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Dallas Area Rocket Society ("DARS")

James Gartrell
408 Driftwood St.
Rockwall, TX 75087



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SHROUDLINES

A Dallas Area Rocket Society Production

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A Newsletter of the Dallas Area Rocket Society



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Dallas Area Rocket Society ("DARS")

Special Edition Discovery Channel Program, November 9

By James Gartrell

Hello folks! Hope you enjoy this "special" edition. What's so special? Well, if you didn't hear about the Discovery Channel's upcoming program, The Rocket Challenge, you've been missing out. Discovery and First TV crews were on site at LDRS to film and interview select rocketeers, and for rocketeers willing to participate in a unique contest, they provided a set of special challenges, such as fastest to build, launch and recover a provided K-motor "scratch" rocket. Woowee!! Can't wait to see it! The program is scheduled to air on November 9th, so set your video recorders. You'll definitely want to keep this program for posterity's sake. Since two of DARS club members are featured in the program, this newsletter is devoted predominantly to the stories they put together to fill us in on the rockets that put them in the spotlight.

Phase 1 of an historic fundraising program, initiated by members of the rocketry community and supported by both the NAR and TRA, began in anticipation of the airing of The Rocket Challenge, and continues right now in Phase 2. You can help by visiting www.saverocketrynow.org to participate and download a program-announcement flyer to distribute at schools, your local hobby store, or anywhere you think people will notice it. Phase 1 raised well over the targeted \$70,000 in a little over one week from excited rocketeers to sponsor the purchase of eighteen 15-second ads during the airing of The Rocket Challenge, with the remainder rolling over into Phase 2. The ads will briefly highlight the virtues of the hobby and invite interested viewers to visit a dedicated website, www.flyrockets.com, where they can learn more about rocketry. There, visitors will be introduced to rocketry in a very exciting way, with links to national and local clubs, vendors, and other related websites. Very exciting! Proceeds from Phase 2 will be used to purchase ads in Popular Mechanics. A program-announcement flyer is also available on the DARS site that can be downloaded and printed on the reverse side of the Save Rocketry flyer. Please take time to do this.

This is a very exciting time for rocketeers, long overdue for the hobby. We were fortunate that the Discovery team decided to produce the program at this time. We were also fortunate that folks in the hobby soon recognized that now was the perfect time to promote our hobby to potential members in a new and innovative way—immediately, online, while they're watching a unique and exciting program about rocketry. Quite frankly, we need new members in large numbers so that we have a larger voice in our efforts to stop over-regulation of our hobby.

So, this issue comes to you a little earlier than normal so you can get that video recorder set up on time, and with the hope that you will get the word out to folks you know, inviting them to watch the upcoming Discovery program. Your efforts can have a dramatic impact on the future of our hobby.

Regular sections of the newsletter will continue in future issues, but most were foregone in this issue due to the size of the two special member articles. I sincerely hope you enjoy their articles as much as I did. This is history, folks, and DARS is right in the middle of it.



Member - National Association of Rocketry ("NAR").

Special points of interest:

- Tune in for an exciting program about rocketry, the Rocket Challenge, scheduled to air on November 9 on the Discovery Channel. Rocketeers around the country united to fund the purchase of commercials that will air during the program, directing viewers to a special website tailored to further inspire potential rocketeers and direct them to clubs, vendors, and other useful resources which will aid them in the further pursuit of their rocketry interests.
- Aurora, Supreme Goddess of the Sky—a special article by Dan Stroud to tell us a little about his latest high altitude rocket. To put things in perspective, Mount Everest has an elevation of 29,035 feet, very close to the altitude achieved by Aurora.
- Team X-30 at LDRS—Dave Schaefer fills us in on the latest in the journey of the X-30. The X-30 utilizes the "lifting body" technology also used by the Space Shuttle and also being considered for future reusable space re-entry vehicles. Dave's rocket beautifully displays this technology



A picture off of the flyrockets.com website. Stop by and visit!

Aurora, Supreme Goddess of the Sky

A beautiful rocket on the outside, totally new on the inside.
By Dan Stroud

Terry and I were chattin with Pat Gordzelik in Amarillo and within seconds of our conversation we set our path for the coming year and forged a new goal. All because Pat said he could make an experimental “P” motor. Terry and I know that if Pat says he can make a motor, he can do it. The wheels began rolling. Pat began creating a huge “P” motor and Terry and I began a new rocket.

It was timely because for the past year Terry Stroud and I had been banging around ideas about a future rocket. Our thought, that should we build a rocket to achieve higher altitudes than Zeus (our ultra-hot 4” minimum diameter rocket), we would have to come up with a better system for high altitude deployments. Through observation we realized that many large rockets and high altitude flights had an atrocious recovery rate. Terry’s penchant for paintball had already given us some ideas. We had decided CO2 would be ideal for high altitude deployment. Later on Les Derkovitz published an article in the September 2003 issue of High Power Rocketry discussing the merits of CO2. We knew he had hit the nail on the head. In it, he made it clear that black powder becomes less effective at high altitudes. Although there are ways to make it work, it’s a band-aid approach. It’s old technology that screams for a replacement. Carbon dioxide deployment offers one of the answers. Now before you go off debating our thinking consider our reasoning. Black powder becomes less effective with altitude and CO2 becomes more effective with altitude --- hmmm – let me think. Perhaps sound reason and logic might dictate -----. It was this thinking that would become the focus of Aurora’s unique construction.

Terry, Pat, Laurretta (Gordzelik) and I soon formed Team ExTreme. Shortly afterwards we recruited Ed Jacoby in Austin, and later, (Candyman) Michael Williams and Chris Mealer, both of Amarillo. We also added our three Michigan buddies to the honorary role. It turned out not to be so honorary. At LDRS 22, Jeff Glenn, John Johnsey and Dan Denardo soon earned their wings. Also at LDRS 22, we dragged Brad Gibbons and his long-range wireless ignition system into our fold.

The project came to be named “The Aurora Project.” Pat suggested the name. We liked Aurora not only because it associated nicely with Zeus, with both names derived from Greek mythology, but also because of the association with the enigma of the military’s rumored super-secret ultra high altitude spy plane, called Aurora. Of course we spiced it up a little. Aurora became “Aurora, Supreme Goddess of the Sky.”



From that point on our goal was unwavering. We would produce a new breed of rocket. Not only were we gearing up to launch a rocket with a giant “P” motor, the rocket would have to be designed from the ground up to deploy its drogue parachute with a CO2 system and the main parachute with a release mechanism, a Blacksky ARRD. Aurora would become a 20-foot tall lightning bolt, 8.5 inches in diameter made entirely of carbon fiber and Kevlar. It would have to endure high G’s and fly into the rarified air near 30,000 feet, where deploying a

(Continued on page 3)

Other Upcoming Events

By James Gartrell

⇒ Below is a listing of upcoming launches DARS will be hosting through the end of the year. The 2004 launch schedule will be published as soon as it is available. Fly ‘em high!

DATE	FIELD	LAUNCH DIRECTOR	TYPE	COMMENTS
11/8	Rockwall	Buzz McDermott/ Nettie Hunsicker	LMR/ Contest	Fly just for the fun of it or compete! I’m hoping the weeds will be dead.
11/22-23	Windom	TBA	HPR	Also, rain date for “Shoot for the Stars” if needed.
12-13	Rockwall	Buzz McDermott	LMR	Fly your special Christmas rocket! The weeds should be dead for sure!

⇒ Don’t forget to come to the December 6 DARS meeting. New officers will be elected then, and there will be an auction afterwards. Your chance to make a difference in the club, and clean out those closets and make a little Christmas money at the same time. Or better yet, get some good deals to put under the Christmas tree. ;-) This is an important meeting to make, but it should be lots of fun, too! Y’all come! The new officers and their pictures will be included in the next issue. Events of last year will also be summarized. Watch for it! DARS achieved a very prestigious honor this year. Find out what it was, if you haven’t heard by now.

⇒ November 15 is the deadline for schools to enter the Team America Rocketry Challenge (“TARC”). If you haven’t done so already, now is the time to contact your local middle school/junior high and high school and remind them of the deadline. The TARC is a great opportunity to really excite our youth about the prospective of aerospace and other scientific/engineering fields. Not only is it rewarding for the students and schools, but at the same time it is also a super opportunity to gain support for our hobby. Every member should do all they can to promote this fantastic program.

⇒ Planning to be around Amarillo on 11/15-16? Don’t forget POTROCS has their HPR launches that weekend.

⇒ NHRA has a tentative New Year’s Eve/Day launch scheduled.



The Dallas Area Rocket Society is a non-profit chartered section of the National Association of Rocketry (“NAR”). Its purpose is to promote the hobby of consumer rocketry in the Dallas/Ft. Worth metropolitan area.

Membership in DARS is open to all interested persons. Membership in NAR is encouraged, but not required. Annual dues are \$10.00 for individuals and \$15.00 for families. The entire family, including children, are welcomed to the meetings.

The club meets on the first Saturday of each month at 1:00 p.m.

Meetings are held in Plano, TX at:

Plano Late Night Bingo

1805 Ave K (18th and K St.)

Plano, TX 75074

Exit off Hwy 75 to East Plano Parkway (just north of George Bush Turnpike—Hwy 190) and go east, turn left on K St., and turn right into the shopping center just north of 18th St.

(Continued from page 9)

glider into a tight turn to set up for landing. I did not have much altitude or airspeed to play with. The X-30 was descending rapidly. I stretched the glide to avoid some obstacles in front of the touch-down zone. Bryan noticed me slowing down and cautioned me not to get too slow. (Stretch the glide on a lifting body?) All of this worked out quite well, however, it left me with little energy to flair and the X-30 touched down on the plowed field a little more firmly than I



would have liked. It was down and in one piece. I had done my job, so I can officially collapse now. I then got up and joined my teammates as we walked over to recover our pride and joy. The X-30 was in remarkably good shape considering the rough field. While we did have some damage on the bottom, we didn't rip it to shreds like I had thought. Tommy noted that we could easily fix the bottom with more duct tape and fly it again. We did not get the altitude we wanted but the X-30 had put up a good flight. During the first two flights of the X-30, I had struggled to maintain control of it. This time the X-30 flew beautifully and responded very well to the controls. We still had some unanswered questions. Why was the motor late in starting? And what happened to our almost "M", it didn't make it out of the "K" range? Visiting with Rick Boyette, I discovered that with all the heat and confusion, the gentleman who was operating the launch controller did not keep the ignition button firmly depressed on the Hypertek launch controller, like the manufacturer recommends. It took Rick some time to notice this, as he was looking at the X-30 through the viewfinder of his camera, during the launch. I exchanged several Emails with Anthony Cesaroni about our lack of impulse and he was kind enough to forward me a chart that shows the change in Vapor Pressure of nitrous oxide with a rise in temp. There is a dramatic loss of volume at over 90 degrees. Basically, we probably had less than half the N2O that we would have had at 70 degrees. Had we chilled the N2O tanks with ice, we would have had a considerably better fill, resulting in a lot more impulse. The heat had taken its toll on everyone. During LDRS, we noticed that the number of failures climbed rapidly during the day along with the heat. But the rocketeers were not the only ones affected by the heat. The Discovery Channel had their share of problems as well. Many of the interviews they had done had no audio. Their entire filming schedule fell apart. Many of the onboard cameras did not work, including the one they gave us Sunday morning. And none of the special events they sponsored went off on time. These are just a few of the obstacles they had to overcome. I blame our Hypertek problems on no one but ourselves. The Hypertek system is a wonderful product and Cesaroni supports it very well. But like anything worthwhile, it does have a learning curve. So, how will team X-30 look on TV in November? I estimate that The Discovery Channel took about 9 hours of video of our team. That means that we will probably get about 90 seconds on national TV. Depending on which 90 seconds the producer picks we could come off looking good, or perhaps the piece will be titled "The Stooges in the space plane adventure."

(Continued from page 2)

parachute is not an easy task. It would also have to house a giant 6-inch by 60-inch long diameter "P" motor.

To our good fortune, Tom Rouse had introduced a CO2 deployment system marketed as the CD3 Carbon Dioxide Deployment System, which was being sold by Aerocon. We had test fired some of them at Pat's house at the famous barbecue grill. Our only problem was that we were building a larger rocket than the existing CD3 carbon dioxide system was designed for. We liked Tom Rouse's design so we came up with a way to use 4oz. CO2 single use bottles designed for the paintballers and adapted Tom's design to fit on the larger CO2 disposable tanks.



The gist of our recovery system design is the CO2 system that fits between the top of the avionics chamber and bottom of the parachute tube. During one of our trips to Amarillo and back Terry and I had already addressed the problem of locating the CO2 system and getting the gas to the area we wanted it in our dual deployment system – to the nosecone. Inside the parachute recovery section of our 8-inch airframe we placed a 6-inch tube to house a 24-foot Rocketman Super Chute. In the space between the walls we placed three 1.5 inch by .5 inch oblong tubes as corridors running the full length of the recovery section. The rest of the wall space we foam filled. The idea is to eliminate any wasted space, which translates to wasted gas. The rocket is airtight. We would spend some time to get the vents calculated correctly. While filming for the Discovery Channel we tested the system and found that the nosecone actually blew off too easily. After some discussion of the problem (also on camera) Terry came up with the answer; restrain the nosecone so the pressure builds up a little before blowing it off. You see, although the CO2 gas comes out very fast, it's not an "explosion." However, if you restrain the nosecone, body tube, or whatever, the pressure quickly builds up within less than a second and POW, the nosecone blows off nicely. We tested this theory right in front of the cameras. Our sophisticated test? Six strips of masking tape! Hey, it worked! We simply "pull tested" the breaking strength of masking tape and converted the necessary restraint resistance needed into the number of sheer pins that would be required.

Let me say that we've all heard the criticisms pointed at the new CD3 CO2 system. I can tell you there's always a resistance to any new technology, no matter its merit. But I can also tell you that the Aurora project provides as solid a testimony for it as you could hope for.



For safety, Aurora uses redundant carbon dioxide units to deploy the chutes. **NO** black powder was used as a backup! There's no use in reverting to a flawed and less reliable method as a backup. All of us at Team ExTreme can now assure you that CO2 works. If you build the vehicle right, the system works --- period! In our case Aurora was built specifically to conform to the design perimeters dictated by the system. Because we designed a totally new rocket and Pat designed a totally new motor, it might seem we

(Continued on page 4)

(Continued from page 3)

were flirting with disaster. That's not the case. It was the design, careful execution and thorough testing of both the rocket and the motor that assured it would all function properly.

For those who were there it was a very exciting experience. We worked until 4:00 in the morning preparing the rocket for our assigned launch time between 9:00 and 10:00 am the following morning, Monday July 21st. Lauretta Gordzelik shoved water and food down us, as our team worked through the night to be sure we were ready. Every detail was attended to. This was no small task.

From the beginning, Pat had to arrange for a new launch site even further out than the away cell pads. The "P" motor required a launch distance half a mile away. The day before the launch Pat and Ed Jacoby finished assembling the POTROCS club's new 20 feet tall Blacksky Ultimate rail. Being that it was Sunday, and at Argonia Kansas, there were no hardware stores available, so Pat and Ed got innovative and devised a standoff at the top of the rail so we could attach support wires. There for all the world to see on the Discovery Channel show will be the table leg they pirated from one of Pat's tables, mounted at the top of the launch rail. Lines extend off it and one of First TV's Production company's cameras are attached to it as well. Pat then arranged for a large flatbed trailer to take the rocket and our team out to the pad.



At the time I was unaware, but Terry later told me that several "supposed" experts had been telling Pat the motor would fail. Pat had worked on the "P" motor for months and had covered every detail. Throughout the project he had calculated the results over and over using several programs. One of them, "Burnsim," Pat's beta testing for the developer. We also did a static test burn of Pat's formulation in an "O" motor. Yep, an "O" motor! He kept the KN number reasonable. He factored in the problems that might be encountered with the increased burn, the motor housing's capacity, the safety factor needed for the motor casing to accommodate an unexpected pressure spike. Pat had covered it all, but the negative feedback from a few "supposed" experts had to cast some doubt, despite Pat's normal high confidence level. But the Super Polish Rojo motor was now assembled and sitting in Aurora. All Pat could do at this point was swallow and believe. As for myself, just before we were ready to arm the rocket, Jake, our First TV cameraman, asked, "What do you do if it fails?" I guess I'm so blind and single-minded that not until that moment had I seriously considered the consequences.

So there we were, all of us out there waiting for the countdown. Underneath, Pat and I were fearing the worst. The pressure mounted. It was the largest launch of our lives, there was a whirl of details, cameras in our faces, family and friends there to watch, and the entire

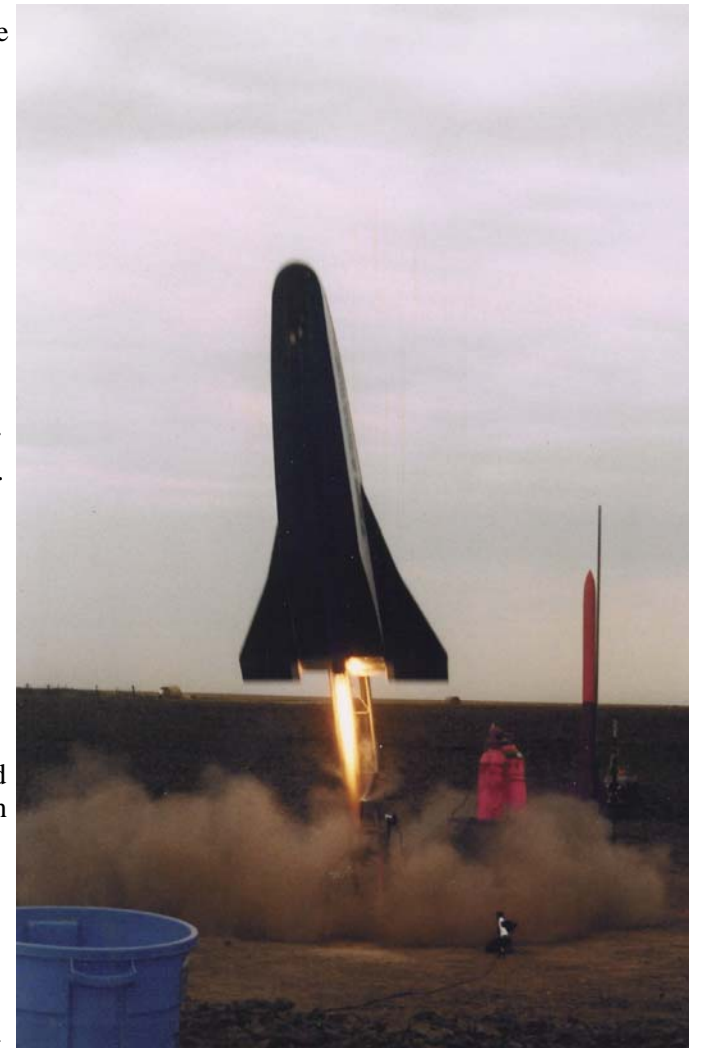
(Continued on page 10)

(Continued from page 8)

their faces. Karen inquired, "Dave, what just happened?" My initial thought was to say, "Well, Curly and Mo over there just blew up the X-30!" But, I paused for a moment, looked at her and said, "Well Karen, we just had a successful deployment test of the emergency parachute back-up system. Excuse me for a moment." I walked over to Phil and Russell to see what went wrong. They still had kind of a dazed look about them. "Gentlemen, would you be kind enough to explain to me why the chute is lying on the ground?" I asked. At that point, we entered into a lengthy discussion, and I won't bore you with the details. We turned the X-30 upright and the damage was not as bad as I thought. The back-up parachute system, by design would shred the covering on the top to pieces. Phil and Russell did figure out what went wrong and we still had a second 3-gram ejection device in the X-30. The top would need some repair. Russell inquired if I would need more cover material and the proper tools to fix the damage. I told him that my roll of wide masking tape would do the trick. I then radioed to Bryan to see where he was and to get my tape out of the range box and bring it to the pad. Please keep in mind that the DSC camera crews are getting all this on video! Just then someone behind me said they had a roll of duct tape and handed me the tape. Russell and Phil reinstalled the chute and I did the repairs with the duct tape. While I was making the repair, I looked at Phil and said "Tom Ridge was right. Every family needs a roll of duct tape for emergencies." The dark tape did not match the white top of the X-30, and when I was done with the repair, it looked like a smiley face on the top of the space plane. With our disasters behind us, we loaded the X-30 onto the pad. Bryan Nelson joined me and we took our positions for the launch. Pat Gordzelik was running the range from the LCO table and made the announcement that he would be starting the countdown shortly. Pat's a great LCO and I was pleased he was handling our flight. As Pat did the introduction, I tried to put the entire crisis behind me and focus on the task at hand, piloting the X-30! 5 4 3 2 1 launch... and nothing happened! 20 seconds went by and the X-30 just sat there on the pad! Bryan said "Well Dave, I guess" and he was interrupted with the sound of the L-970 coming up to power! This put our minds back into flight mode, like right now! The massive X-30 left the rail smartly and looked great as it



rocketed into the sky. While I was ready for the 7-second burn that would take the aircraft to 2500 ft., three seconds into the flight the motor quit at about 600 ft. The 59 lbs X-30 would only coast upward for another 300 ft or so. This really caught me off guard. Decision time! Do I just fly straight ahead and land, or do I try and make a tight pattern and go for a landing in the touchdown zone. Going straight ahead, we would have landed 500 yards away making the landing extremely difficult. So, I went for the latter, and rolled the huge



(Continued on page 10)

(Continued from page 7)

on the pad and fill it again. So, again we started the fill process and then heard an unusual sound coming from the X-30. Once again, we had to abort the fill to see what was wrong. This is starting to get frustrating! The problem this time was that when all of the nitrous oxide was rapidly vented off last time, the rapid change in pressure made our small over flow tube retract inside the motor mount. The only thing to do was to remove the X-30 from the pad, undo the motor mount and get the small overflow tube back in place. This would take a little time during which some of the bowling ball loftiers were flown. I kept a watchful eye on these, as the thought of being impaled by a bowling ball is not a pleasant one. Then I observed a bowling ball leaving the pad with a very high boost, and it arched right over our heads! "Heads up", I shouted and the group scattered in all directions. Fortunately, the chute came out, a little late but it all hung together, crisis over. As we regrouped, Karen from the DSC was noticeably freaked out by this. Phil calmly explained to her that if she stays close to one of us, she would be O.K. But then the whole team added "however I wouldn't stand close to Dave!" Thanks for the vote of confidence guys. I didn't realize that I am still wearing the official DARS target on my back. We fixed the tube problem and reloaded the X-30 back onto the pad. With the cameras rolling, for the third time, we started to fill the motor with nitrous again. Almost right away, we could see all of the N2O leak right out the nozzle of the motor. Major bummer! It would take over an hour to fix the bad "O" ring. When we had previously removed the X-30 from the pad, we damaged the "O" ring that accepts the fill stem. Venting the NO2 froze this ring, making it susceptible to tears. It was late in the day and the entire team was hot and tired. So, we aborted any more attempts to fly on Saturday. It is safe to say that we were not in the best of moods at that point. Our hosts Jerry and Debbie Kiser had arranged for kind of a celebration dinner for the group of us that night. I really was not in a partying mood. This event was the best thing that could have happened to us! Good food combined with the friendship of the team and our new friends in Argonia made for a most enjoyable evening that for me was certainly the highlight of the trip! That evening we removed and disassembled the motor and Phil skillfully replaced the damaged "O" ring.

Sunday morning started with overcast skies. This would be great for us, as no way could I end up with the sun in my face. Additionally, a morning flight would give us the rest of the day to sort out any problems that might arise. With the perfect weather, we showed up at the field ready to go, and rejuvenated by the camaraderie from the night before, our spirits were high. Once again, we proudly marched off towards the pads. Bryan went off to find the DSC people to let them know we are getting ready to launch. Arriving at the pad, we were told that Oscar did indeed recover from his collapse. He came out that night collected all of his ground support equipment and went home. So there was NO HYPERTEK EQUIPMENT AT THE PADS! This was not how I had planned for the morning to go. The Kloud Busters



once again demonstrated their resourcefulness by having one of their club members bring from home his personal equipment. Unfortunately, this equipment was for I and J motors, but because of their great effort, it would work in a pinch. The range was slow, as the overcast skies prevented most of the flights that morning. This worked to our advantage, as both range and film crews were freed up to work with us. As the ground support was being set up, we had the full complement of the DSC people show up at the pad. More interviews and I worked out the flight plan with the pilot of the R/C helicopter, who would be filming from the air. Bob Wilson and Tommy Bishop were busy getting the pad ready. Phil and Russell Blink had the X-30 upside down on the stands and were getting all the equipment armed for the flight. They installed a new recording deck just handed to them from the DSC. I radioed Bryan that the DSC people were already at the pad. He was back in the spectator area, trying to find them. It was all coming together and it looked like we would finally get to fly this thing soon. I was visiting with Karen from the DSC explaining what everyone was doing and trying to relax and focus on the flight, when I heard a big BOOM followed by "FUDGE". Well, that's not exactly what I heard but you get the picture anyway. As I turned around, smoke was coming up from underneath the X-30. The chute bag and upper hatch was lying on the ground. Phil and Russell had "deer in the headlights" expressions on

(Continued on page 9)

(Continued from page 4)

LDRS audience watching, not to mention executives from our sponsor, The Discovery Channel. The cameras then trained on our group's crazy dream now sitting there on the pad. Too late to change anything now! The announcements began. The count started --- 10-9-8-7-6-5-4-3-2-1 ignition! -- Silence! It was so quiet you could hear someone whisper, "Come on baby." And then, WOW! She ignited and a laser-like bright red flame shot out about twelve or fifteen feet. She leaped off the pad and screamed into the sky like a lightweight ripping a hole in the sky! What a roar! What a flight! On and on. It was just awesome.

After going over 29,000 feet Aurora came down soft and gentle – not a scratch. Our only flaw in the flight was an early deployment of the main. Our post flight assessment is that some of the shock cord below the drogue tangled and somehow jerked the ARRD hard enough to make it release prematurely. However, it was of absolutely no consequence as Aurora magically landed only 1200 feet away from the pad! Geez – we had a thousand dollars worth of tracking equipment in the nose, including a brand new GPS system sending live telemetry of the rocket's position, and it came down right in front of us.

Aurora made history as the first successful "P" powered rocket at an LDRS event, and became the first large rocket to employ compressed carbon dioxide as a method to deploy the parachutes.

Team ExTreme members:

- Dan Stroud, Rocket designer and builder.
- Terry Stroud, Aerospace engineer, our math guru, computing guru, electronics expert, and also our 3D animation illustrator.
- Pat Gordzelik, Motor and propellant designer, logistics, and ramrod.
- Laurretta Gordzelik - "Rhetta," Propellant construction, organization, chief caretaker of the group, and thankfully, medicinal expertise.
- Ed Jacoby, Propellant construction, igniter expert and new recruit to carbon fiber construction.
- Michael Williams, "Candyman," Propellant construction, muscleman, and new recruit to carbon fiber construction.
- Chris Mealer, Propellant construction, also new recruit to carbon fiber construction.

Also: thanks to:

Jeff Glenn, Our checklist guy and a great new rocketeer who also certified while there.
 Dan Denardo, Mr. fitness, body builder and our own camera guy.
 John Johnsey, Builder of the beautiful NASA MD2-F1 lifting body on display at LDRS.
 Jimmy Franz, Our super-ace machinist who helped us create the CO2 system.
 Brad Gibbons, Creator of the much-appreciated long-distance wireless ignition system.
 Many thanks to the folks at Kloudbusters.

Also many many thanks to the gang at First TV Productions, especially to Jon Taylor and Jason Sands.
 And to our wonderful sponsors, The Discovery Channel, ScoreCube, National Switchgear and VideoTex, we say, thank you so much for taking the ride with us.



Team X-30 at LDRS

By Dave Schaefer

There was no doubt that we would be flying the X-30 at LDRS 22 in Argonia Kansas this year. With all of the research we had done, and the completion of the successful flight at NTHP last year, our project had matured. The only changes we were planning, would be using a Hypertek L970 Hybrid motor, which would actually simplify the c/g shift from the fuel burn. Additionally, going from 3500ns to 5000ns would give us a nice increase in altitude. We were ready.

Early in June, I received an E-mail from the Kloud Busters, inquiring if I would mind if they gave out my phone number to the Discovery Channel. Sure, no problem I responded. This was the first time that I learned that the DSC would be coming to LDRS. About a week later, I got a call from Karen from the DSC and we visited on the phone for about an hour, on all aspects of the X-30, as well as some personal information on the team members. Wow, this is cool, we're going to be on TV! Over the next few weeks I got several more calls from the DSC. They needed more information and more video. At my suggestion, I had them contact Tony Huet to film the things they wanted.

While Bryan Nelson and I were concentrating on getting the X-30 ready to fly, Phil Eaton, Russell Blink and Tommy Bishop worked hard on getting the launch pad ready. Getting the pad properly set up for the X-30 with the hybrid motor was no simple task.

Phil's wife Robin was busy making all the arrangements for the team to stay right in Argonia. She did an amazing job at securing our accommodations with some absolutely delightful folks right in town. Robin took great care of the group during the launch. In addition to providing us with our accommodations, Robin handled all of the meals and set up our social engagements as well. This allowed the team to concentrate on the upcoming flight. We could have not pulled this off without all her help! While Tim Sapp generously donated the Hypertek motor that we would be using, none of us had ever flown the Hypertek hybrid before. So I put a call for help out on the listserv used by the NAR L3 certification committee to enlist some help. Fortunately, I got lots of offers from some very experienced Hypertek flyers, so I was satisfied that we had the motor issues covered.

Just two days before leaving for LDRS, I got another call from the DSC. They wanted to know what day we were going to fly and what time we had in mind for the launch of our project, as they were trying to put together their schedule for filming. I explained to them that we would need to go up late in the day, as this would put the sun behind the flight line

and out of my eyes. They requested that we delay our flight until Saturday afternoon, which was fine with us. I cautioned them, that while our team had our act together and would fly on time, most of the other groups would run notoriously behind schedule. Putting together a tight filming schedule during a launch would be a joke.

On Wednesday July 16th, Bryan and I loaded up my car and headed up to Argonia to set up camp. With all of the people in our group we would need a sizable area to set up. Arriving at the launch site, we discovered that our idea of setting up the night before the launch certainly was not an original one. All of the good spots were taken. To make matters worse, the dry, rough, plowed field did not offer a decent place to land the X-30. The large clods of dirt looked like the boulders on Mars. We would get some damage on touchdown for

(Continued on page 7)



(Continued from page 6)

sure.

Kloud Busters had left Rick VanVoorhis in charge and Rick went all out and got us what I would consider the best spot on the field! I know he took some heat for this, thank you Rick. Unfortunately, we would spend the next day and a half defending our turf, as we had roped off a lot of space for the entire group who had not yet arrived and would not show up until Friday morning. Aside from that we spent most of Thursday just enjoying the launch. Thursday was slow as many of the really cool stuff were waiting for the film crews to show up. The 108-degree heat and the wind keep the lines at the pads pretty short. On Friday, the rest of the team arrived and we started to be interviewed by the DSC. They came by several times to do numerous interviews with the team during the course of the day and then they talked me and Bryan into putting up a flight on my SR-71. It was quite windy on Friday afternoon as Bryan and I started to set up the Blackbird for the flight with our entourage of cameramen from the DSC in tow. Bryan was being very creative in using some smaller launch rods under the wings to keep my rocket from spinning around in the gusts. This is when the hot glue that Hobby Labs used to glue on the launch lug decided to let loose. Apparently, the glue was no match for the wind and the heat. Nice timing, I have flown this model for over two years and now, with the producers watching and cameras running this thing decides to let loose. How embarrassing! Man, I hope they don't show this on TV! One good thing that did happen on Friday was that I met Oscar Valiant. Oscar was in charge of all the Hypertek Hybrid operations at LDRS and he was going to help us with the X-30. With Oscar's expertise, all of the hybrid flights at LDRS went off very well, so I had nothing to worry about.

Saturday was a repeat of Friday. Hot and windy! The first project that the DSC was filming was planning to fly at 9:00am. However, it did not fly until 1:00pm throwing the whole filming schedule into a tizzy. It was obvious that our 2:00pm launch of the X-30 would be pushed back. Oscar came by to check out our motor installation and corrected any minor deficiencies we had. Now all we had to do was to wait for the film crew. Finally at about 5:30 we had the film crew show up. It was now our turn to show the world the results of our research and demonstrate the professionalism and competency of Team X-30! Well that was the plan anyway. We proudly marched off to the pads! In the waiting area we had one last big interview with the DSC.

When we got to the Hybrid pad, I had expected to see Oscar. That's when I found out that Oscar had succumbed to the heat and was at the emergency room. How inconsiderate! Couldn't he have waited until after our flight to pass out! This caught the Kloud Busters off guard. However, they did provide a replacement for Oscar who unfortunately did not have Oscar's level of experience. To further complicate things, the new hybrid pad manager did not have the FRS radio communications with the LCO table. So this is why I hadn't seen a Hybrid fly in the last hour, I thought to myself. Then I saw someone running towards us. It was Rick Boyette from Tripoli Palm Beach. While Rick hadn't flown the larger Hyperteks he had experience with the smaller ones, so at that point he became our motor guru. So, we set the massive X-30 up on the pad, took some last minute pictures, and took our positions for the flight. The Nitrous fill went well, from my perspective anyway, and just when it was time to fly the pad manager vented off all our N2O. What's going on I inquired to Rick? Rick who was a little upset, told me just about the time we had a complete fill, the new pad manger saw a Nitrous leak at the pad and signaled the vent. He added that the leak wouldn't have affected the flight at all, and in his opinion, they should have flown it. No problem, I thought to myself, we'll just tighten up the nut



(Continued on page 8)