



M.D.R.A. Report

Volume 4, Number 1



Cover: Kathy Gilliands "Star 3" Level 3 project.

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Editor Bob Utley

Did you notice that the newsletter has changed it's name to MDRA? Well, it's the new look for the club. We will still be part of Tripoli and still do cert. flights at the launches, really nothing has changed except to be incorporated will help with things in the long run, like flight insurance and some other things coming soon.

Bill Mantell, you've seen him, as the pad manager, the one who helps setup and take down the launch system also the one with the camera taking all those great pictures of your rockets that are on the web page and in the newsletter, notice the big pile of photos at the club meeting and he never asked for a dime? Well it's time we at least give him some more film to keep him doing it, I'm not sure what else we can do but that's a start.

Well, the first woman this side of the Mississippi river got Level 3. Yea, I had to put her rocket on the cover, it's history in the making, just like Ed and Rogers flight last issues. There's more on this later.

I want to thank Neil McGilvray, Bill Schworer and Bill Mantell for their help in this issue.

ESL 36:

02-3/4-01

It seemed like this launch would never come. The February Launch at Higgs Dairy Farm was supposed to be our January launch. But due to uncooperative weather and some crazy schedule juggling, things just didn't seem to gel properly in January. Plus I am sure that no one was ready to fly anyway. Yea right. One of the best things that can come from a delay like this the heightened sense of anticipation. That was in evidence by the number of e-mails and phone calls that were flying around between our fellow rocketeers. I bet everyone wished their flights had gone as well as they did over the phone or e-mail then the harsh cruel reality of rocket life on the field.

Saturday began brisk and with a slight wind with gusts up to 12-15 MPH. Not

bad considering that it was February. A German Video Crew from a company called Storybook honored us with their request to film the launch. They were on hand most of the day to interview individuals and film flights. I am not sure what the final product will be or where it will air but we will make an effort to get their footage for our own MDRA Video Tapes that Bob Utley so adequately puts together. Remember if you do get any worthwhile video of any of our launches, get it to Bob. We also had a photographer from a magazine called American Profile. He interviewed a few people and got some shots of the launch. He also got everyone together with his or her rockets for a fantastic group shot. I would be remiss if I did not mention the Dave Bullis "Fashion" shots that were also taken with his Level Tree rocket, Tolitha Koum. Word on the street is that Dave is going to become an Underwear Model for Victoria's Secret Men's Collection because of this. I know rocketry will miss him and I hope he remembers us.

Dave Bathras flew his scale Saturn V on an E-30. The Storybook people were very interested in this project. I guess it was that Werner Von Braun connection. Once a German Rocket Scientist always a German Rocket Scientist. With out a doubt, the best German export since Beck's. Unfortunately the recovery of the model was not exactly the way that Dave had planned, but it should fly again.

Kathy Gilliand flew her Level Three Rocket called Star 3. For those of you who didn't know, our own Kathy is the first woman to certify Level Three this side of the Mississippi River. That monumental feat was accomplished at Higgs Farm on 1-21-01. We were supposed to have a launch that day but due to weather, snow, and the condition of the field only one flight was to be permitted. If at all, due to the wind. The wind abated as the afternoon wore on and as rocket and motor preparation proceeded. By about 3 P.M. the rocket was on the tower and ready to go. There was none of the usual pre-launch hype, as we did not have any P.A. set up. Just a small group of the faithful shaking off the cold. With launch control button in hand, Kathy gave a quick 5-4-3-2-1- count and pressed the button. There was no blast plate under the rocket so most of the trademark white smoke was consumed in the exploding sod that the M-1939 was kicking up. The rocket accelerated off the tower, arched slightly into the wind and kept climbing on a spectacular trail of

fire and smoke. The rocket reached about 6200 feet and recovery went picture perfect. Congratulations Kathy, you go girl.

With that pesky Level Three flight behind her, what's a girl to do? But do it again. Same rocket, same field, less wind, an even better result. Kathy's second M-1939 flight topped the first. With less wind the rocket shot straight up and away. Once again Kathy showed us men who burns the AP in the family. The rocket deployed a small drogue at apogee and began the long fall from 6900 feet. Right on cue at 1200 feet the main was out for a perfect recovery. Once again congratulations Kathy.

David Grubie flew his PML Endeavor for his Level One Certification. Needless to say everything worked as David had signed papers by the end of the day to allow him to empty his wallet at a faster rate with Performance Hobbies. David did not fool around on his cert flight. He flew an I-161 and skipped right over the normal H powered cert flight. Congratulations David and welcome aboard. Greg Gruntler was determined to get it up and get it up often. Greg flew four different rockets with four different motors. David put up his Horizon on a H-123, Quasar on a H-220, Sudden Rush on an I-435 and his Rush Job on an I-161. David apparently likes to mix up the fast and the slower propellant. The Guess's had quite a command of the first third of the alphabet. Between Kim, Matt and Mitch they had A through I covered. Kim launched her very first rocket, an Estes Alpha that was painted pink and called Flamingo on an A-8 for a perfect flight. Mitch put up his Loc Graduator on a F-40 for a nice flight and recovery in the mud that seemed to get deeper and stickier as the day went on. Matt flew his first High Power flight on a Loc Expedito with a H-180 in the business end for a nice flight and recovery. The Loc IV was next with heart breaking results. This was a new rocket so what better way to break it in than to break it. The chute got tangled in the fins for a less than suitable landing. One fin broke off and this rocket should be back in service soon. Mitch's last flight was his stretch Endeavor with an I-300. Apogee separation went as planned, mains were a low 500 feet and the trees aided in recovery. The rocket was extracted from the tree with no damage with a still functioning altimeter beeping out 1627 feet.

Seth Harris flew his Arcas on a H-238 for a nice flight. Sean McAndrew was flight-testing some of his Sparky home brew in his Loc Forte. Sean flew this rocket successfully twice for very impressive flights on his 29mm H-100 Sparky motors. Unfortunately the second flight ended up on the power lines and Sean was unable to recover it from the 7,200 Volt Power Line. The current rumor is that the rocket has been taken off the line. Yours truly flew Cowabunga on a combination of motors. A K-700, air starting two H-124 Black Jack's. The German film crew, Story Book, recorded this flight. The K-700 was working full time during the initial stage of lift of as the rocket weighed in at 34 pounds. The air starting expertise of Sean McAndrew was utilized and even he couldn't compensate for the flukiness of thermalite starting of the Black Jack's. The air starts began late and out of sequence. This caused the rocket to go into a sub nominal trajectory and dumped the main at apogee; I hate it when that happens. The good news is the rocket was recovered with no damage, other than some expressed disappointment when asked by Story Book what I thought of the flight. How do you explain that to the people who designed the original "Single Use Rocket".

Tobin Miklas got three of his vehicles into the air. Tobin flew Mach Buster on a G-55 for an "Elvis has left the building" flight. Tobin also flew his Strong Arm on a G-80 and his Amraam on an I-284. Kevin Mitchell braved the parking lot and eventually made his way to the flight line to launch his Black Brant II on an I-435. We look forward to the re-emergence of Kevin's big projects. Hint, hint!! Tim Nist, who never lets extreme altitude get in the way of extreme attitude, launched his Syonic on a K-1000. A rip-roaring flight was followed by a less than spectacular finish, unless you call total destruction of this beautiful rocket spectacular. All right I'll say it. Tim if you are going to crash your rocket the club policy is that it must be done in full view of the members. Not after a 9,000-foot flight and a mile down range. Warren Pelton scarified his AMF on a G-35. Predicted altitude was 4,600 feet and it looked like it blew through that. The rocket was seen heading east being pushed by strong upper level winds. Maybe it will turn up in Portugal. Warren also attempted his Level One. Unfortunately

he sacrificed his AMF rocket to the wrong Gods. Warren's X-Caliber was launched on a H-73 and the aft launch lug separated from the airframe causing the rocket to go everywhere but up. The rocket did a little disassembly dance on the field before coming to rest in a million pieces. Warren vows to be back and that is the spirit.

Ted Proceus was inspired by his favorite television show "Three's Company" and launched his 3's Crazy. This rocket was an air-starting cluster of Jack represented by the mighty H-180 air starting Chrissie and the other one represented by G-75's. No wonder this show does so well in syndication and Ted stayed true to form with this flight. What the show didn't achieve in quality it made up for in duration and Ted attempted his own version of that. What Ted didn't get in altitude he made up for in down range distance. 2,400 feet up and 4,000 feet down range. I can sympathize with the pain of late air starts. Jerry O'Sullivan lit up the sky on Saturday with the launch of his Sand Hawk on an M-3200. What can you say other than "Wow" Jerry had a custom blend created by Paul Robinson for this flight. What was to be a medium power plant turned into a fast load for the big 7,600 ns casing. The rocket tore off the tower and quickly achieved 1,150 FPS and was pulling 20 G's. At motor burn out some debris was seen fluttering down from the rocket. It seems the speed; air pressure caused some delaminating of the rocket. No matter the rocket was to be refurbished and that is a small price to pay for the 20-foot flame pushing the rocket skyward. Some times when you push the envelope, it tears.

Rob Roberts flew 3 rockets, EZ 1 twice on a H-97 then clustered on a H-180 with two G-75's. Rob also flew his Broad Sword on an E-15. Erin Rosa was down with some of his Midshipman buddies from Annapolis to certify Level One on a rocket he called Blue and Gold. Erin flew the rocket on a H-242 for a perfect flight. Congratulations Erin and welcome to the club. The Midshipmen will get to play with these toys before certifying Level 1,000 when they get to launch the real deal later in their Naval Careers. Mike Rudiger made a rare appearance to give the early arrivals a look at his scratch built LARS rocket system that really put a big smile on Dave Bullis's face. Mike also launched some more

conventional, his Patriot on a H-250 for a nice flight. Michael Ruzzi put in 9 flights on Saturday in the D to G range with his Sand Hawk, Wart Hog, Fat Boy, Sand Hawk, V-2, Terrier Sand Hawk, Big Daddy and Tomahawk. You figure out the motor combinations. Bryan Slojick launched his Magnum in what can only be described as an interesting flight. Bryan is always pushing that old envelope and this time he tore it up as well as his rocket. The J-800 did its job as gravity did its job. Bryan is never one to say die and he will be back to amaze and entertain us, I have no doubt.

Daniel Sternberg was down with the Navy boys to attempt his Level One Certification. Daniel flew his Eliminator with unsatisfactory certification results. He later flew a rocket called Salvation that was recovered the next day. The question is was Salvation Daniels Salvation? Umphhh Dave? Tom Thompson flew his Amraam called the One Eyed One Horned Flying Purple People Eater on a J-275. This tongue twisting named rocket had a few twists in store for Tom as the booster separated from the payload section at apogee. Luckily the rocket was relatively light and it will fly again. Speaking of Amraam and crashing, Curtis Turner had one of the finest finished rockets on the field Saturday. It was his big 6" Scale Amraam. The rocket was to flown on a L-630, red flame motor. Multiple igniter problems were an omen of things to come. On try number four the rocket left the pad on a spectacular long burning flight. Apogee separation went as planned but Curtis's pucker factor quickly increased as it became apparent that he was not going to see that beloved main chute deploy as planned. A sad end to a beautiful rocket. Nelson Wallace had two successful lower powered flights with his Barracuda on an F-20 and his Nighthawk on a G-35. Jeffery Webb joined the ranks with his successful Certification Level One flight with a Binder design Thug on a H-242. Welcome aboard Jeff, way to go. Dave Weber put three of his ingenious creations up on Saturday. Dave flew his bucket-stabilized rocket called "Kick The Bucket" on a G-40. He also flew Tuber for flight 118, Yawn!!! Only kidding Dave as I am still trying to get past flight number one on some of my rockets. Dave finished off the Saturday launch with his twilight launch of his strobe light rocket called Blinky.

The Cold and windy conditions of Saturday had waned somewhat for a cloudier but warmer and calmer day. While many of the bigger projects were launched on Saturday to take advantage of the unpredictable Maryland weather, Sunday would prove everyone wrong and turned out to be the better flying day.

Tucker battle came armed to the teeth with a quiver of Este's rockets that he turned in eight launches with. Tucker was burning up those A, B and C motors. All of this in preparation of that highly anticipated D flight later this year. Bob Booker flew four rockets in the E to I range. Bob flew his Who Killed Kenny on an E 15, Mega Nuke on a G 40, and Mega Sketter for a nice twirling flight on a H-128 and his IROC on an I 161. All for nice flights with safe recoveries. Ed Brun proved to do the compliment of his rocket Sod Buster and Busted Sod on this flight. Ed flew the rocket with a J-250, which was to provide a long high flight with a scheduled perfect recovery. As it goes with rockets sometimes the big blue thing that circles the bright yellow thing gets in the way of the best laid plans. Dave Bullis helped out some of the local boys and flew the low power rockets Girl and Kent Island for what could only be described as nominal flights. Dave also helped out the big boys Terry Chalfant and Dave Lucas with the J 400 Green Gorilla in two different rockets, thanks to yours truly. The original flight was to be in Dave Lucas's Amraam 3. However a faulty igniter saved the loss of the rocket and possibly worse. When my rocket Socially Un-Acceptable left the pad, which was next to the Amraam, the stand off block was kicked into the fin area of the Amraam. Unknown to all was that this even occurred or the damage that followed. One of the fins had been loosened to a point of literally falling off the rocket. This was noticed only after the igniter failed and was being replaced. The Amraam was retired and the Corporal was then selected to be the Green Gorilla launch vehicle. After several abortive attempts to light this motor, a "real" igniter was provided and the rocket screamed off the pad with chutes at apogee and a safe recovery.

The Carrington's, Clark and Paul, took the family total for the day with a combined 12 flights. They launched everything between an A to an H 242, which

goes to prove that the family that flies together, spends lots of money that Dad can't tell Mom about. Gary Deaver launched two rockets, his V-2 flew on an I-357 for a fast, high flight and his Calisto Extended on a H-97. Gary Denvor flew his scratch built V-2 on an I 300. Bob and Vincent DeRosa combined for five flights. Bob held up the high power end with his Patriot on a G 80, LOC IV on an H 123 and his Performer on a fast blue I 357. Vincent held up the model ranks with two C 6 flights on his Snitch. Guy DeStefano had two nice flights with his Graduator on an H 220 and his Warlock on an I 435. Guy also demonstrated a unique recovery technique with a Ram Air Foil Parachute. Next he needs to learn to steer it. Adam and Eric Dolphin launched their Spe Hawk on a G-125. Greg Frye put his Warbird up on an I 435 for a nice flight. Ivan Galysh launched his Phobos and and Areonox on an H 55 and F 23 respectively.

Erik Hall took to the sky four times with his Initiator on an F 23, LOC IV on a G 80, Initiator on an F 40 and Eclipse on an I 211. All for successful flights. Richard Hickok flew seven times on C to E power. Adam Higgs had Aqua in the air twice on e 15s for some highflying fun in the sun. Allen Hosmer was burning up the beginning of the alphabet with six flights. These three boys did their share to keep the black powder reserves in check.

Bill Mantell kicked up his Hawk Mountain Eclipse to about a mile on K 550 power. Bill had a straight, screaming flight and his usual perfect recovery. This was to be a warm up flight for Bill's 15,400-foot flight with this rocket at Rhodesdale later in the month on an M-1120. Way to go Bill, fly them high and get'em back alive and kicking. Sean McAndrew flew his Magnum on a K 600 for a high neck cracking flight. Yours truly, Neil McGilvray decided to try to fly Socially Un-Acceptable without fins half way through the flight. The 23-pound, 4 inch diameter fiberglass rocket was loaded with a DPT K 1120. This motor pushed the rocket through mach at motor burn out and that's when things got real exciting. The rocket decided that this would be a good time to perform a crowd pleasing high-speed disassembly. All four fins and launch lug blew off, as did all three parachutes. The main was torn loose when the 1/2" tubular nylon webbing snapped and the drogue was

ripped off as well as the chute on the nose cone. The good news is that rocket is repairable, the bad news is that I will master these motors even if I have to fly them in Bob Utley's rockets to avoid further damage to mine.

Ed Miller had a nice flight on his Tarsis on an H 242. We are looking forward to the next mega flight of Ed & Roger Thunderhead. Come on Ed & Roger "do it again". Elaine Miller flew her PML Endeavor on a J 400 for a nice flight. (*editor note: Elaine will do her L3 at Whitakers on the 24 of this month*) Tim Nist was back at it again on Sunday with two more flights. The first was in his Wac Corporal two-stage rocket. The booster was a J 460 and the sustainer contained a J 135. The boost phase went as planned, however the sustainer motor never lit and the upper stage continued ballistic and was recovered under chute. The booster section never deployed the chute and sustained some damage upon contact with planet earth. Tim's second flight of the day was with his scale Honest John that he received his Level Three on. This flight was configured with five motors, a L 1500 and four I 435s. With a push of the launch button the rocket was off the tower like a shot. All the previous disappointment of the weekend quickly faded for Tim as this was quite an impressive flight. In typical Nist fashion it was high and the recovery was perfect. Jerry O'Sullivan got everyone's attention with the launch of his High Five on a Kosdon K-1250 Skidmark motor. With its trademark low frequency roar and pumping black smoke combined with burning titanium sparks the rocket tore into the overcast sky. Recovery was perfect and the rocket came down about $\frac{3}{4}$ of a mile away after this spectacular flight. Jerry also launched his Astrobee-D on a J 650. The Jim Mitchell propellant blasted the rocket off the pad to 4,700 feet for an excellent flight.

Jeff Potter was on hand Sunday to launch two rockets and Jeff Jr. launched one. Jeff Jr. put his Lego Maniac on a D-12. Jeff Sr. launched his Crayon on an H 240 for a nice fast flight. Jeff's pride and joy was his 6" Ultimate Endeavor that was meticulously finished with Dodge Prowler 2002 paint. This rocket was flown on a K 1100 and three I 435s. The K 1100 was lit first and punched the rocket into the air. About a second and a half later the I's kicked in and blasted the

rocket into overdrive. Apogee was nominal and all looked good. Then the unthinkable began to present itself. The mains weren't coming out. The rocket landed with that distinctive painful thud!!! Jeff built it strong, so it looks like the Endeavor will fly again. Ted Proceus had two more rockets to send skyward. Ted launched his ASP on a J 300 for a nice flight and his Extreme 66 went up on an I 120. Both recoveries got the rockets back in on piece and that is half the battle. Tom Rodilosso flew his Indigo on a D 12.

One would think after the problems Bryan Slojick had on Saturday that he might be somewhat gun shy about attempting another "Bryan" flight. Not a chance. This time the rocket was his Electric City being boosted by three H 124's and then air starting a J- 650. All worked perfectly and Bryan proves that if you can build it and think it, he will fly it. Rob Super flew his R-2 on a D 12. Robert Taylor flew his Navy Shrike on an I 161. The Thomas boys or are they the Bullis boys flew three record able rockets. The Field Plover, must be a Bullis rocket, flew twice on G 35 power and the Pop Tart fly on a B 6. Caroline Thompson flew her Mars Bommer on an E 14 and her Little One on a B 6.

Bob Utley waited until Sunday to crash his rocket. Bob wanted to wait to see who was going to fly furthest down range before he took to the air. Ted Proceus set up an inviting challenge on Saturday and Bob was up to the task. Bob thought he was loading his Primo with a K-450 but unbeknownst to Bob it was more like a K-50. The rocket achieved minimum altitude and perused a long $\frac{3}{4}$ mile arc to the designated crash site. Practice makes perfect. The fins and altimeter miraculously survived and the rocket has been rebuilt for the spring crashing season. Speaking crashing the Wallace brothers, Fred and Nelson were on hand to stick their fingers in the fan with the rest of us crash victims. Fred Wallace, no relation to Nelson, flew his Optimum 150 with a home brew L 1300. Lift off was inspiring, but soon into the burn all hell broke loose as the forward closure let loose right through the altimeter bay. With the altimeters now smashed, pieces of circuit board the rocket came in hot with another one of those sickening thuds. The Optimum will not be rebuilt, as there is nothing left and it is back to the drawing board on propellant

combinations. Nelson Wallace was not to be left out as he also joined the crash brigade. Nelson launched his big Bruiser he calls Silver Ghost. Nelson had fashioned a palm video camera onto a piece of flat bar and attached it above the nose cone looking down at the rocket and the ground. The rocket lifted off on a special L-850 and flew great until apogee. At this point the nose cone came loose with out the aid of a recovery device, like a parachute. The rocket was recovered intact but the nose cone and camera were a total loss. To make matters worse in the excitement to get the rocket launch ready on the pad Nelson had inadvertently turned off the recorder.

Wade Winazak flew two rockets, his Air Wave on an H 242 and Jurassic Spark on an I 357. Both turned in great flights. Darren Wright tried his hand at a 2-stage with his Terrier/BBX. The motor combination for this flight was an I 357 to a G80. Darren also went for the stratosphere with his Eclipse powered by everyone's favorite long burn K 185.

Once again the members of the Maryland Delaware Rocketry Association showed their resolve and determination to attempt those difficult projects with varying degrees of ultimate success. But in my mind every attempt has an element of success. That is how we learn and continuously improve our craft. Failure is inevitable in rocketry, but the spirit that drives us on is what is important. What we do here sets the bar higher for the rest of the country. Believe me this group is well known beyond our borders and most people like what we are doing and wish they could be part of the fun. That is why we do it after all. FUN. We continue to have fun with rockets and do it safely. That is the prime concern, safety. Even the crashes are compensated for to only damage the rocket and possibly the ego of the owner. Remember keep it safe and keep it fun. With those two elements we have met the two prime objectives.

Remember to thank Tommy Higgs for the generous use of his farm. We couldn't have a better friend than Tommy and his family. Treat his land like it was your own and leave it in better condition than how you found it. One other thing to keep in mind is that we are an all-volunteer organization and can always use help with the different aspects of running the launch. Please pitch

in with something you help is appreciated. Plus it is actually fun, one of our main elements, to get involved and interact with the other members of the group. Until next time, fly high and recover low.

Neil McGilvray



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Bill Mantells 15,405 flight at Rhodesdales.

ATV Payload Project:

January 7th was an interesting day at Rhodesdale, where a number of Maryland and Delaware members got a chance to see how a launch looks from the rockets' perspective. A stretched PML "Video" Endeavor flew an amateur radio TV (ATV) payload package on a J-415. Unfortunately (or fortunately, depending on your point of view), those of us there also got a live "nose cone perspective" of a premature drogue chute ejection at over 300 MPH. Shortly after that unplanned event ripped the Endeavor apart, we gained an appreciation for what it must look like to fall out of an airplane from around 1000 feet without wearing a parachute! Just like the early 1960's NASA Ranger moon probes, the ATV system performed flawlessly until it impacted an extremely massive object. But unlike Ranger, this TV payload lives to fly again

with the replacement of a single broken transistor.

This short article covers the ATV payload project that Jerry O'Sullivan, KG4IMX, and I are working on. When we are satisfied that it operates as intended, it will be placed aboard Jerry's Terrier-Sandhawk and will provide the crowd on the ground with a spectacular live view of the M to L staging enroute to apogee at over 12,000 feet. Of course the footage will be recorded and posted to the web site.

Modern microprocessors and other miniaturized electronics provide us with low cost recording altimeters that capture flight characteristics and control ignition and ejection circuits. Microprocessors are now so pervasive that its easy to forget NASA and DoD paid millions of dollars to develop and build similar rocket electronics in the 1960's and 1970's, and this equipment was a lot larger in size and weight. This same miniaturization of electronics has given us inexpensive solid state color TV cameras, which are ideal for putting in electronic payload packages. Advancements in technology have also reduced the size and cost of TV transmitter circuits. The result is a color TV and sound payload system, with a line of sight range exceeding 15,000 feet, can be easily built by hams for a few hundred bucks.

The ATV video payload project consists of two 6 volt NiMH rechargeable battery packs wired in series, and three modules: the color TV camera, the sound modulator board/microphone, and the 1.5 watt transmitter. The TV camera runs on 9 volts, this is provided by a voltage regulator that steps down the battery output. The sound and transmitter boards run on 12 to 14 volts. The output of the transmitter is run through miniature coaxial cable into an inverted "V" dipole antenna, which is made out of very stiff piano wire so it doesn't bend much in flight. The complete video payload module weighs several pounds, it can be lighter if smaller battery packs are used.

Ground receiving equipment includes a turnstile antenna, a 70 cm to channel 3 downconverter, and a channel 3 to RGB downconverter. A TV/VCR combo unit is tuned to channel 3 to display and record the live payload transmission, the RGB downconverter provides video and audio output to a digital video camera.

Downconverters operate on 12 to 14 volts, and the 120 volts necessary to operate the TV/VCR unit is provided by a 400-watt inverter. This arrangement is shown in the attached diagram.

The dotted line portion of the diagram shows additional equipment that could be added in the future to provide GPS telemetry superimposed on the video. This is done by routing the camera output through a text overlay board that is also connected to a GPS receiver. In addition to the video, viewers on the ground would see how fast the rocket was traveling, its altitude, heading, longitude and latitude. We may add this telemetry feature to the payload in the future.

Unlike the low power radio beacons some of us are using to track our rockets, video provides a few "extra" challenges. The modules are very close to each other inside the payload section, so we have to shield the various components to prevent the higher transmitter power from effecting the video and audio signals. We have found that aluminum foil cemented around the CCD TV housing and on the payload wood mounting plates, along with careful placement of the modules, has minimized this problem. We are concerned that the high transmitter power may also effect the recording altimeters, so we are doing tests and putting in shielding to ensure this doesn't happen.

You may be wondering why it is that we can use low power beacons for recovery tracking, but need a higher power transmitter for TV. Well, there are two reasons. One is that the TV transmits a lot more information (the image) which requires a higher signal bandwidth then is required for just an audio signal. This means the average received power at any single frequency within the wider video bandwidth is actually a lot less than it would be if it was just a narrow band audio signal, so we need to boost up the transmitter power to get a strong enough signal down to the ground. The other reason is that we don't want to have to track the rocket with a high gain directional antenna. A strong signal means that we can just point the turnstile antenna in the direction of the intended trajectory and that will be good enough to record the entire flight.

Another challenge of the TV payload is that the signal is effected by the rotation of the rocket around its axis. Although we would like to think our rockets don't roll as they fly, most do roll at a slow rate. The rotation of the transmit antenna aboard the rocket can effect how well the signal is received on the ground, particularly when the rocket is at higher altitudes. To obtain maximum received signal strength, the transmit and receive antennas need to be in alignment. Since we cant keep our rockets from rolling without some sort of gyro and control system, we have to be clever with how we set up our receive antenna to keep the signal from fading in and out. The receiving antenna is called a turnstile because it has two sets of elements crossed at 90 degrees. As the rocket rolls the signal received by one set of elements will start to fade, but at the same time it will increase in the other set of elements. Connection of the two sets of elements is made with a specific impedance of coaxial cable cut to a certain length. This causes the signals from both elements to add together and the output is constant regardless of the payload orientation to the antenna. Aluminum screen or a metal plate placed at a precise distance under the crossed elements reflects some of the received signal back, which gives the antenna some directionality and extra signal gain.

Although the first flight didn't go as planned, (see photo at right) the test of the video package was still a resounding success. It proved the electronics could withstand the high gee loading of takeoff and the sharp deceleration of premature ejection, and that the receiving system worked regardless of how the payload was oriented. We suspect the reason for the premature ejection is because the J-415 was configured with a delay element and black powder charge, using the older O ring sealing method, as a back up in case the transmitter effected the AltAcc. From the looks of the motor parts, ejection failure was the culprit. Aerotech agreed with the postmortem and promptly sent a new J-415....they did think the video was "pretty cool". You can watch it yourself at <http://www.mdtripoli.org/jerryo/atv2.mpg>

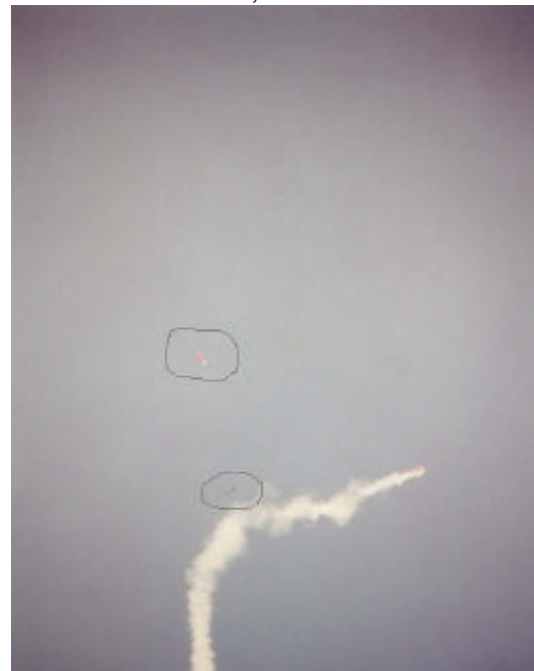
The reason the video is so dark during the boost phase is because the rocket flew late in the afternoon and the

camera was oriented toward the sun, which was very low on the horizon. When the payload starts free-falling the brightness improves quite a bit as the payload faces down towards the ground and rotates away from the sun. Since this is compressed digital video it does not look as good as the original on the VCR tape. A lesson learned here is that the best video will be obtained when the sun is fairly high up in the sky.

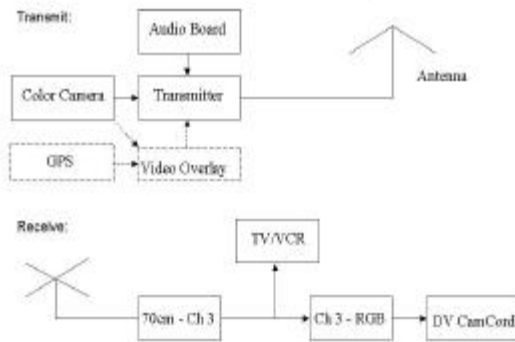
Components to build this system, and more information on ATV in general, are available from PC Electronics (www.Hamtv.com) and ATV Research (www.atvresearch.com). You must have at least a Technician class ham license to buy from these companies, and they will verify call signs and addresses before they sell to you. If you don't have a ham license, don't despair. If you can pass a level 2 written exam you will find getting a no Morse Code technician license to be very easy. The November/December Maryland Tripoli Report has more information about getting a ham license.

We plan to do one more flight test on a 4 inch rocket in March before fitting the electronics to Jerry's Sandhawk, and will post the video to the web. If you want more information on this project or ham radio give Jerry or myself a holler.

Bill Schworer WC6P, #6872



ATV Functional Block Diagram



PERFORMANCE HOBBY

<http://www.performancehobbies.com>

Aerotech new RED motors are out and PH will have them in stock as soon as Aerotech releases them.

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

NEXT ISSUES:

- Launch report of Mar & Apr.
- Up coming Projects
- Events for May & June

Special Thanks:

Just wanted to give a special thank you for all the people that helped me with my Level 3. Neil McGilray, Jerry O'Sullivan, and Dave Weber for helping with the parts, Jeff Potter for his encouragement and the fabulous paint job, Bob Utley for insuring that it would be safe, and Fred Wallace and Ed Miller for signing off on me. I felt 100% support from Dave Bullis, Lynn and everyone in the club.

Most of all I want to thank Tommy Higgs, because not only have I learned alot about rockets, I've learned alot about farming. I now know where soy beans come from and the growing season for corn!

Now, if only Oprah would call me..... Thank you Everyone!!

Kathy Gilliland

Latest News:

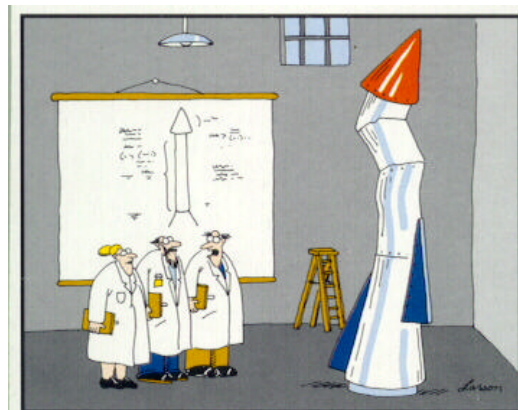
In the next week or so you should receive a ballot for Prefect, please cast your vote and return the ballot, we have even provided the stamp. If you don't see one, then you did not renew your membership.

Keep The Pointy End
up and the Fierly
End down.

D. Bullis

<http://www.mdtripoli.org>

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"It's time we face reality, my friends. ...
We're not exactly rocket scientists."

Flight Log Feb 3-4, 2001 ESL #36

Flyer		Manufacturer	Model	Motors	Result
Bathras	David	Estes	Saturn V	E30	
Gilliand	Kathy	Scratch	Star 3	M1939	
Grubie	David	PML	Endeavor	I161	*Cert 1*
Gruntler	Greg	BSD	Horizon	H123	
Gruntler	Greg	PML	Quazar	H220	
Gruntler	Greg	PML	Sudden Rush	I435	
Gruntler	Greg	PML	Rush Job	I161	
Guess	Kim	Estes	Flamingo	A8	First flight/launch
Guess	Matt	LOC	Expediter	"H180,G75 (2)"	
Guess	Mitch	PML	Stretch Endeavor	I300	
Guess	Mitch	LOC	IV	G64	
Guess	Mitch	LOC	Graduator	F40	
Harris	Seth	Aerotech	Arcas	H238	
McAndrew	Sean	LOC	Forte	H100	
McAndrew	Sean	LOC	Forte	H100	
McGilvray	Neil	Scratch	Cowabonga	K700/H124(2)	
Michael		Centuri	Arcon Hi	C6	
Miklas	Tobin	PML	Amraam	I284	
Miklas	Tobin	Rocket Vision	Mach Buster	G55	
Milkas	Tobin	Aerotech	Strong Arm	G80	
Mitchell	Kevin	Scratch	Black Brant II	I435	
Nist	Tim	LOC	Syonic	K1000	
Pelton	Warren	PML	X-Calibur	H73	*Cert 1* no go
Pelton	Warren	Scratch	A-M-F	G35	
Proseus	Ted	Scratch	3's Crazy	"H180,G75 (2)"	
O'Sullivan	Jerry	Scratch	Sandhawk	M3200	
Roberts	Rob	LOC	EZ I	H97	
Roberts	Rob	Estes	Broadsword	E15	
Roberts	Rob	LOC	EZ I	"H180,G75 (2)"	
Rosa	Erin	Aerotech	Blue & Gold	H242	*Cert 1*
Rudiger	Mike	NCR	Patriot	H250	
Ruzzi	Michael	Scratch	Sandhawk	G38	
Ruzzi	Michael	Aerotech	Wart Hog	F20	
Ruzzi	Michael	Estes	Fat Boy	C5	
Ruzzi	Michael	Aerotech	Wart Hog	F23	
Ruzzi	Michael	Scratch	Sandhawk	G38	
Ruzzi	Michael	Estes	V-2	D12	
Ruzzi	Michael	Estes	Terrier/Sandhawk	D12	
Ruzzi	Michael	Estes	Big Daddy	D12	
Ruzzi	Michael	Estes	Tomahawk	D12	
Slogick	Bryan	LOC	Magnum	J800	
Sternberg	Dan	NCR	Eliminato	H238	*Cert 1* no go
Sternberg	Daniel	Scratch	Salvation	H238	*Cert 1* no go
Thompson	Tom	PML	O.E.O.H.F.P.P.E.2	J275	
Turner	Curtis	PML	Amraam	L630	
Wallace	Nelson	Aerotech	Night Hawk	G35	
Wallace	Nelson	Aerotech	Baracuda	F20	
Webb	Jeffery	Binder	Thug	H242	*Cert 1*
Weber	David	Weber Eng.	Kick The Bucket	G40	
Weber	David	Weber Eng.	Blinky	G40	strobe lights
Weber	David	Weber Eng.	Tuber	H97	Flight #118
4-Feb-01					
Battle	Hunter	Estes	Amraam	C6	
Battle	Hunter	Scratch	Juan Carlos	C6	
Battle	Tucker	Scratch	Tristar	B4	
Battle	Tucker	Estes	Mighty Mite	A3	
Battle	Tucker	Estes	Mighty Mite	A3	
Battle	Tucker	Estes	Mighty Mite	A3	
Battle	Tucker	Scratch	Viper	C6	
Battle	Tucker/Hunter	Estes	Condor	C6	
Booker	Bob	Scratch	Mega Nuke	G40	
Booker	Bob	LOC	I Roc	I161	
Booker	Bob	Scratch	Mega Skeeter	H128	
Booker	Bob	Scratch	Who Killed Kenny	E15	
Brun	Ed	Scratch	Sod Buster	J250	
Bullis	Dave	Rocket R&D	Coporal	K400	
Bullis	Dave	Scratch	Amraam III	J400	

Flight Log Feb 3-4, 2001 ESL #36

Flyer		Manufacturer	Model	Motors	Result
Bullis	Dave	Scratch	Kent Island	C6	
Bullis	Dave	Scratch	Girl	N1600	
Carrington	Clark	PML	Amraam 2	G64	
Carrington	Clark	Scratch	Lost Cause	C6	
Carrington	Clark	Scratch	Bull Pup 12B	H242	
Carrington	Clark	PML	Cirrus Dart	F40	
Carrington	Clark	Aerotech	Mirage	G75	
Carrington	Clark	Scratch	Bullethead	E18	
Carrington	Clark	PML	Cirrus Dart	G80	
Carrington	Paul	Scratch	Black Dog	C6	
Carrington	paul	Scratch	Black Dog	B6	
Carrington	Paul	Estes	Trans-Wing	B2	
Carrington	Paul	Scratch	Black Dog	A8	
Carrington	Paul	Scratch	Lost Cause	A10	
Deaver	Gary	PML	Calisto Extended	H97	
Deaver	Guy	LOC	V-2	I357	
Denvor	Gary	Scratch	V-2	I300	
DeRosa	Bob	NCR	Patriot	G80	
DeRosa	Bob	PML	Performer	I357	
DeRosa	Bob	LOC	IV	H123	
DeRosa	Vincent	Estes	Snitch	C6	
DeRosa	Vincent	Estes	Snitch	C6	
DeStefano	Guy	LOC	Warlock	I435	
DeStefano	Guy	PML	Graduator	H220	
Dolphin	Adam/Eric	Rocketman	Spe Hawk	G125	
Frye	Gregg	Scratch	Warbird	I435	
Galysh	Ivan	PML	Phobos	H55	
Galysh	Ivan	Aerotech	Aeuroxx	F23	
Hall	Erik	Aerotech	Initiator	F23	
Hall	Erik	LOC	IV	G80	
Hall	Erik	Aerotech	Initiator	F40	
Hall	Erik	PML	Eclipse	I211	
Hickok	Richard	Scratch	Alarm	D12	
Hickok	Richard	Scratch	Red Ball Express	C6	
Hickok	Richard	Scratch	Acrid	D12	
Hickok	Richard	Scratch	Harpoon	E15	
Hickok	Richard	Scratch	Acrid	D12	
Hickok	Richard	Edmonds	Thunder	D12	
Hickok	Richard	Scratch	Dueling Gliders	E15	
Higgs	Adam	Scratch	Agua	E15	
Higgs	Adam	Aerotech	Aqua	E15	
Hosmer	Allen	Estes	Loadstar	C6/C6	
Hosmer	Allen	Estes	Sky Winder	C6	
Hosmer	Allen	Estes	America	C6	
Hosmer	Allen	Estes	Mongoos	B6	
Hosmer	Allen	Estes	V-2	D12	
Hosmer	Allen	Estes	Alpha III	C6	
Mantell	Bill	Hawk Mountain	Eclipse	K550	
McAndrew	Sean	LOC	Magnum	K600	
McGilvray	Neil	Scratch	Socially Un-Acceptable	K1120	mach
Miller	Ed	Scratch	Tarsis	H242	
Miller	Elane	PML	Endeavor	J400	
Nist	Tim	Smokin Rockets	Honest John	"L1500,I200(4)"	
Nist	Tim	Rocket R&D	Wac Corp	J460/J135	
O'Sullivan	Jerry	Scratch	High 5	K1250	
O'Sullivan	Jerry	Aerotech	Astrobee-D	J650	
Potter	Jeff	Scratch	Crayon	H240	
Potter	Jeff	PML	Ultimate Endeavour	"K1100,I435 (3)"	
Potter	Jeffery	Scratch	The Lego Maniac	D12	
Proseus	Ted	Scratch	ASP	J300	
Proseus	Ted	Scratch	Extreme 66	I120	
Rodilosso	Tom	Scratch	Indigo	D12	
Slogick	Bryan	Scratch	Electric City	J650/H124 (3)	
Super	Rob	Scratch	R2	D12	
Taylor	Robert	Scratch	Navy Shrike	I161	
Thomas	James	Scratch	Felid Plower	G35	
Thomas	Phillip	Scratch	Pop Tarts	B6	

Flight Log Feb 3-4, 2001 ESL #36

Flyer		Manufacturer	Model	Motors	Result
Thompson	Caroline	Scratch	Mars Boomer	E14	
Thompson	Caroline	Scratch	The Little One	B6	
Utley	Bob	Scratch	Primo	K450	
Wallace	Fred	Scratch	Optinal 150	L1300	
Wallace	Nelson	LOC	Silver Ghost	J850	
Winazak	Wayda	PML	Air Wave	H242	
Winazak	Wayda	PML	Jurasic Spark	I357	
Wright	Darren	PML	Terrier/BBX	I357/G80	
Wright	Darren	PML	Eclipse	K185	

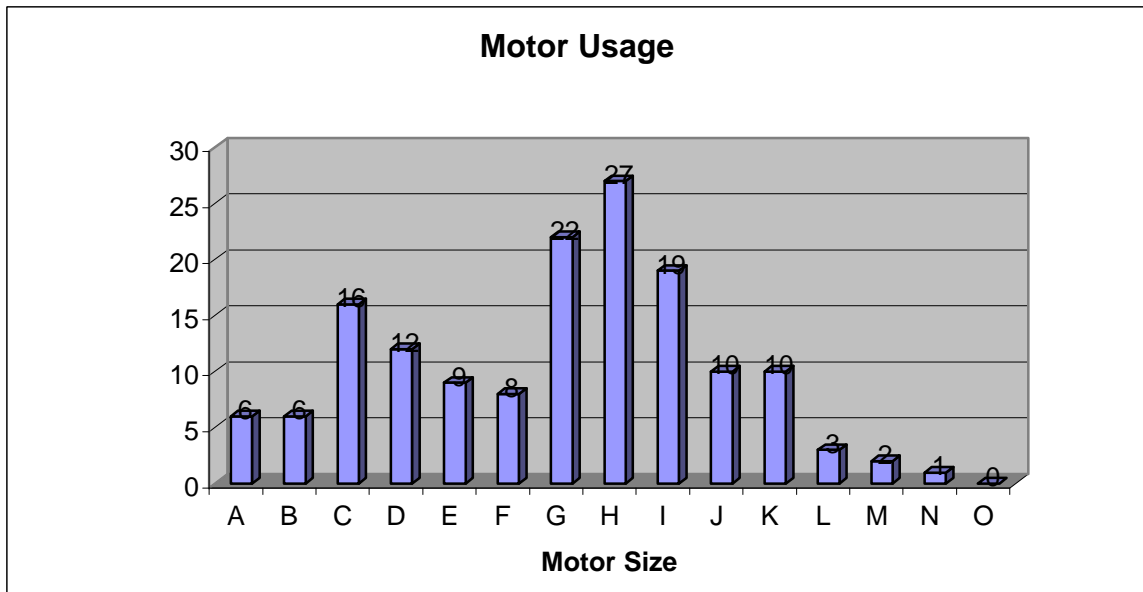
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B	6	30
C	16	160
D	12	240
E	9	360
F	8	640
G	22	3520
H	27	8640
I	19	12160
J	10	12800
K	10	25600
L	3	15360
M	2	20480
N	1	20480
O	0	0

151 TOTAL MOTORS 120485 NEWTON/SECONDS

Atlantic	0		
Aerotech	13		
Apogee	0		
Binder	1		
BSD	1		
Centuri	1		
Cluster R	0		
Custom Rockets	0		
Dynacom	0		
Edmonds	1		
Estes	22		
Hawk Mountain	1		
High Flight Tech	0		
Hobby Lab	0		
Impulse Aero	0		
JD Cluster	0		
LOC	16		
Launch Pad	0		
MSH	0	51	3-Feb
NCR	3	92	4-Feb
Neubauer	0	143	Total Flights
PML	23		
Pratt Hobbies	0		
Public Enemy	0		
Quest	0		
Rocketman	1		
Rocket R&D	2		

Rocket Teck	0
Rogue Aero	0
Rocket Vision	1
TCB	0
Thoy	0
True Modeler	0
Scratch	53
Smokin Rockets	1
V.B.	0
Unknown	0
US Rockets	0
Weber Eng.	3

143 TOTAL ROCKETS



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ESL 36 group photo, an that's not everone either.

March 2001

Rocket Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																				
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April 2001

Rocket Calendar

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