to the K range. It is excellent for clusters, because its relay circuitry is capable of delivering 30 amps of current to the igniters.
- A **Basic RTLS** and a **Longwire** will fire K, L, and M solid motors with the operator at the safe distance from the pad specified by the Safety Code.
- A **Basic RTLS** and a **Valve Manifold** will fill and fire floating-injector hybrids up to the K range, including RATT Works®, Propulsion Polymers® and West Coast Hybrids®. You will need a NOX supply tank. Add a **Longwire** for the RATT Works® K and (upcoming) M motors.
- A **Basic RTLS**, **Valve Manifold** and **GOX Box** gets you into I and J sized HyperTEK® hybrids. Add the **Longwire** when you are ready for K, L and M motors.

(Note: to fly HyperTEK® hybrids, you will need a GOX tank, a NOX tank, hoses and a fill stem assembly. We highly recommend the **X-Rockets** drop stem assembly; from personal experience, it is worth every penny. Of course, the HyperTEK drop stem assembly is also of excellent quality. Pratt Hobbies stocks both systems.)

Modules 1 and 2 are in stock for immediate shipment. Modules 3 and 4 will be available in early October 2002. Contact Pratt Hobbies at [www.prathobbies.com](http://www.prathobbies.com) for delivery information and club package pricing. Dealer inquiries are welcome.

Photo 1: Closeup of the Basic RTLS, Module One of the M-RTLS system.

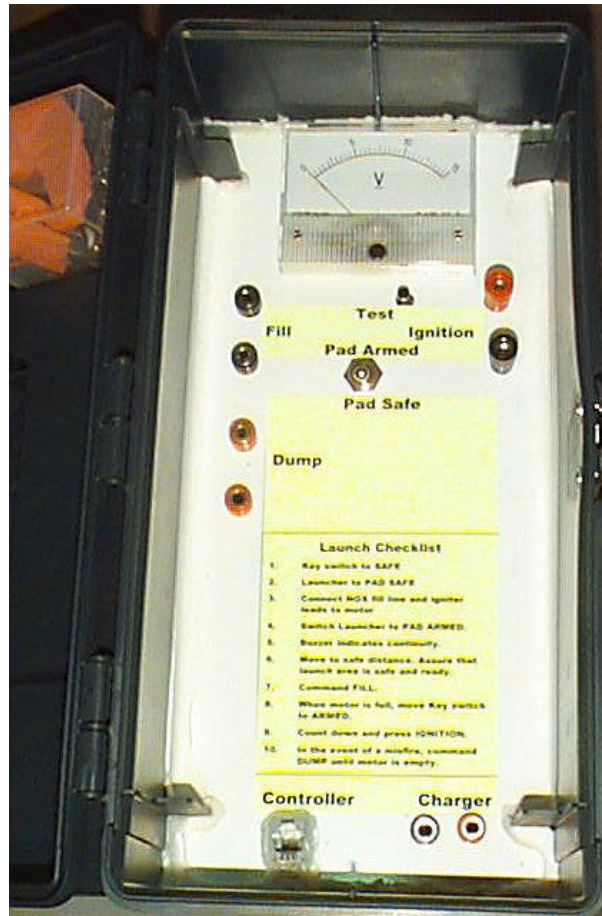


Photo 2: Valve Manifold, Module Two of the M-RTLS System



## Log September 21-22, 2002 ESL #54

Flyer		Manufacturer	Model	Motors	Result
deBay	Mike	PML	Explorer	H100	DW
deBay	Mike	Aerotech	Arreaux	E18	
Gilland	Kathy	Binder	Two the Stars	K450	ML
Hall	Eric	PML	Silver Fox	G40	
Hall	Eric	PML	Silver Fox	G38	
Hall	Eric	PML	Gray Thing	G80	
Hall/Wright	Eric/Darren	LOC	Rhino Dump	H242	
Hayes	Scott	Scratch	Red	G60	
Hayes	Scott	Estes	Alpha 3	D21	
Hayes	Scott	Estes	Alpha 3	G55	
Hayes	Scott	Scratch	Red	G80	
Hayes	Scott	Aerotech	Mustang	G35	
Hickok	Richard	Edmonds	EE-CEE	A3	
Hickok	Richard	Shrox	Shrox X15	C6	
Hickok	Richard	Scratch	A-10 Wart Hog	B4	
Hickok	Richard	Scratch	GT-1	G80	
Hickok	Richard	Scratch	Alarm	D12	
Hier	Tom	LOC	Mini Magg	H135	
Hier	Tom	LOC	Mini Magg	I145	
Hooker	Jeff	Aerotech	Mustang	G35	
Hooker	Jeff	Aerotech	G-Force	G80	
Hooker	Jeff	PML	Eclipse	I211	
Lussier	Robert	LOC	Mini Magg	G125	
McGilvray	Neil	Scratch	Orang Crush	L1800	"Blue, planted"
McHugh	Kevin	Estes	Heat Seaker	C6	
McHugh	Kevin	Scratch	Schrok	C6	
McHugh	Kevin	Scratch	Merlin	C6	
O'Sullivan	Jerry	Scratch	High 5	J300	DW
Parker	Wayne	Scratch	Venus	G80	
Parker	Wayne	LOC	Whip Lash	F23	
Parker	Wayne	Aerotech	Barracuda	G80	
Parker	Wayne	Aerotech	Cheetah	F50	
Pratt	Doug	PML	Tomahawk	I110	
Schuler	Karl	Scratch	Indigo	E9	
Schuler	Karl	Estes	Phoenix	D9	
Schuler	Karl	?	?	D12	
Schuler	Karl	Aerotech	Strong Arm	G35	
Schuler	Karl	Scratch	Black Brant XII	D12	
Schuler	Scott	Scratch	Bee Sting	C6	
Schumacher	Fred	Yo-Yo	Overkill 4	K450	
Stafford	Dick	Quest	Nike Smoke	F23	
Stafford	Dick	NCR	Big Brute	G35	
Stafford	Dick	Scratch	Mini Mojo Fatboy	H123	
Stafford	Dick	Scratch	Lobbin Bobbin	H123	
Stafford	Dick	Thoy	Snipe	E9	
Stone	Charlie	Estes	Lil Star Burst	A8	
Stone	Charlie	Estes	Storm Caster	C11	
Taylor	Nikki	Estes	V-2	D12	
Taylor	Nikki	Estes	Nike	C6	
Utley	Bob	Scratch	Gay American	H100	zinc dust
Utley	Bob	Scratch	Gay American	H100	zine oxide
W.	Brenda	LOC	Lil Nike	F80	
W.	Brenda	Scratch	Max Big Bertha	E30	
Weber	Dave/JR	Weber Eng.	Tuber	G75	#141
Weber	David	Weber Eng.	Sticker Shock	I285	
Young	Dave/JR	PML	Patriot	L1800	LD
22-Sep					
Bronfoin	Andrew	Scratch	Annihilator	J650	
Bryant	Carl	Aerotech	Strong Arm	F25	
Bryant	Carl	Aerotech	Initiator	F25	
Bullis	Dave	?	?	D12	
Bullis	Dave	Thoy	Instant Access	J340	
Bullis	Dave	Scratch	Gloria	C6	
Bullis	David	Scratch	Vicxohia	C6	
Bullis	David	Scratch	Victoria	C6	
Cameron	Deoglas	PML	3x Cluster	G80	
Cox	Chris	Scratch	Cowmoo Flauged V2		D12
Cox	Jim	Scratch	Cowmoo Flauged V2		E9

Flyer		Manufacturer	Model	Motors	Result
Cox	Jim	PML	Mini BBX	H130	
Cox	Jim	Scratch	Super Duper Bertha	G40	
Cox	Jim	Scratch	Thing	D12	
Cox	Jim	Scratch	Thing	"D12,D12,D12,D12"	
Davidson	Bill	LOC	Lil Bit	I220	
Deaver	Gary	PML	Tomahawk	I255	
Galysh	Ivan	PML	Black Brant Cansat	J270	
Guess	Mitch	Estes	Phoenix	D12	
Guess	Mitch	PML	Endeavour	I211	
Guess	Mitch	LOC	Graduator	F23	
Guess	Mitch	Aerotech	Arcas	F25	
Hayes	Scott	Aerotech	Mustang	E15	
Hayes	Scott	Scratch	Yellow Dart	G35	
Hayes	Scott	LOC	EZI 65	H242	
Hayes	Scott	PML	Small Endeavor	H123	
Hayes	Scott	Aerotech	Mustang	F20	
Hickok	Richard	Scratch	Kilter	D12	
Hickok	Richard	Scratch	Sea Skua	E15	
Hickok	Richard	Shrox	Hyperion	D12	
Hickok	Richard	Edmonds	D.C. Thunder	D12	
Hickok	Richard	Scratch	Hawk Motor Test Vec		C6
Hickok	Richard	Scratch	Blue Meanie	D12	
Hier	Tom	PML	Amraam 4	J280	
Holt	Keith	Aerotech	Arcas	G40	
Holt	Keith	Scratch	John Deere Green	H360	
Holt	Keith	Aerotech	Arcas	F25	
Holt	Keith	Aerotech	Arcas	G80	
Hooker	Jeff	Aerotech	Arcas	G35	
MacDonald	Tom	Rocket R&D	ASP	I220	
McAndrew	Sean	Rocket R&D	Patriot Pac 3	K1500	
McAndrew	Sean	Scratch	Static Fire	H100	smokey
McAndrew	Sean	Scratch	Static Fire	J300	smokey
McGilvray	Neil	Scratch	Comfortable Nunbs	K1000	Baby Blue
McGilvray	Neil	Scratch	Udder Madness	L1700	Smokey LD
Merkley	Bart	LOC	Graduator	G75	
Merkley	Bart	NCR	Lance Beta	G40	
Merkley	Bart	Binder	Sentinel	J350	
Oasen	Rick	LOC	Spy in the Sky	I211	
Olson	Dave	Aerotech	Initiator	G35	
Olson	Dave	Estes	Comanche	"D12,C6,C6"	
Olson	Dave	Aerotech	Airspike	F20	
Olson	Dave	Estes	Comanche	"C6,C6"	
Olson	Dave	Estes	Commanche	C6	
Olson	Dave	Aerotech	Initiator	F20	
Olson	Dave	Aerotech	Initiator	F20	
Olson	Dave	Aerotech	Air Spike	F20	
Olson	Dave	Aerotech	Air Spike	F40	
Parker	Wayne	LOC	Onyx	G40	
Parker	Wayne	Aerotech	Mustang	E30	
Parker	Wayne	Estes	Astrocarn	C6	
Parker	Wayne	Estes	Astrocarn	C6	
Polansky	Mark	NCR	Lance Beta	H180	
Polansky	Mark	Scratch	Cork Screw	I154	
Polansky/Moraco	Mark/Shannon	Estes	Black Brant	D12	
Proseus	Ted	Scratch	Static Fire	H100	
Proseus	Ted	Scratch	Tomahawk	D15	
Proseus	Ted	Scratch	Javelin	H200	
Proseus	Ted	Scratch	Static Fire	J500	
Roberts	Rob	LOC	LOC IV	H66	
Roberts	Rob	LOC	Graduator	G43	
Roberts	Robert	Scratch	Un-EZI-2	I148	
Rozman	Tom	Scratch	Silver Bullet	J350	
Rozman	Tom	PML	Small Endeavor	H123	
Schumacher	Fred	Scratch	Overkill 4	K450	
Sechrist	George	LOC	Viper IV	D12 (4)	
Sechrist	George	Scratch	"Masquito 4""	H112	
Sechrist	George	Aerotech	Initiator	F52	
Sechrist	George	Aerotech	Initiator	G35	
Taylor	Robert	Scratch	Green Goblen	J350	

Flyer		Manufacturer	Model	Motors	Result
Thompson	Tom	PML	Mini BBX	G125	
Wallace	Fred	Scratch	Yo-ATF Special	H200 (2)	
Wallace	Fred	Scratch	Bigger Bertha	J350	
Wallace	Fred	Scratch	MAG-IT	I230	
Weber	David	LOC	V2	I211	
Weber	David	NCR	Archer	"I500,G80,G80"	
Weber	David	Weber Eng.	Tuber	H100	#142
Wright	Darren	PML	Explorer	G80	
Wright	Darren	Scratch	Static Fire	H100	
Wright	Darren	Scratch	Static Fire	M2500	
Z	Larry	Scratch	Black Widow	J415	

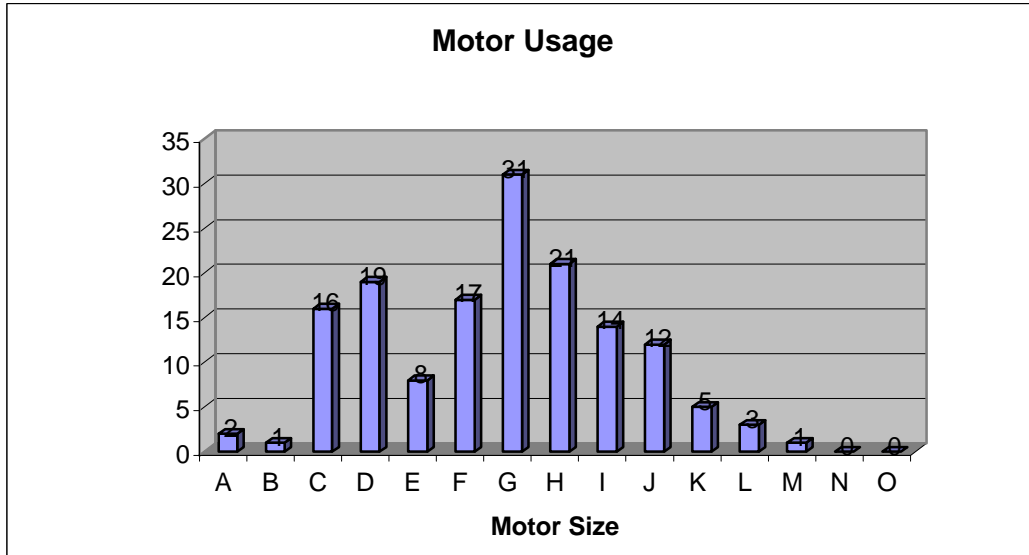
A	2	5
B	1	5
C	16	160
D	19	380
E	8	320
F	17	1360
G	31	4960
H	21	6720
I	14	8960
J	12	15360
K	5	12800
L	3	15360
M	1	10240
N	0	0
O	0	0

150 TOTAL MOTORS 76630 NEWTON/SECONDS

Atlantic	0
Aerotech	25
Apogee	0
Binder	2
BSD	0
Centuri	0
Cluster R	0
Custom Rockets	0
Dynacom	0
Edmonds	2
Estes	15
Giant Leap	0
Hawk Mountain	0
High Flight Tech	0
Hobby Lab	0
Impulse Aero	0
JD Cluster	0
LOC	17
Launch Pad	0
MSH	0
NCR	4
Neubauer	0
PML	17
Pratt Hobbies	0
Public Enemy	0
Quest	1
Rocketman	0
Rocket R&D	2
Rocket Teck	0
Rogue Aero	0
Rocket Vision	0
TCB	0

Thoy	2
True Modeler	0
Scratch	53
Shrox	2
Smokin Rockets	0
V.B.	0
Unknown	2
US Rockets	0
Weber Eng.	3
Yo-Yo Dyne	1

148 TOTAL ROCKETS



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Neil McGilvray doing the cow dance.

## Log October 19-20, 2002 ESL #55

Flyer		Manufacturer	Model	Motors	Result
Barkoff	Bruce	PML	Patriot 1/4	H180	
Barkoff	Drew	Estes	Corkscrew	C6	
Barnsley	Ivan	Scratch	Upscale Midget 3X	"D12,C11"	
Barnsley	Ivan	Scratch	Couch Potato's Delight	H180	
Barnsley	Ivan	Scratch	Auction Black Special	I205	
Barnsley	Ivan	Scratch	Loud as it looks	I285r	
Barnsley	Jeanie	Scratch	Hat Trick	G33	
Bathras	David	Rocket R&D	Corporal	K450	ml
Bee	Gad	PML	Cue Rue	E24	
Bee	Gad	Scratch	Lance	D21	
Bee	Gad	PML	Cue Rue	F27	
Cameron	Douglas	PML	Nimbus	J285	
Cara	Josh	Estes	Alpha	C6	
Cara	Josh	Quest	Totally Tubular	C6	
Carrington	Clark	PML	Cirrus Dart	G35	
Carrington	Paul	Aerotech	Mustang	F50	
Casey	Mike	PML	Eclipse	J300	
Cortney	Abbie	Scratch	No Name B3		
Cox	Chris	Scratch	UFO	C10	
Cox	Chris	Scratch	Cowmoofladed V2	E9	
Cox	Jim	Scratch	Wild Thing	"D12,D12,D12,D12"	
Custer	Richard	Scratch	Virginia Fried Chicken	G80	
Davies	John	Scratch	Zephyr	F40	
Davis	Glenn	PML	Cirrus Dart	F24	
Davis	Glenn	Launch Pad	Hawk	E11	
deBay	Mike	Aerotech	Arreaux	F20	
deBay	Mike	Scratch	Static Test	H100	blue
deBay	Mike	Scratch	Static Test	H100	blue
DeForce	Rick	Scratch	X18-1	F39	
DeForce	Rick	Estes	Alpha	D12	
Enyart	Edward	LOC	Loc IV	"G80, G80"	
Enyart	Edward	Aerotech	G-Force	G80	
Galysh	Marta	LOC	EZI 65	I130	
Gardner	Glen	Scratch	No Name	J330	
Gardner	Glen	Scratch	F.U.D.	J330	
Gilliand/Kleppinge	rKathy/Nick	Scratch	Goliath	C6	
Gilliand/Kleppinge	rKathy/Nick	Scratch	Dart	C6	
Gramick	John	PML	Bull Puppy 2.1	F23	
Gramick	John	Binder	Stealth Jr.	G35	
Guilday	Sean	PML	Woosher-1	I285r	
Harris	Mike	Edmonds	EE-CEE	A3	
Hickok	Richard	Scratch	Scream	D12	
Hickok	Richard	Scratch	Vulcan	G38	
Hickok	Richard	Scratch	GBU-28 Bunker Buster	F21	
Hickok	Richard	Scratch	Blue Meanie	D12	
Hickok	Richard	Scratch	Vulcan	G80	
Leader	Abbie	Estes	United States	B6	
Lintner	Chase	Estes	Gnome	A10	
McCorkle	Sean	PML	Phobos	H138	
McGilvra y	Neil	Scratch	Cow	P12000	
Miklas	Tobin	PML	Small Endeavor	I170	
Novalis	John	Rocketman	Liberty 7	J350	
O'Sullivan	Jerry	Scratch	Terrier/Terrie	"M2500,M2500,M2500,M4000"	
Pelton	Warren	PML	Phobos	H242	
Romani	Ed	PML	Black Sabbath	I161	
Romani	Ed	Scratch	Graduator	F22	
Romani	Ed	Scratch	Mim23-Hawk	H128	
Rossbach	Michael	PML	Ariel	H123	
Rossbach	Michael	PML	Phobos	G80	
Rossbach	Mike	Scratch	Mike Smoke	G40	
Schumacher	Fred	Scratch	Overkill 12	"N5000,M2000,M2000,L1200,L1200"	
Soltysik	John	Scratch	No Name	J285	
Stackpole	Mark	Scratch	G-Wiz	G200	
Stafford	Dick	NCR	Archer	G80	
Stafford	Dick	Scratch	Saucer 10.25	G38	
Stafford	Dick	Scratch	Dust Devil	"E9,E9"	
Szypula	Andrew	Estes	Space Shuttle	C6	
Szypula	Andrew	Estes	Firestreak	C6	

<b>Flyer</b>		<b>Manufacturer</b>	<b>Model</b>	<b>Motors</b>	<b>Result</b>
Szypula	James	Quest	Superbird	C6	
Szypula	Jim	Quest	Superbird	F50	
Szypula	Jim	Rocket Vision	Grymm	F21	
Szypula	Mathew	Scratch	Matts Rocket	A10	
Thompson	David	PML	Amram 3	I161	
Thompson	David	LOC	Magnum	"K700,H100,H100"	
Thompson	Tom	Scratch	Clusters Last Stand	"K1100,J330,J330,I161,I161"	
Thompson	Tom	Scratch	Weezer	J330	
Thompson	Tom	Scratch	Eggs in one Basket	I175	
Trutt	Norwood	Scratch	Nike	M2000	
Walston	Zachary	Scratch	Ion Pulsar	C6	
Walston	Zachary	Quest	Tomahawk	C6	
Walston	Zachary	Estes	Fiesta	A3	
Walston	Zachary	Estes	SR71	C6	
Waltson	Tim	PML	Little Lunar Express	I205	
Winazak	Wayde	PML	Air Wave	H153	
Young	Dave	PML	Patriot	L1200	ML
20-Oct					
Bazinet	Rob	Scratch	Little Joe	J400	
Bryant	Carl	Aerotech	Initiator	F25	
Bryant	Carl	Aerotech	Strong Arm	G40	
Carrington	Clark	Aerotech	Arcus	F20	
Carrington	Clark	PML	Patriot 1/4	I161	
Casey	Mike	PML	Eclipse	J400	
Cox	Jim	PML	Money to Burn	J280	
Cox	Jim	PML	Mini BBX	H250	
Davies	John	PML	Explorer II	G64	
Davies	John	PML	Mini BBX	H128	
Davies	John	Scratch	Zephyr	F52	
Deaver	Gary	PML	Tomahawk	I285r	
Deaver	Gary	Scratch	Pioneer	I285r	
deBay	Mike	PML	Explorer	I300	Blue
DeForce	Rick	Estes	Big Daddy	F12	
DeForce	Rick	Scratch	Flash	E28	
DeForce	Rick	Scratch	Vicero y	J285	*Cert 2*
DeForce	Rick	Scratch	F104 Starfighter	G80	
DeForce	Rick	Estes	Proton Torpedo	C6	
DeForce	Rick	PML	Explorer	H123	
Enyart	Ed	Scratch	Jayhawk	H240	
Enyart	Edward	PML	Tetys	J300	
Eurek	Mark	Scratch	El Gordo	F39	
Garrow	Lew	Scratch	Pull my Finger	J250	
Gorecki	Alan	Hawk Mountain	Talon 3	J80	
Gray	Augie	PML	Sudden Rush	I161	
Gray	Augie	Scratch	Harpoon	"K700,H100,H100"	
Guess	Mitch	LOC	Graduator	F25	
Guess	Mitch	Scratch	Rohini RH-75	I170	
Guess	Mitch	Estes	Big Daddy	F20	
Guilday	Sean	Scratch	Funnel Roc	G64	
Guilday	Sean	Scratch	Big Nuke	K500	
Haberlein	Paul	Scratch	Nike	H124	
Haberlein	Paul	Scratch	Mini Magg	H123	
Hier	Tom	PML	Amraam 4	J420	
Hier	Tom	PML	Quantum Leap	"J280, I170"	
Holt	Keith	Scratch	Gear Head	K450	
MacDonald	Tom	PML	Eclipse	J285	
MacDonald	Tom	Rocket R&D	Aspire	J285	
McCorkle	Sean	Binder	Aspire	F20	
McCorkle	Sean	Binder	Aspire	G35	
McCorkus	Sean	V.B.	Stretch Blobbo	E27	
Miller	Russell	Scratch	Polsla Feniks	J360	*Cert 2*
Miller	Russell	PML	Rosed to the Onax	H240	
Naberlein	Paul	Scratch	Nike Ajax	I425	
Olson	Dave	Aerotech	Air Spike	F20	
Olson	Dave	Aerotech	Initiator	G35	
Plitt	Mike	Estes	V2	F12	
Plitt	Mike	Scratch	Mars Lander	G80	
Polansky	Mark	Scratch	Bullet	K670	

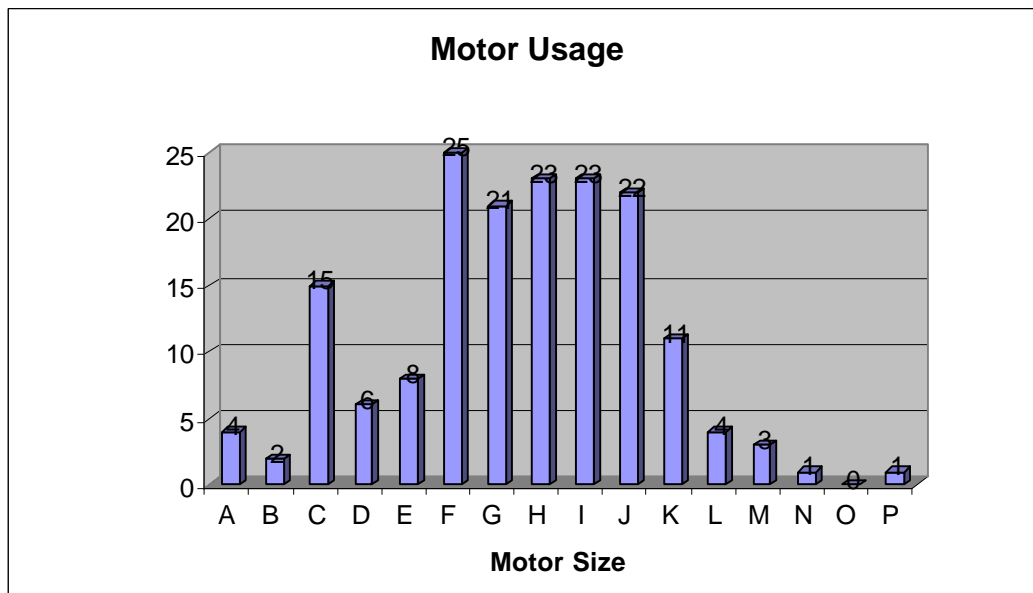
Flyer		Manufacturer	Model	Motors	Result
Proseus	Ted	Scratch	Nike Smoke	K600 TT	
Proseus	Ted	Scratch	Cherokee	K1500	
Reeves	Stephen	PML	Bull Puppy 2.1	F20	
Roberts	Rob	Scratch	Un EZI 2	I150	
Roberts	Rob	Scratch	UnEzi 2	I168	
Roberts	Rob	LOC	Vulcanite	H82	
Sauer	Dennis	PML	Amraam 3	I170	
Sauer	Dennis	PML	Small Endeavor	H110	
Scrimgeour	Kevin	PML	T jr	H153	
Scrimgeour	Kevin	Scratch	Gold Finger	H153	
Scrimgeour	Kevin	Aerotech	Stars N Stripes	F20	
Scrimgeour	Kevin	Scratch	Big Red	E15	
Scrimgeour	Kevin	Scratch	Phoenix	I205	
Sorrentino	Joe	True Modeler	Nike Smoke	F24	
Stackpole	Mark	Scratch	Butt Ugly and Outa Here	J700	
Stackpole	Mark	Scratch	Won't Die	J100	
Stackpole	Mark	Scratch	Orange Crush	K1500	
Strauss	Jim	Binder	Raptor	I285r	
Strauss	Jim	Scratch	Green Weanie	"G80, E9,E9"	
Taylor	Nikki	Scratch	Nike Smoke	C6	
Thompson	David	Estes	Super Big Bertha	F12	
Wallace	Fred	Scratch	Bad Boy	L600	
Wright	Darren	Scratch	Monster Maniac	L800 blue	

A	4	10	
B	2	10	
C	15	150	
D	6	120	
E	8	320	
F	25	2000	
G	21	3360	
H	23	7360	
I	23	14720	
J	22	28160	
K	11	28160	
L	4	20480	
M	3	30720	
N	1	20480	
O	0	0	
P	1	80960	
169	TOTAL MOTORS	237010	NEWTON/SECONDS

Atlantic	0
Aerotech	9
Apogee	0
Binder	4
BSD	0
Centuri	0
Cluster R	0
Custom Rockets	0
Dynacom	0
Edmonds	1
Estes	14
Giant Leap	0
Hawk Mountain	1
High Flight Tech	0
Hobby Lab	0
Impulse Aero	0
JD Cluster	0
LOC	5
Launch Pad	1

MSH	0
NCR	1
Neubauer	0
PML	40
Pratt Hobbies	0
Public Enemy	0
Quest	4
Rocketman	1
Rocket R&D	2
Rocket Teck	0
Rogue Aero	0
Rocket Vision	1
TCB	0
Thoy	0
True Modeler	1
Scratch	74
Shrox	0
Smokin Rockets	0
V.B.	1
Unknown	0
US Rockets	0
Weber Eng.	0
Yo-Yo Dyne	0

160 TOTAL ROCKETS



## Log December 14-15, 2002 ESL #56

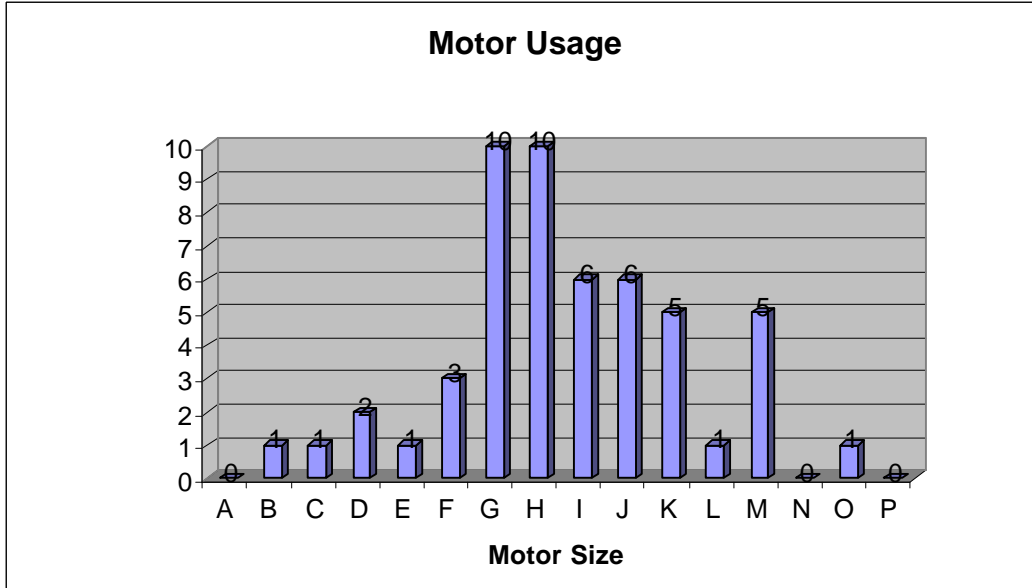
Flyer		Manufacturer	Model	Motors	Result
Gilliand	Kathy	Aerotech	Initiator	G40	
15-Dec					
Blizzard	Aaron	Rocket R&D	Seargent	G79	
Blizzard	Aaron	Rocket R&D	Seargent	I205	
Blizzard	Aaron	Rocket R&D	Seargent	H110	
Brizen	Andy	Scratch	Blue Thunder	I240	*Cert 1*
Brizan	Andy	Scratch	Blue Thunder	I235	*Cert 1*
Brizen	Andy	Scratch	Bee Sting	H122	
Cox	Jim	Estes	Silver Commet	G35	
Cox	Jim	PML	Callisto	H100	
Esker	Paul	Scratch	"2"" Sprint"	G80	
Esker	Paul	Scratch	4' Midget	G35	
Esker	Paul	Scratch	Glider	C11	
Esker	Paul	Scratch	Midget	G35	
Gleiter	Justin	Scratch	Osprey	J1500	
Gleiter	Justin	Thoy	Falcon	H200	white
Hier	Tom	PML	Quantum Leap	J450	
Hier	Tom	LOC	Mini Magg	I145	
Holt	Keith	Scratch	Gear Head	K550	
Kelly	James	Scratch	Skywinder	B6	
Kelly	Kevin	Scratch	Weasel	E9	
Kitto	Mike	Scratch	No Fear	K640	
McAndrew	Sean	Scratch	Static tes t	I500	blue
McAndrew	Sean	Scratch	Static tes t	I500	blue
McAndrew	Sean	Scratch	Spool	H124	red
McAndrew	Sean	Scratch	Spool	H124	smoky
McAndrew	Sean	Scratch	Static test	J300	sparky
McGilvray	Neil	Scratch	Anthem	M1500	blue
Olson	Dave	Aerotech	Initiator	F20	
Olson	Dave	PML	Xcalibur	G80	
Olson	Dave	Aerotech	Airsane	F20	
O'Sullivan/Schworer	Jerry/Bill	Scratch	Nike-Smoke	M1000	sparky
Parker	Wayne	Aerotech	Cheetah	F25	
Parker	Wayne	LOC	Onyx	G35	
Proseus	Ted	Scratch	Nike-Smoke	K700	tiger
Ritz	John	Scratch	Kevlar-Carbon	M1000	red
Ritz	John	LOC	Fortie	J250	yellow
Ritz	John	Scratch	Tempest	K600	orange
Roberts	Robert	LOC	Vulcanite	H130	
Roberts	Robert	LOC	Vulcanite	H135	
Ruzzi	Joe	Scratch	Sandhawk	G38	
Ruzzi	Joe	Scratch	Excel	H238	
Ruzzi	Joe	Estes	Python	D12	
Schumacher	Fred	Yo-Yo	Overkill 12	O2800	red
Taylor	Robert	Scratch	Green Monster	M1000	*Cert 3*
Tiger	George	Aerotech	Initiator	G80	
Tiger	George	Scratch	2X Bull Pup	G40	
Truett	Norwood	PML	Camraam	K400	tiger
Wallace	Fred	Scratch	Bad Bor	L1200	
Weber	Dave	Weber Eng.	Super Tuber	M1700	ml
Weber	Dave	Weber Eng.	Merry Christmas	H128	
Wright	Darren	Scratch	Extreme 54	J800	blue
Wright	Ray	Launch Pad	Aim-120	D12	
Wright	Ray	PML	Quantum Leap	J330	*Cert 2*

A	0	0
B	1	5
C	1	10
D	2	40
E	1	40
F	3	240
G	10	1600
H	10	3200
I	6	3840
J	6	7680
K	5	12800
L	1	5120
M	5	51200
N	0	0
O	1	40960
P	0	0

52 TOTAL MOTORS 126735 NEWTON/SECONDS

Atlantic	0
Aerotech	4
Apogee	0
Binder	0
BSD	0
Centuri	0
Cluster R	0
Custom Rockets	0
Dynacom	0
Edmonds	0
Estes	2
Giant Leap	0
Hawk Mountain	0
High Flight Tech	0
Hobby Lab	0
Impulse Aero	0
JD Cluster	0
LOC	5
Launch Pad	1
MSH	0
NCR	0
Neubauer	0
PML	5
Pratt Hobbies	0
Public Enemy	0
Quest	0
Rocketman	0
Rocket R&D	3
Rocket Teck	0
Rogue Aero	0
Rocket Vision	0
TCB	0
Thoy	1
True Modeler	0
Scratch	28
Shrox	0
Smokin Rockets	0
V.B.	0
Unknown	0
US Rockets	0
Weber Eng.	2
Yo-Yo Dyne	1

52 TOTAL ROCKETS



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Neil McGlivray's Cow on a Darren Wright P Motor.

Last Page Funny



Bob is experimenting with Beans as a fuel.....

***No one is exempt from this page, we are starting at the top and working our way to the bottom of the barrel.***