



M.D.R.A. Report

Volume 5, Number 2



Cover: A great picture of a fast launch, just wish I knew who's rocket it is.

Editor's Corner :

email: robertu@erols.com
Editor Bob Utley

Well another one almost on time, missed it by 5 minutes.

The votes are in and Fred won, yep Fred Wallace was voted back in to the Board of Directors and Fred Schumacher is the newest member of the BOD. Congratulations to both of you. Thanks go out to Lynn Reamy on the Notation board and David Bathras on the Election board. They both did a big job to get this done and on time.

I want to thank Ivan Galysh for his article on the Payload Project. Maybe we can get him to do a write up on the Sat Can project too. Thanks Ivan. Also John Wickman for his article on Pyrodex, thanks again for allowing it to be reprinted.

I would thank Neil McGilvray for all that he wrote, but I've run out of oxygen from the road trip.

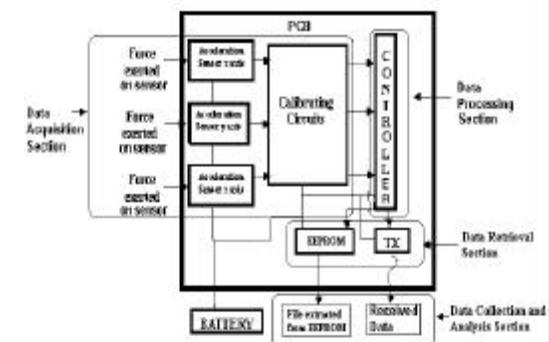
Lastly lets not forget that LDRS is coming up in the next week. I'm not going so it should "real" safe to launch rockets.

George Washington University Student Payload Project

A challenge was made by the Naval Research Lab (NRL) Rocket Club to the engineering students at GWU. Two brave students took the challenge last fall. The senior project was to last one year. The two students were Tracy Ogin and Veena Gadwal. The challenge was to use sensors to determine the altitude, speed and acceleration of a rocket using different types of sensors. Tracy took on the pressure sensor and pitot tube. Veena had the accelerometers.

Tracy's sensor suite consisted of two pressure sensors, one measured the static air pressure and the other dynamic air pressure using a pitot tube. The pitot tube sensor was connected to a copper pipe that ran through the tip of the nose cone. The data was collected using a single chip computer made by Microchip that had built-

in analog-to-digital converters, memory, and digital I/O ports. The processor sampled the two sensors twenty times per second and stored the samples in an external serial memory chip. Three analog channels are stored in the external memory, one for the pitot tube, the second from the amplified static pressure tube, and the third raw voltage from the static pressure sensor. Since the payload is separate from the flight computer, the processor needed to detect a launch. The processor detected a launch with a decrease in the air pressure using the static pressure sensor. The processor triggered at about 250 feet.



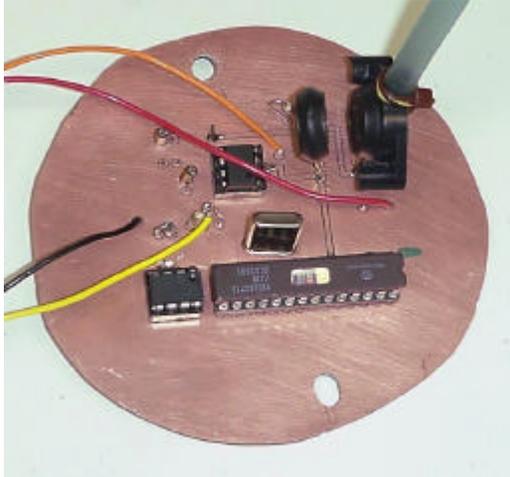
Accelerometer Sensor System Block Diagram

Veena's sensor suite consisted of three accelerometers positioned to measure all three axes. The z-axis sensor, in line with the rocket, was capable of measuring a maximum of 50 Gs. The other two sensors measured up to 5 Gs. The sensor sampling was at twenty times per second. All three axis samples were stored in the external serial EEPROM. Launch detection was determined by measuring an acceleration of at least 2 Gs for a quarter second.

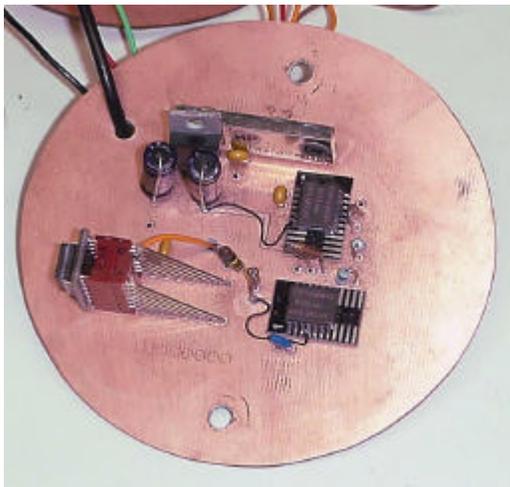
Both sensor boards were installed in the same payload canister. The canister was made from a coupler tube used in rockets for connecting two sections of airframes. The ends were made from coupler bulkheads and airframe bulkheads. The accelerometer experiment had a radio transmitter for sending telemetry data using pulse width modulation.

Over the course of the two semesters, the two students learned how the sensors and processors worked and designed circuitry to measure and collect sensor readings. In March, the circuit boards were made and integrated into a payload canister developed by the NRL rocket club. The first flight was at Great Meadows, VA. The rocket was a Loc/Precision EZI-65 with

An extended upper airframe. It flew on a Hypertek J170 motor donated by Pratt Hobbies. The rocket flew well, but the payload did not work properly. After a couple weeks of debugging and more rigorous testing, the payload was ready for flight.



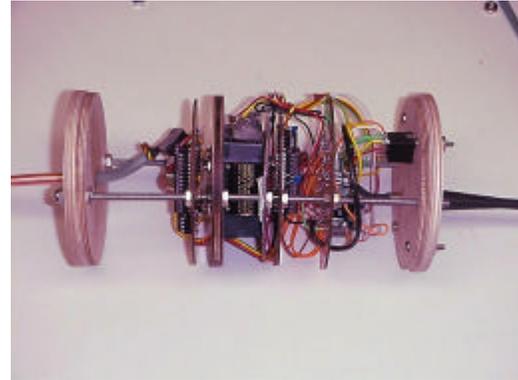
Pressure Sensor Board



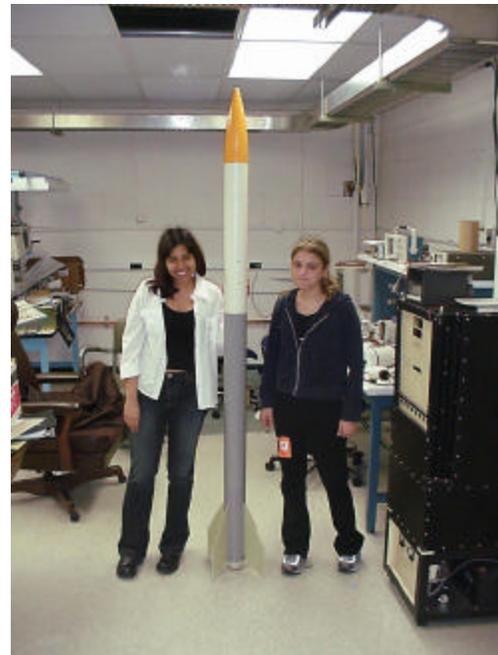
Accelerometer Sensor Board

The launch took place at Rhodesdale on April 6. The weather was cold and windy. We had no choice but to launch because the project was due soon. The launch system used was the Hypertek Hybrid system loaned by Pratt Hobbies. The motor, also donated by Pratt Hobbies, was a J190 hybrid motor. The rocket also donated, was a PML Black Brant X with the upper airframe replaced with the extended EZI-65 airframe. After the ground equipment was prepared, the motor was filled with nitrous oxide and the countdown started when the plume appeared out of the side of the

rocket. The rocket launched with a roar. The motor glowed almost to apogee. The students were excited, then disaster struck. The parachute did not deploy. The rocket arced over, came back to earth and disappeared behind a hill. A very faint thud could be heard.



Circuit boards and batteries packaged for payload canister



Veena and Tracy

With the assistance of Lester, we drove to the crash site. The rocket was nearly completely destroyed along with the student payload. The only parts that survived intact were the fin can of the rocket and the Hypertek motor. We gathered all the parts and returned to the launch area. The students watched nervously as we approached. We searched for the memory chips in the hopes that some data could be

recovered. We found the chip for the pitot tube and pressure sensor and the data was successfully recovered. We didn't locate the other memory chip for the accelerometer sensors. All acceleration data was thought to be lost.



Preparing the rocket

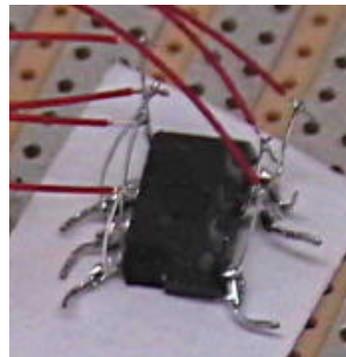
Sunday at home, I decided to take apart the mangled payload section. While doing so, I located the other memory chip mashed between two boards. The chip pins were smashed and pointing in all the wrong directions with two pins missing. I took the chip to my workbench and looked it over with a magnifying glass. The power pin on the chip was torn off but enough metal was exposed to allow a wire to be soldered. After soldering wires to all the pins and carefully connecting the chip to the reader, I was able to download all the acceleration data.

The crash may be a blessing in disguise. Data was recovered for the entire flight until impact. The students have more data to work with and can analyze a ballistic flight.



Payload launching

Sifting through the debris, it was determined that the ejection charge never fired. The rocket used the new G-WIZ MC flight computer for parachute deployment. The flight computer successfully flew three times before. The ejection canister was placed under the parachute. It may be possible that the parachute shifted during acceleration and broke the connection to the ejection canister.

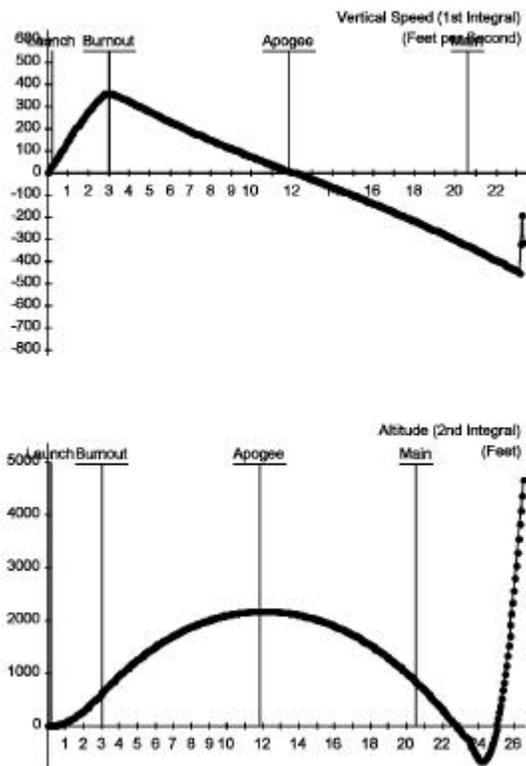


Mangled Memory

A week later, a few members of the NRL rocket club were looking at the rocket remains. We located the memory chip from the GWIZ flight computer and were able to unsolder the chip from the small chunk of board and download the data. The data was sent to the manufacturer. A couple days

later, an email arrived with flight data. The Black Brant which weighed ten pounds fully loaded attained a maximum altitude of just over 1900 feet, had a maximum velocity of 427 feet per second, and a maximum acceleration of 6.5 Gs. The students now had data to compare against.

The plots to the right show the altitude measured by the barometric pressure sensor and the acceleration measured by the accelerometer from the G-WIZ MC flight computer. The next two plots show the velocity and altitude of the rocket based on accelerometer data. There is a difference in the altitude between the barometric pressure sensor and the accelerometer. The pressure sensor is more accurate since the accelerometer cannot differentiate between horizontal and vertical motion.



The two students had to determine the altitude, velocity, and acceleration based on their sensor data and determine how well they compared to each other.

Next year, we hope to have more students involved in developing payloads for rockets. Several engineers at NRL have

helped the students this year. They are Doug Koch, Tom Rodillosso, Tom MacDonald, Carl Hill, and Tom Petsopolous. Each helped in various ways such as reviewing schematics, explaining theory, launch support, and test support.



Ivan Galysh, Veena Gadwal, Tracy Ogin

ESL 51:

Central Sod Farm, Maryland 6/16/2002

The summer launch season, abridged as it is in Maryland was off and running with ESL 51 at the Central Sod Farm, courtesy of our host Tom, Bill and Jack Warpinski. With out the generosity shown by people like this our hobby would truly be grounded. Many thanks! The only thing better than flying on a beautifully manicured lawn was to add a perfect day. Then of course it was Fathers Day and what better Fathers day present could a Rocketeer wish for than a warm sunny day all to their own to lose and crash their hard built rockets.

Bill and Dave Alewine flew a lucky 13 rockets ranging from E to I motors. Lucky 13 because they got them all back. Alex Baker finished up his duties the night before at Kevin and Barbara Mitchell's wedding. Yes, it's true rockets can be a chick magnet and Kevin proved that as he walked down the aisle with his beautiful bride Barbara. Congratulations to both. Anyhow, Alex launched 5 Este's rockets with a 100% success rate. Doc Bevans launched his Explorer on a H-123 in anticipation of his second try at Level 3 later this season. Ricky Brown was back at it with three launches in the F and G range.

Doug Cameron had big plans with his Cirrus Dart, however the rocket didn't

cooperate. Doug launched it on supersonic flight with an I-357. Wham Bam, the rocket was out of here last seen high on apogee. Rumor has it the rocket is still coming down. Doug will be actually attempting the flight in the near future if he doesn't worry about tune up flights to outer space. Doug finished the day with his Strong Arm on an E-52. Chris Cox flew the beginning of the alphabet, nine times in the A to G range.

Gary Deaver flew three times with Callisto on a G-80 and Shockwave on an F-23 and F-27. Mike DeBey got to spend Fathers Day with his two young sons and actually launch two rockets. Mike launched his Arreaux and Freedom on E and G power respectively. Glen Gardner launched his minimum diameter rocket F.U.D. (you think he's trying to tell someone with the initial "D" something?). Glen launched it on an I-356 for a neck cracking flight and rocket cracking recovery. Speaking of neck cracking, that term is becoming synonymous with North Carolinas Mark Lloyd's propellant formula. Kathy Gilliland flew a M.L. K-450 in her newly re-done Star Seeker. Next time it flies it will be the newly re-done re-done Star Seeker. Justin Gleiter was slumming from his "normal" butt kicking flight with an I-345 for a still impressive flight.

Steve Hackett flew six time in the F to J range with the most impressive flight being his Saab on a J-350, haven't seen many of those around lately. Keith Holt flew three times with the most notable flight being his "Bite Me" on a J-415. Nice motor and nice flight. Andrew Kelley flew three times in the B and C range. Kevin Kelly flew his Endeavor on a K-250 for a spectacular flight only to have it end in the rocket gobbling trees to Northeast. The word is out on the rocket and hopefully it will be found and returned soon. Sean McAndrew spent part of the day testing his home brew formulations with great success and even found time to prep hi Magnum and let it rip with a K-600ish motor of his own design.

Yours truly, Neil McGilvray, decided that it was time to push things a little bit further. Comfortably Numb was launched at 16 pounds with my own formulation or snowflake, which turned out to be a L-1640 to 7500 feet. The only problem with going that HIGH AT THE Sod Farm is that you went that high at the Sod farm and a long walk ensued. I also flew my five finned 7.5"

rocket with a M.L. formulation that turned out to be a L-2900. Talk about fast! The .875-second burn didn't fool around getting the rocket off the pad as it pulled 32 G's. Unbelievable only scratched the surface on this one, thanks Bob!!

Chris Mcleon flew twice on G-75 and I-161 power plants for two nice flights.

Rick Oasen took to the pads twice. The Silver Fox with a J-300 was the most memorable flight. Jerry O'Sullivan teamed up with the bad boys at Ozark Aerospace to fly his High 5 on a J-450 and Murphy's Law on a J-200. Both for nice if not pedestrian flights. Wayne Parker had his Barracuda on a G-40 and his Mustang up on a F-25. Mark Polansky looked skyward three times with F, H and I power. The Potter family combined for 10 flights covering the range between A and G. Ted Proceus blasted off three times with his Javelin on a H-90 and I-120 and his Nike Smoke on a J-550, (all of his own making). The tried and true formula Ted has flown many times before let him down in the Nike and phoned in to every Rocketeers nightmare toll free number, 1-800-Kaa-Boom!

Rob Roberts had two H flights on his Vulcanite and Graduator. Thomas Rozman flew his scratch built Silver Bullet on I-211 for a nice smokey flight. Fred Schumacher, the Rookie MDRA Board Member, had his smaller Overkill rockets out for three flights one on a F-20 and two on K-400 red loads. Fred did experience some trouble with the K-400 flights above and beyond the "help" Bob Utley so kindly offered. Fred's apogee charges were firing early on both flights, coincidence? I think not. Bill Schworer had 3 flights, 2 on G power and one on his Sudden Rush on an I-285. Dad, Kevin Scrimgeour and Daughter, Allie combined for eighteen flights ranging from the C to H range. At times it seemed like Allie was having her own private launch.

Brian Slojick was back from Law School to continue where he left off, combining all sorts of insane motor combinations for al to admire and enjoy. This time was no exception. Brian combined a J-770 central motor and 4 H-150's for an interesting attempt. The central motor did not light and was to be flown in Sean McAndrew's Magnum for an impressive flight. Too bad it didn't work in the Electric City flight. Joe Sorrentino launched his True

Modeler Nike Smoke on a F-24 and his Short order on a D-13. Rob Super had four flights in the D and F range. Joy, Keith and Mike Urban combined for seven flights in the B, C and D level of rocket propulsion.

Bob Utley was testing out his variants of H sized red propellant in his aptly named rocket Gay American, (trying to tell us something Bob?) The motors worked great, now all Bob has to do is work on recovering a small rocket. Mmmm, Gay American, small rocket...Let's do the math here. Dave Weber was able to squeeze in four flights between registering flyers and steering people in the right direction. Dave flew his Nose Cone rocket Proboscis on a F-32, Two flights of his V-2 on an I-154 and I-170. Dave also managed to get Tuber in the air and back safely on a H-100. Will wonders never cease? Ray Wright flew his Mini BBX on a G-80 and Quantum Leap on an I-255 for a nice fast flight. Darren Wright of Ozark Mountain, I mean Aerospace fame static fired a full 10,000ns M motor as part of the continuing test program leading up the Pre-Liberty Project P motor test flight and the full blown Liberty 2 O-Motor and P-Motor world record flight later this year. Stay tuned for that. Dave young rounded out the alphabet with his big Patriot flight on yet another M.L. formulation L motor for an outstanding flight.

Thanks for the use of the field once again go out to the Warpinski family. The next two launches will be on Saturday afternoon and all day Sunday. The Farm is working up until noon; so do not go on the property before that. As always remember to treat the land like your own or better and we will be invited back again. Fly them high and recover low. 'Till next time.

Neil McGilvray

Using Pyrodex:

I want to thank John for allowing his report to be reprinted in this newsletter. (editor)

The topic has come up from time to time about using Pyrodex instead of 4f black powder for ejection charges. I think I have found the secret to using Pyrodex as a direct substitute for 4f black powder. I have done a series of ground tests and successfully

flown 11 rockets with various sized ejection charges all of them using 100% Pyrodex instead of black powder.

The Pyrodex I am using is Hodgdon "P" or FFFG Equivalent. I use it in PVC pipe tubes sealed on one end or phenolic tubes sealed on one end. The sealed end is a PVC fitting with a hole in the middle for the electrical wires to the e-match or flashbulb. If you use a flashbulb, make sure the tip of the flashbulb is in the Pyrodex powder. Flashbulbs do work with the Pyrodex as I had 100% success in ground tests and two flight tests.

I used an equivalent volume of the Pyrodex "P" as a substitute for the 4F black powder. After putting the powder in the open end of the tube I would put a wadding material in the tube. I filled the rest of the open tube with wadding so that the powder stays at the base of the tube.

On the open end of the ejection charge tube, I would normally use masking tape to seal the tube when using black powder. For the Pyrodex, I used electrical tape to seal the tube. I put one piece across the open end of the tube with the ends of the tape going down the side of the tube. Then, I put another piece of electrical tape across the open end of the tube 90 degrees to the first piece with the ends going down the side of the tube. Looking at the end of the tube, it makes a cross pattern. Finally, I put a piece of electrical tape circumferentially around the tube at the end where I put the electrical tape. This piece of tape goes over the ends of the first two pieces of tape. That's it.

I'm flying just with Pyrodex now as it does not leave the residue or stink you get with black powder. Also, it is generally easier to obtain.

John Wickman

What is a Launch Fee?

What is a launch fee and why do we have to pay them? This is a question that comes up from time to time. I only launched one rocket or I only launch small rockets or I

crashed my rocket. Do I still have to pay? The answer is yes.

One of the many goals of the MDRA is to make expand the horizons of Rocketry in a safe and reasonable manner. With the restrictions that are associated with TRA and NAR the journey that the MDRA has embarked on is a natural and reasonable one. You don't have to look very far back in the short history of TRA or NAR to see how the technology associated with rocket motors, recovery systems and ability of the Flyers has grow exponentially. There are plenty of members who remember when there was a huge fight over the legitimacy and the safety of re-loadable motors. There are many more that thought they have been around forever. Today the sharing of technology has allowed for the Commercial and Experimental flyers a huge level of confidence in the materials, design and performance of the motors used today. It is because of this that we allow Commercial and Experimental motors to be flown at the same launch. The safety record speaks for itself. Perception becomes some individual's reality. The MDRA Board of Directors would like to maintain our reality within in the realm of fact and truth, not "what-ifs". We try to manage by facts and apply good judgment. As we all know without safety we will soon have nothing.

Which bring me to the fees. What do the fees get me? With the expansion of our membership comes the requirement to provide for safe and reliable launches, in keeping with our philosophy to allow rocketry to take it's natural path. All it takes is a trip to any of the neighboring launches to appreciate what the MDRA provides the member flyers. The upgrades are paid for by one mechanism, launch fees. They provide for safety in the P.A. System that you can actually hear. If you are out of earshot you can listen on 89.9 FM, the MDRA broadcast frequency. They provide for the tents that keep the elements off the RSO area and the LCO area as well as the equipment that is used at both tables. The fees pay for the new more reliable launch systems that are currently in use. Specific to the system used at Higgs Farm and the Sod Farm, we have two systems to provide 100% redundancy or a total of 48 pads.

The fees also provide for the tables that aforementioned equipment sits on.

They provide for the upgraded and expanded rail launch systems that are becoming more popular. The fees pay for the new trailer that allows for easy and efficient transportation of the launch equipment from site to site. This will be especially handy with the big launches planned at other MDRA sites, like Rhodesdale. The fees pay for the port-a-pots. Something everyone takes advantage of at least a couple times a launch. Try having a launch without one. The fees also help compensate the Land Owners that allow us to enjoy our hobby. You think it would be tough to hold a launch without a port-a-pot, try holding one without a Land Owner.

There are many other miscellaneous items that the Launch Fees provide for, but suffice to say the MDRA fees are the lowest around and give you the best bang for your buck. Is it easy to take advantage of the situation and not pay the fees without being flagged? You bet it is, but what did you really save and did you feel good about it. I would think not. When the day is done, we do know who paid and who didn't. Nine times out of ten we will not say anything but we know and you know who you are. This is a volunteer organization that a few people put in a whole lot of uncompensated time for the benefit of many. All we need you to do is help us help you, by paying your fees. Help us keep the MDRA on its present course and let's keep those birds in the air.

Neil McGilvray

Bob and Neil's Excellent Adventure

4-13-02 and 4-14-02

The 2002 spring launch season was well under way when it seemed like a good idea for Rocket Road Trip. It was Experimental launch weekend in Orangeburg, South Carolina and Whitakers, North Carolina. With Orangeburg being only 8 hours away, why not go for it and see how the other half lives and launches. Friday, 4-12-02 was to be the main driving day. As

fate would have it the weather knew we were going to a rocket launch so naturally it rained for a good portion of the trip down to South Cacalacky. Fortunately for me Bob did all the diving that allowed me time to do all the talking. I was exhausted just talking for eight hours straight and couldn't imagine combining that with concentrating on the road.

Once down in the Orangeburg area we experienced the finest of Southern Cuisine. It also had the desired effect, mach diamonds before we saw our first rocket launch. I know one thing if there is ever a real oil shortage in this country they recycle all the cooking greases that is used in the south. Later that night we met up with Jim Mitchell and Colby Tucker for a "few" of Jim's favorite libations. Jim certainly likes to keep everyone's sprits as high as the rockets we fly.

Saturday was launch day at the fabled Super Sod farm in Orangeburg. Like good rocketeers we were up early and ready to roll. We figured that we would get to the Sod farm around 10 and blend into the crowd. So much for that plan. There wasn't a soul in sight. The farm works until 12 noon and no one shows up until after that. After a couple of hours of twiddling our thumbs Jim and Colby showed up and we all started wondering if it was the wrong weekend. Eventually the pit area began to fill in with maybe 30 people total. Not to worry we were there to launch some rockets.

Bob was going to go first with his Primo on a M.L. home brew L-1800. The only problem was there were broken clouds at about 6,000 feet and the rocket was scheduled to go 9,000 feet. It was determined that a totally clear area in the sky would need to open up before the flight. Tom Bickford, launch director told Bob he hoped he brought extra batteries because the rocket may be on the pad for some time. I guess he didn't figure that the electronics were not on yet. The Clouds seemed to be moving as slow as our southern rocket brethren. Finally the time came for the launch and the rocket took off like a shot. At the extreme altitude that the rocket flew it was lost for some time until about 2,500 feet and ½ a mile down range, before the chute deployed. The rocket was recovered intact and then it was my turn.

I was planning to fly Cracked Actor on a M-2500, DPS formulation, but things were moving so slow it was giving me bad karma. I like fast moving, unbridled madness. I flew Slam Dance with a DPS L-1000 instead. I learned my lesson from Bob and didn't mention how high it was going to go. The 2-second burn propelled the rocket to about 7,000 feet and the recovery was in the ever-shrinking field at Orangeburg. It seemed inconceivable that 2 LDRS's have been held here. The field is not much bigger than The Central Sod farm that we use for our scaled down summer launches. But you use what you have. Apparently housing and businesses have been slowly encroaching on the field. Making the high flights more of a test of recovery skills. Bob and I had the highest flights of the day and got our rockets back, sad but true.

Most of the flights were in the J and K range with the exception of Jim Mitchell and Colby Tucker going for some big air. Greg Murri of South Carolina spent most of the day prepping his big 12" diameter Ultimate Endeavor that was to fly on a DPS formulation, Diamond Back, N-Motor. This was the flight everyone waited all afternoon to see. The rocket was big and beautifully finished. The N project was brought out to the same "Away Pad" that Bob and I launched out L's from. Greg had lots of help getting the big bird on the pad and even offered to buy the beer when the rocket was recovered. After the normal announcements the button was pushed and the rocket began to lift off the pad when BOOM!!! The booster section was blown all to hell. Burning propellant was flying everywhere and the rocket was pretty much destroyed. During the clean-up operation Jim Mitchell made a comment to Greg that he guessed this meant no beer. Bob and I took this as our cue to thank the new friends we met and head north to North Carolina before they discovered Bob's fingerprints on Greg's rocket. Hopefully that section was burned beyond recognition in the explosion.

The 4 to 5 hour trip to North Carolina seemed to pass quickly as I consumed most of the useable oxygen in the Van. Once there we were surprised and thrilled that Kelly Mercer and Mark Lloyd did not launch their 650-pound full P powered Big Dog rocket. Unfortunately they experienced premature ejection charge firing

on the pad earlier on Saturday. And with 16 different charges to deal with on a 20 foot tall, 24inch diameter, 650-pound rocket, this was a major problem. Multiple calls to Jim Amos of Missile Works and rewiring the system did the trick.

The next day at the field the confidence level was high for the Big Dog team and there were many other flights that lifted skyward prior to the P launch. Most were successful so I won't bore you with those. There was a Very Cool flight of a 6000 ns 3" M motor that was announced as a M-4500 or something like that. When the button was pushed the rocket roared off the pad and then promptly tore itself to shreds. We thought the motor CATO'ed, but the rocket completely disincarnated due to aerodynamic stress. Very Cool!



Big Dog ©Elaine Miller 2002

Finally it was time for the Big Dog. Never seeing a P motor fired before and knowing that the Liberty Project was going to contain one of these along with two O-Motors, I was very interested to see the performance on this big power plant. Once cleared to a safe distance the button was pushed and the motor ignited and the rocket began to slowly lift off the pad. It wasn't to about 2 seconds later that you could hear the roar of full P-Power. Incredible!!!. Then the unthinkable happened. At about 600 feet the motor blew the forward closure and consumed the rocket in a spectacular fireball. 80 pounds of AP flying through the air puts on quite a show. No one was hurt, except for the years of work that Kelly and Mark put into the project. Someone has to do it and they stepped up to the plate and took a swing. All the shots are not home runs, but like they say it is better to try and fail than never to try at all. Once again it was

fortunate that the part of the rocket that contained Bob's fingerprints was destroyed on the fire. Still batting a thousand.

Bob's good luck and plausible deniability was soon to come to an end, as Ben Russell needed help with his O-Motor project. Ben had a motor that he made, however he needed a rocket to fly it in and weeks earlier Mark Lloyd made an offer to use his up-scale sprite. Ben took up the offer and had a nice paint job put on the rocket as a way of saying thanks. After some wrestling with the propellant grains the motor was assembled, chutes packed, and motor installed. The rest of the rocket had to be assembled on the pad as it had a 48" diameter ring that was attached to the three fins. Once assembled the electronics were turned on and the rocket was ready to go. In typical Whitakers style we all took one step back and had a Whitakers away cell. Actually we were more than a safe distance but after the P-Motor it felt like we were riding in the rocket.

The button was pushed and the rocket blasted off the pad and continued skyward. Just when the flight looked like it was in the bag, it became obvious that it would be coming home in a bag. The ejection charges fired right at the end of burn out. And all the chutes got tangled in the ring and fins of the 14" diameter rocket. The Sprite tumbled in from over 6,000 feet and landed with a pathetic thud. As unfortunate as the flight was for Ben, Mark Lloyd lost two rockets this day, his P-Motor project and this O-Motor Project.

Our condolences go out to Mark, Kelly and Ben. Hopefully we will all learn from this and become better as a result.



Ben Russell Sprite ©Elaine Miller 2002

This once again was our cue to get in the Van and continue our return trip back

to Maryland where I could enjoy some bland food. The trip was lots of fun and we accomplished the goals that we set out for ourselves as well as seeing some unexpected Very Cool rocket flights. Trips like this give you an appreciation for what we have going with the MDRA. There are great people flying all over the country at some great fields, but we have the best fields on the East Coast and the most progressive policies. After 8 hours down to South Carolina for 3 seconds of fun, you really appreciate that 1 ½ hour ride to Higgs, Rhodesdale or Coverdale. I will take that any day.

Neil McGilvray

PERFORMANCE HOBBY

<http://www.performancehobbies.com>

Animal Works has a big line of motors that are in black, red, purple, green and fast, slow loads. Check in with Ken to get the loads and hardware to fly this great new motor line.

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

NEXT ISSUES:

- How to make ignitors
- Launch report of July.
- Events for Sept & Oct.
- Another last page funny.

Keep The Pointy End
up and the Fierly
End down.

D. Bull is

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

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The real deal ©J. O'Sullivan 2002



The Model ©J. O'Sullivan 2002

Log June 16, 2002 ESL #51

Flyer		Manufacturer	Model	Motors	Result
Alewine	Bill	Scratch	Acme-1	G80	
Alewine	Bill	Estes	Green Slime	E15	
Alewine	Bill	Scratch	Acme-1	H97	
Alewine	Bill	Scratch	Acme1	H128	
Alewine	Bill	Estes	Green Slime	E9	
Alewine	Bill	Scratch	Acme-1	G60	
Alewine	Bill	Scratch	Silver Streak	H97	
Alewine	Bill	Scratch	V-2	E15	
Alewine	Dave	Scratch	Grey Ghost	G80	
Alewine	Dave	PML	Quasar	G80	
Alewine	Dave	Scratch	Pink Missile	I170	
Alewine	Dave	Scratch	Pink Missile	I170	
Alewine	Dave	LOC	"V-2 5.5""	I211	
Baker	Alex	Estes	UFO	C6	
Baker	Alex	Estes	Navy MK-109	B4	
Baker	Alex	Estes	UFO	A8	
Baker	Alex	Estes	Banshee	C6	
Baker	Alex	Estes	UFO	C6	
Bevin	Doc	Scratch	Explorer	H123	
Brown	Ricky	Estes	Py-r-gone	G35	
Brown	Ricky	Scratch	Stubs	F100	
Brown	Ricky	Estes	???	C6	
Bullis	David	Estes	Eternal White	D12	
Cameron	Doug	Aerotech	Cirrus	I357	
Cameron	Doug	Aerotech	Strong Arm	E52	
Cox	Chris	Scratch	Aston Ranger	C6	
Cox	Chris	Scratch	UFO	C6	
Cox	Chris	Scratch	Big Bertha	C6	
Cox	Chris	Scratch	Charpie	A10	
Cox	Chris	PML	X-Caliber	G80	
Cox	Chris	Scratch	Exssesire Force	C6	
Cox	Chris	Scratch	Excessive Force	C6	
Cox	Chris	Scratch	Big Bertha	C6	
Cox	Jim	Scratch	Trifo	E27	
Deaver	Gary	PML	Calisto	G80	
Deaver	Gary	Scratch	Shockwave	F23	
Deaver	Gary	Scratch	Shock Wave	F27	
DeBay	Mike	Aerotech	Aerreaur	E18	
DeBay	Mike	Scratch	Freedom	G35	
Gardner	Glen	Scratch	F.U.D.	I3560	
Gilliand	Kathy	Scratch	Star Seeker	K450	ML
Gleiter	Justin	Scratch	Osprey	I345	
Hackett	Steven	Aerotech	G-Force	G38	
Hackett	Steven	NCR	P-4000	G40	
Hackett	Steven	NCR	Blk-Slo	H45	
Hackett	Steven	Scratch	Saab	J350	
Hackett	Steven	NCR	Pac III	F25	
Hackett	Steven	NCR	Pac III	G125	
Holt	Keith	Scratch	Bite Me	J415	
Holt	Keith	Aerotech	Arcas	F25	
Holt	Keith	Scratch	John Deer Green	H220	
Kelley	Andrew	Scratch	Novel	C5	
Kelley	Andrew	Scratch	Wicky-Wacki	B4	
Kelley	Andrew	Estes	Banshee	B4	
Kelly	Kevin	Scratch	Manhole Blaster	J250	
McAndrew	Sean	LOC	Magnum	K??	
McGilvray	Neil	Scratch	Orange Crush	L1800	ML
McGilvray	Neil	Scratch	Comfortabley Numb	L1800	ball buster blue
McLeon	Chris	PML	unknown	G75	
McLeon	Chris	PML	???	I161	
Oasen	Rick	V.B.	Silver Fox	J300	
Oasen	Rick	LOC	Lilac Time	F50	
O'Sullivan	Jerry	Scratch	High 5	J450	
O'Sullivan	Jerry	Scratch	Murphys Law	J200	
Parker	Wayne	Aerotech	Barracuda	G40	
Parker	Wayne	Aerotech	Mustang	F25	
Polansky	Mark	Aerotech	Cheetah	F40	
Polansky	Mark	PML	Honest John	I161	

Log June 16, 2002 ESL #51

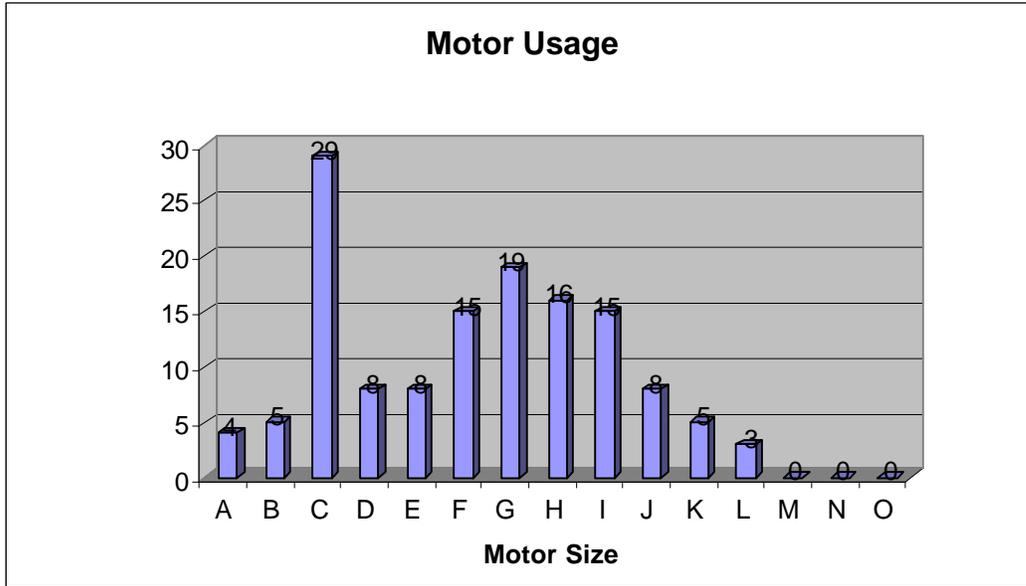
Flyer		Manufacturer	Model	Motors	Result
Polansky	Mark	NCR	Lance Beta	H180	
Potter	Charlotte	Estes	Big Daddy	E9	
Potter	Jeff	Scratch	Flying Pyramid	D12	
Potter	Jeff	Scratch	Acme	A10	
Potter	Jeff	Estes	Tie Fighter	C6	
Potter	Jeff	?	unknown	G38	
Potter	Jeff	?	V2	E9	
Potter Jr.	Jeff	Scratch	Acme	A3	
Potter Jr.	Jeff	Estes	X-Wing	C6	
Potter Jr.	Jeff	Estes	R2-D2	D21	
Potter Jr.	Jeff	Estes	Tie Fighter	C6	
Proseus	Ted	Scratch	Javelin	I120	
Proseus	Ted	Scratch	Nike Smoke	J550	1-800-Ka boom
Proseus	Ted	Scratch	Javelin	H90	
Roberts	Rob	LOC	Volcanite	H133	
Roberts	Rob	LOC	Graduator	H69	
Rozman	Thomas	Scratch	Silver Bullet	I211	
Schumacher	Fred	Scratch	Overkill Jr.	F20	
Schumacher	Fred	Scratch	"Overkill 4""	K400	
Schumacher	Fred	Scratch	"Overkill 4""	K400	
Schworer	Bill	PML	"2""	G64	
Schworer	Bill	PML	"Amraam 2""	G33	
Schworer	Bill	PML	Sudden Rush	I285	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	D13	
Scrimgeour	Allie	Scratch	Shinning Ready	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Allie	Estes	Big Bertha	C6	
Scrimgeour	Kevin	Scratch	Goldfinger	H133	
Scrimgeour	Kevin	Scratch	Purple Haze	G80	
Scrimgeour	Kevin	PML	Navy Blue	I205	
Scrimgeour	Kevin	Aerotech	Bisrel	F20	
Scrimgeour	Kevin	Scratch	Purple Haze	G35	
Scrimgeour	Kevin	Scratch	Burnt Toast	H153	
Scrimgeour	Kevin	Aerotech	Bisrell	F20	
Slojick	Bryan	Scratch	Electric City	J770/H150	
Slojick/McAndrew	Brian/Sean	Scratch	Magnum EXP	K??	
Sorrentino	Joe	True Modeler	Nike Smoke	F24	
Sorrentino	Joe	V.B.	Short Order	D13	
Super	Rob	Scratch	Maniac 4	D12	
Super	Rob	Scratch	Black Diamond 2	F20	
Super	Rob	Scratch	Black Diamond 2	F20	
Super	Rob	Scratch	Star Whip	D12	
Urban	Joy	Estes	Safari	C6	
Urban	Joy	Scratch	Fiesta	C6	
Urban	Keith	Estes	Heli Cat	C6	
Urban	Keith	Scratch	227 Imperial Army	B4	
Urban	Mike	Estes	Invader	B4	
Urban	Mike	Estes	Omega	D12	
Urban	Mike	Estes	Orbital Transport	C6	
Utley	Bob	Scratch	Gay American	H???	red ver a
Utley	Bob	Scratch	Gay American	H???	Red ver c
Wallace	Meagan	Scratch	Razor	C6	
Weber	David	Weber Eng.	Proboscis	F32	
Weber	David	LOC	V-2	I154	
Weber	David	LOC	V-2	I170	
Weber	David	Weber Eng.	Tuber	H100	#136
Wright	Ray	PML	Mini- BBX	G80	
Wright	Ray	PML	Quantum Leap	I255	
Young	Dave	PML	Patriot II	L1800	LD

A	4	10
B	5	25
C	29	290
D	8	160
E	8	320
F	15	1200
G	19	3040
H	16	5120
I	15	9600
J	8	10240
K	5	12800
L	3	15360
M	0	0
N	0	0
O	0	0

135 TOTAL MOTORS 58165 NEWTON/SECONDS

Atlantic	0
Aerotech	10
Apogee	0
Binder	0
BSD	0
Centuri	0
Cluster R	0
Custom Rockets	0
Dynacom	0
Edmonds	0
Estes	31
Giant Leap	0
Hawk Mountain	0
High Flight Tech	0
Hobby Lab	0
Impulse Aero	0
JD Cluster	0
LOC	7
Launch Pad	0
MSH	0
NCR	5
Neubauer	0
PML	13
Pratt Hobbies	0
Public Enemy	0
Quest	0
Rocketman	0
Rocket R&D	0
Rocket Teck	0
Rogue Aero	0
Rocket Vision	0
TCB	0
Thoy	0
True Modeler	1
Scratch	61
Smokin Rockets	0
V.B.	2
Unknown	2
US Rockets	0
Weber Eng.	2

134 TOTAL ROCKETS



Dave Bullis at the LCO table ©S. Hackett 2002

July 2002

Rocket Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																																																							
	1	2	3	4 <small>Independence Day</small>	5	6 <small>METRA Launch</small>																																																																																																																							
7 <small>METRA Launch</small>	8	9	10	11 <small>LDRS 21</small>	12 <small>LDRS 21</small>	13 <small>LDRS 21</small>																																																																																																																							
14 <small>LDRS 21</small>	15 <small>LDRS 21</small>	16 <small>LDRS 21</small>	17	18	19	20																																																																																																																							
21	22	23	24	25	26	27 <small>MDRA Launch (Sod Farm) Whitaker Reg Launch</small>																																																																																																																							
28 <small>MDRA Launch (Sod Farm) Whitakers EXP Launch</small>	29	30	31	<table border="1" style="display: inline-table; margin-right: 10px; border-collapse: collapse; text-align: center;"> <thead> <tr><th colspan="7">June</th></tr> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr> <tr><td>30</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <thead> <tr><th colspan="7">August</th></tr> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </tbody> </table>			June							S	M	T	W	T	F	S							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							August							S	M	T	W	T	F	S							1							2							3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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August 2002

Rocket Calendar

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Last Page Funny



This tracking smoke is a great idea, look how fast I found your rocket for you Jerry. (Of course that's magic fingers McGilvray.)

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