SNOAR NEWS

September/
October/
November
1987

THE LEADER IN SPACEMODELING

"HEAVY MEDAL MADNESS"

Ken Mizoi wins Bronze!

EXCLUSIVE!

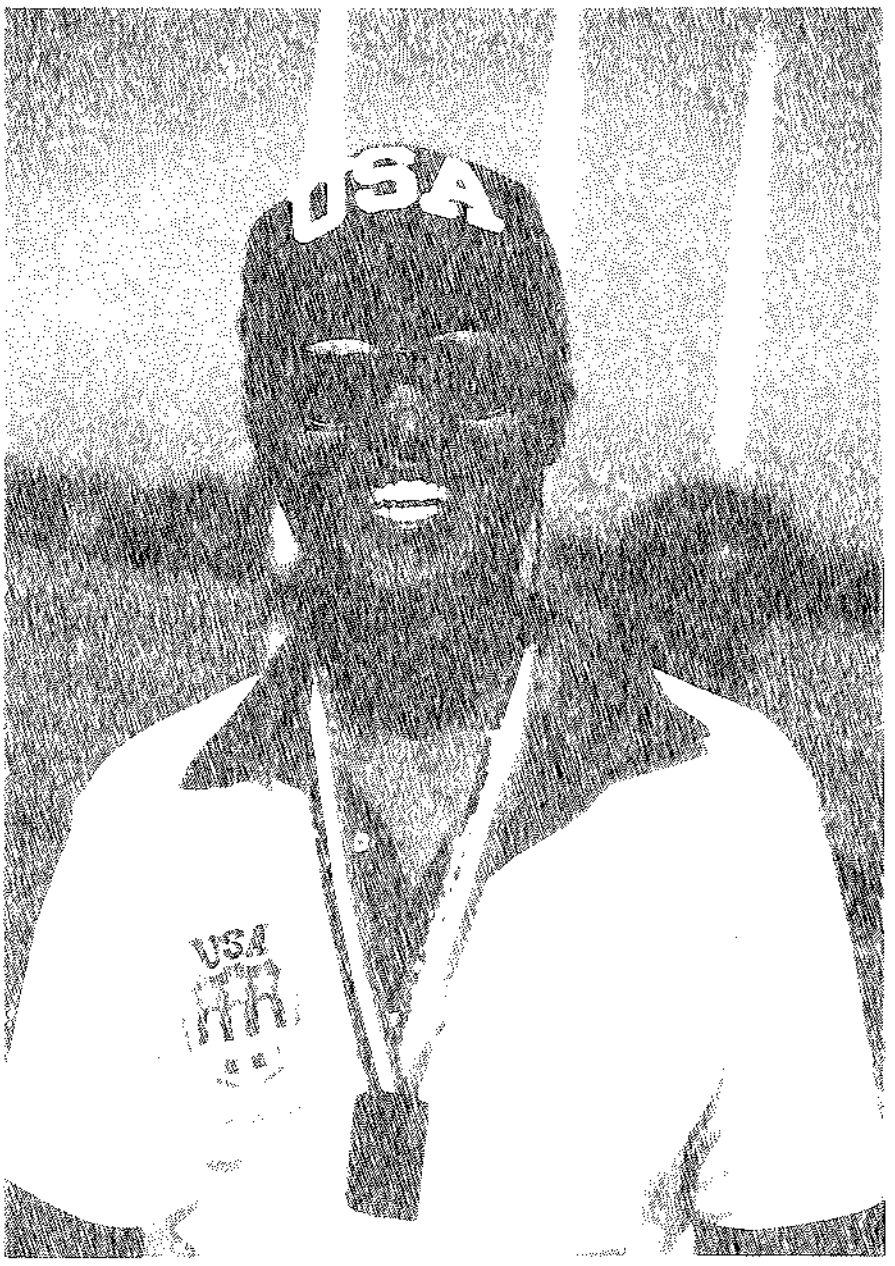
1987
World
Spacemodeling
Championships
Report

NARAM-29
Coverage

Modelnet
Conference

The LDRS
Story

The Latest
on
Enertek



SNOAR NEWS

THE LEADER IN SPACEMODELING

ROCKETRY'S LONGEST PUBLISHING, MOST CONTROVERSIAL NEWSLETTER

VOLUME XIII, NUMBER 5

QUOTABLE

"Gee! I've never launched an "N" before!"
Chris Pearson, commenting on the Santa Maria boilerplate flight.

COVER STORY:

Happiness is a World Championships Medal!

Ken Mizoi is all smiles after the award ceremony for S3A: A Parachute Duration, where he earned a bronze medal. This issue features complete World Championships results, as well as coverage of NAR-AM-29 and LDRS-6. Cover photo by Robyn Steele.

CREDITS:

This issue is being written on scraps of toilet paper in a Yugoslavian "Hotel/Prison Camp" by: Matt Steele, 13017 Branscomb Rd, Huntsville, AL 35803; **They took away her camera:** Robyn Palmer Steele; **The Crowd Favorite (being held hostage in hopes of negotiating an appearance by Garry Shandling):** George Gassaway; **Imprisoned for giving Tito the bird:** Chris Pearson; **Convicted of "Treasonous Humor":** Mr. Maddog (Tony Williams); **The Man Behind the Arrests:** J. Pat Miller; **Luckily, she escaped:** Mary Roberts; **People who should not open thier doors to strange KGB, CIA or FBI agents:** Dan Kafun, Randy Kelling, Vince Huegele, Terry "Yugo Swan" Lee, Chas Russell, Chris Johnston, Jack Kobzeff, Mister Twister, Moose, Andy Robertson, Bob Ferrante, Bob Kaplow, Heidi Smakula, Brad Bowers, Randy Redd, Jordan Pavlov, Sammy McNully, The Honorable Wasco Schafter, J.D. McNeil, and Robert Anderson. **People who should open their doors to the authorities:** Jerry Irvine

Help! They won't let me out of here! I keep asking for my passport, and they just laugh.

"Passport? What passport?" Ah, Hahahaha, you Americans are so funny!" Hahahaha!

Don't Criticize in Public

After the recent SNOAR NEWS editorial on Mark Bundick's behavior, I got a nice little letter from Pat Miller. It basically said that "We don't want you criticizing NAR volunteers in newsletters." Well, I respect your request, Mr. Miller, but it just isn't going to be that way. Volunteers are only useful to the organization if they are doing a good, *(continued on page 34)*

IMPORTANT STUFF

SNOAR NEWS is published 6 times a year by the nation's most outrageous club, SNOAR, NAR section #337. Subscription price is a mere $10.00. Make your checks payable to Matt Steele, and make them out today!

Any resemblance to any persons or cartoon characters, whether dead or alive in this publication is just crap. Sue AVI or US Rockets instead, OK?

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Yugoslavia '87

The Seventh World Spacemodeling Championships

By:
George Gassaway, Matt Steele, and Robyn Steele

Matt Steele looks for signs of thermals while George Gassaway pilots his "Synchronicity III" radio controled rocket glider. (All photos in this article by Robyn Steele, Matt Steele, and George Gassaway)

And then there were three...

There was a considerable amount of tension in the calm evening air, as the crowd's attention was drawn to the three flyers left in S8E, E powered radio controlled rocket glider. There were just three flyers left after three regular rounds and two intense flyoffs rounds. A Bulgarian, a Russian, and an American were left to fight it out for the three medals. Phil Barnes, the two time defending world champion, was long gone, having hit massive sink in Round two. Jordan Palov, the silver medal winner in 1985, fell out in the first round suffering a wing strip. The Czechs, who had composite motors as good as the US Team's Aerotech E6 motors, were standing on the sidelines, with their best two flyers eliminated from the flyoffs. The maximum time for this round, the 6th Round, was an agonizingly long ten minutes. And, as the sun began to set behind the Yugoslavian cornfields, there was precious little lift to help make those maxes. Each flyer would have to perform flawlessly in order to make the ten minute time.

Almost as soon as the gun sounded the start of the fifteen minute round, the Bulgarian was off the pad. Next, the USA's George Gassaway followed with a straight up, perfect boost. Both birds began a slow circle, moving over a soybean field that had provided a slight amount of lift in the previous round. Meanwhile, as the clock ticked off the seconds, the Russian was prepping his piston launched, flopwing glider furiously. Some in the crowd wondered whether he would get off the ground in time. With less than three

minutes to go in the round, the Russian model popped off its piston and soared into the air, spreading its wings at apogee. The Bulgarian team fidgets nervously, as the Bulgarian model obviously is not gliding as well as the American or Russian model. All three gliders are now soaring in the same circle, trying to squeeze out the last bit of energy that they can. The Bulgarian, dangerously close to the ground, comes in over the range area for his landing.... and makes the ten minute max with only 12 seconds to spare! George, aware that the Bulgarian was close to missing, concentrates all of his efforts to insure a max, preferring to let the model land far downrange if necessary. George makes the max still about 100 feet in the air! He gently brings the model back to a short, but soft landing at the edge of the range.

All eyes are now on the Russian. His late liftoff seems to have hurt his chances for a max, despite the fact that the mylar covered wings seem to glide through the air quite effortlessly. At long last, he circles away from the bean field and makes a landing approach. As he comes over the range, the Russian team counts down the time.... and the Russian maxes with less than three seconds to spare!

Thus set the stage for the final flyoff round in S8E to determine the world champion. That round would be flown the following day, due to darkness. Still, the crowd had been treated to an excellent exhibition of talent and technology that left no mistake that all three modelers were capable of winning the gold medal.

Background

August 1986, immediately following NARAM-28, were the flyoffs to choose the 1987 US Team. When the selection process ended, a very good group of fliers made the team and prospects for success seemed very bright. Team Manager Dr. Gerald Gregorek and Team Coach Art Rose named previous individual medal winners Ken Mizol, Phil Barnes, Matt Steele to the team, as well as past US team members George Gassaway, Bob Biedron, Jeff Vincent, and Dan Winings. The 1987 US Team also included first time International competitors Harry Rose, Chuck Weiss, George Riebeschl, and Frank McMullen.

A lot of work was accomplished during the year to work out the designs, techniques, and special details required by the international FAI rules. And for the first time ever, the US Team had custom tailored composite motors for all the events they were needed in.

The special composite micro motors were little over 10 mm in diameter, about 40mm long A's weighing 4 grams and 60mm long B's weighing about 7 grams. These were intended for A Parachute Duration, A Streamer Duration, B Altitude, B Boost Glide, and C Scale Altitude. The thrust profiles of the motors were unlike those seen for similar A and B motors, a burn time of about .7 second with a high thrust that would make the models disappear instantly off the launchers. These special motors were possible due to the efforts of HO Hobbies and Art Rose, as well as support from several team members and other interested people. *(They also cost team members about $12 per motor,*

Left:

The top Russian, American, and Bulgarian S8E flyers with their respective gliders. All three modelers made the ten minute max in the third flyoff round. Note that while the wing and stab dimensions are all roughly the same size, each modeler had a radically different strategy to get to this point.

which will explain why they will never be certified for NAR contest use.)

FAI rules add extra limitations to most events. For all events except for scale, models must be at least 18mm (i.e. BT-20) in diameter for at least 50% of the model length (although scale altitude only requires 20% for the model to be at least 18mm). This leads to unusual designs, particularly the special boattailed fiberglass body tubes developed for Parachute and Streamer models.

In FAI flying, duration events are flown in a series of rounds with maximum flight times. The maximum time, or "max" is increased one minute for each succeeding round. There are three rounds scheduled, and times are summed to determine the winner. Should two or more fliers be tied after three rounds with a perfect score of maxes, which almost always happens at the World Championship level, then they go into additional "flyoff" rounds to determine the winner. Not only is flying skill important, but so is recovery, because each flier is only allowed two models to fly the first three rounds and is allowed to use a third model for the flyoff rounds. Often the outcome is determined simply by who still has models left to fly when others lose theirs. In the altitude events the fliers are allowed two models to make three flights, with the best flight out of the three counting. However, in Scale Altitude the flier only has his one model to use, and should it be lost or damaged beyond repair, no more flights will be possible.

The Yugoslavian Adventure

As in past competitions, the team gathered at JFK International Airport for the trip overseas. Gliding on the wings of Pan Am, the team changed planes in Frankfurt, West Germany before arriving in Belgrade, Yugoslavia. From there the team was whisked off to the somewhat archaic Hotel Slavija. Most of the team then promptly went to bed, trying to recover from 26 straight hours in the air, and a six to eight hour time change.

Belgrade is a very dreary city. All the buildings are gray, dark and run down. The people all dress in dark clothes. One can instantly spot the pre-World War II buildings because the architecture is at least a little imaginative, with gargoyles and ornate entrances. Most of the post war buildings are pre-cast concrete that starts to look run down within a year after construction. There are a lot of concrete block apartments with laundry strung out of most of the windows. We saw many windowboxes with flowers, but no landscaping at all around the apartments. There was no grass anywhere except in a few of the parks. Everywhere else it was just weeds. Outside the city, the houses and barns were usually within 10 feet of each other and it was much poorer and definitely less "cosmopolitan". The people looked and dressed like peasants and the houses were tiny and run down- in some cases falling down. Some had glass in the windows, some didn't.

The field for the competition was very poor, not quite what had been described when Yugoslavia applied to host the event 2 years ago. The "Sport Air-

Left:

The US Team marches "Olympic Style" into the Belgrade soccer stadium. The reception given the USA was nothing short of phenomenal. The Soviet team was not nearly as popular, as evidenced by their "plain clothes" approach into the stadium, following the US team. The Soviets did have uniforms for the contest, however.

field" was used mainly by crop dusting planes and a few light planes used for training, as well as a site for parachuting clubs. The field was an all grass airstrip. The pre-meet information we had described the field as being surrounded by "low-growing cultures". With the 8-10 foot tall CORN surrounding the runways, we had to wonder what HIGH growing cultures would be. Fortunately for most of the week the wind didn't blow in from the adjacent meat processing plant, which had a bad enough smell to help rid a person of any Yugoslav breakfast they really didn't want to digest anyway. Unfortunately, the U.S. recovery crew did have to venture into such very bad areas. Beyond the corn were other challenging areas, including some large ditches or moats with green water which was next to impossible to cross, without ending up waist deep in the muck.

All of this was in high contrast with the 1985 Model Airplane Free Flight World Championships Yugoslavia hosted. Held in Livno, the site featured a fantastic recovery area and nearly all teams were very happy with how well the free flight world championships were held. Apparently due to political influences and the desire to have Belgrade selected for a future Summer Olympics, the World Spacemodeling Championships were relocated to Belgrade. This definitely had an adverse effect on the quality of competition.

Contest organization was also extremely poor. Nearly all contestants (105 team members, plus managers, supporters, and others) had to crowd aboard two buses that left for the field at 7:30 AM. The buses were terribly overcrowded, and several people had to stand up for the entire 30 minute ride.

There were some serious matters to protest with the organizers, such as the timers assigned to us losing sight of a maxing PD model early because they did not use binoculars, but we never won any such protests. With the Yugoslavs failing to provide any interpreters for any of the teams, small misunderstandings often became full blown confrontations. All of the countries seemed to be having the same problem.

The processing of engines was a typical example of the contest organizers' poor planning and management. All engines were supposed to be static tested and processed on Tuesday. The US E6 engines for Rocket Glide were tested on Tuesday (although the motors were not needed for several days), but the Czech and US engines for Parachute and Streamer were not tested until Wednesday morning, delaying the start of the meet!

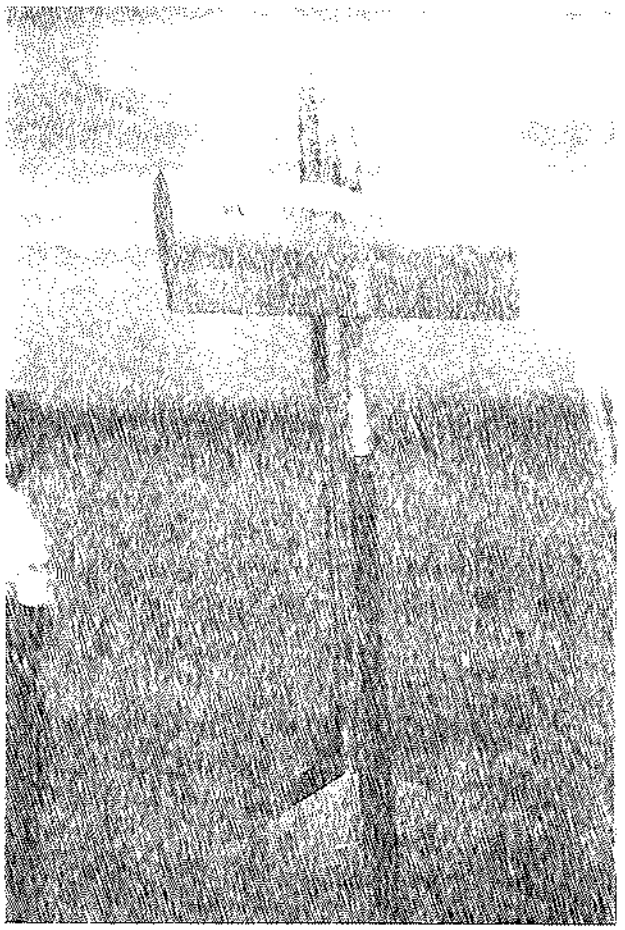
Practice Day

Tuesday, September 1, was designated the official Practice day. Actually, the previous Sunday half of the team went out to the field as the R/G team put in some practice flights and some recovery crew people scouted out the rotten field. By Tuesday, the launch site was mostly set up with a few bugs to be worked out. Each country was assigned their own tent, set up by the army, including a table and a few chairs. There was a water truck on the field, and box lunches were provided by Yugoslavia's national airline, JAT (actual airline food). There was theoretically a restroom, which was being built just for the meet, but it was located at the hangar area about a mile away and was never completed before we left. It may be done as you read this....then again, it may not.

Above: Gerry Gregorek, Bob Biedron, and Janet Rose discuss strategy during the team practice.

The actual launch setup was good. There were 13 launch alleys set up in a straight line, with each launch area rectangular in shape. The launcher end was left open (not roped off) for easy access when multiple launchers were set up. This worked out quite well since spectators were not allowed anywhere near the "open-ended" side of the launch alley.

As for practice flying, the winds were low and ther-



Above: A close up look at the Soviet S8E flop wing rocket glider. These birds didn't boost too hot, but sure did glide nice.

mals all around. Frank McMullin put up a streamer flight or two, as did the Parachute team with a few models. On these flights most of the US team members went downwind to practice recovery crew methods, to work out procedures and find out what needed to be worked on. About 75% of all the practice flights were R/C R/G's. The Russians had two things never before seen in R/C R/G: flop-wings and piston launchers. Their black powder "F11.8" type of motors probably lacked any ignition spike, so piston gave the extra boost needed to clear the pad reliably. The flop-wings had hardly any boost roll, and due to the design, had less pitching due to little or no offset thrust and the symmetrical airfoil with the wing folded. Due to the relatively higher weight of their models and/or a lower thrust than the US E6, the birds climbed slowly to altitude then with the application of down elevator the wings popped open. The models seemed to have 40-44" span and were apparently aluminum skin covered like Russian Free Flight Power models, so the wings must have been fairly lightweight for their size. The models did have a very good glide slope. The Czechs were test flying their new 2 channel radio gear and their own composite motor that is similar in thrust and total impulse to the Aerotech E6. So, this time around the E6 was not going to give the US Team a big edge over everyone.

George Gassaway and George Reibeseh had several good R/C practice flights as did Phil Barnes, using D12's for trim checks and some F6's for full boosts. Part of the R/C practice flying involved checking out any new warps and getting the models trimmed out, and part of it involved getting some experience with the thermals of Yugoslavia and that field in particular. There was a bad note when Phil tried out his back-up model, only to have it go unstable in yaw on launch and damage itself severely from hitting the ground. The accident was due to the rudder being broken before launch but not being detected. Nearly anyone else would have written it off, but by Saturday Phil had it repaired with little loss of performance if indeed he ever needed to use that model.

Tuesday afternoon were the opening ceremonies, held far from the hotel at a soccer field (what would be our equivalent of a high school football field). We marched in like they do at the Olympics, with a young girl or boy in folk costume carrying a sign in front of each country and marched around the stadium. The crowd just roared when the US Team marched in. The only team that got a bigger response were the home town Yugoslavs. The Team stood in the center of the soccer field for about 20 minutes while speeches were made in Yugoslavian welcoming us (at least that's what we thought) Then, we went into the stands to sit down to watch the rest of the ceremonies, but didn't see much due to all of the kids crowding in wanting our caps and jackets and just about anything. Literally we were mobbed! Every kid in that stadium wanted our ball caps.The kids weren't after the Russians' stuff. Just "Can I have your hat?" in passable English. We finally took off the hats and hid them under our jackets and even that didn't help much. Finally a couple of teachers came over with switches and made the kids go back to their seats. But, by then, it was too late to see any of the program. After the ceremonies were over, we were mobbed again while walking to the buses. Bob Beldron had the U.S. Flag on his jacket half-ripped off, and at least two team members had their caps stolen. Once we got on the bus, the kids stood outside and knocked on the windows until the bus finally left. It was a fantastic welcome, but a little overwhelming.

The Seventh World Spacemodeling Championships was the largest one held to date, with 21 coun-

tries represented, and 105 competitors. Besides the United States, the following countries sent teams: USSR, Czechoslovakia, Poland, Bulgaria, Great Britain, West Germany, Romania, Switzerland, Spain, and the host Yugoslavia. France sent two modelers as observers, and they spent a good deal of their time with the US Team.

S3A (A Parachute Duration)

Parachute Duration was the first event flown. Max times in this event were 240/300/360 seconds for successive rounds. Flying for the US in this event were Ken Mizoi, Dan Winings, and Chuck Weiss. Recovering models were just about all available US Team members, plus Matt Steele's wife Robyn being "drafted" much to her surprise. The weather was good, light winds in a consistent direction, with some thermal activity to be found. Round 1 started off well, as Ken Mizoi and Chuck Weiss maxed, but then Dan Winings' model failed to open its chute. Chuck's model landed deep inside one of the many rows of 12-15 foot high corn. Out of 34 fliers, 21 maxed Round 1.

In Round 2, Mizoi and Winings maxed. Chuck Weiss was going to max when the timers lost sight of it at 270 seconds without using binoculars. The US Team protested, and all timers were instructed to use binoculars from that point on, but the host Yugoslavs refused to give Chuck a max, despite the fact one of the timers clearly stated he lost the model in the sun, still going up. This was typical of the type of problems we encountered.

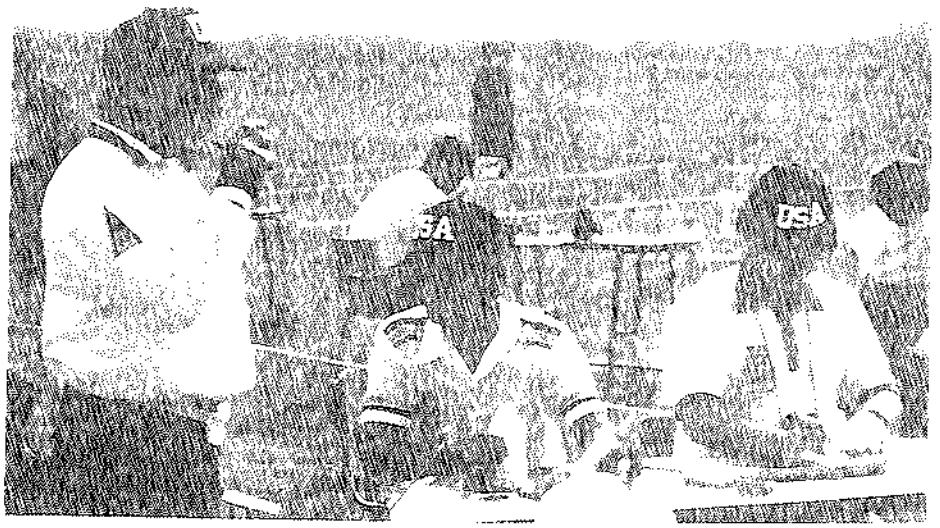
In Round 3, Mizoi caught good air and maxed, putting him in the flyoffs for the second world championships in a row. Winings had a good flight but was DQ'ed when the nose cone of his model was seen to land (it had fallen off). Funny that someone could see a nose cone fall off but not a maxing PD flight. Weiss was out of models, so all he could do was stand around and hope that one of his models would appear from the corn. It never did, and Chuck was frustrated at knowing his models had performed well, but that circumstances prevailed against him. Mizoi was able to fly Round 3 only because a Czech recovery person found his first model from Round one. The only PD model the US recovery crew got was Ken's Round 3 flight.

Ken was among six fliers who made the flyoffs. He maxed Round 4's 420 second time, although it was close halfway through. The model finally latched into a thermal, and pulled out the max for Ken. All five other modelers also maxed, putting the heat on the recovery team to get a model back.

Round 5 was held late in the day after Streamer Duration. The air was calm, but there was lift to be found. Ken also maxed that round (480 seconds), as did all the others! Ken, along with three other modelers, was out of models! Only Andrei Jankov of Bulgaria and Ion Catargiu of Romania were able to field models in Round 6.

In Round 6, Cartagiu had a flight of only 319 to take the silver medal, while Jankov went on to win the gold in style with a 540 second max (that's 9 minutes!). Ken Mizoi was among the four people to take the bronze medal due to the 4-way tie. Among teams, Bulgaria came in first with 2460 seconds, followed by Czechoslovakia in second with 2393, and Russia third with 2325. The US Team finished a disappointing ninth place with 1710 seconds.

US Team Individual Places:
3) Ken Mizoi, 1800 (240/300/360/420/480/000)
27) Chuck Weiss, 510 (240/270/000)
34) Dan Winings, 300 (000/300/000)



Left:

Art Rose, who was invaluable as the team coach, checks out the competition, while Ken Mizoi and Chuck Weiss prep for the first round in parachute duration. Both Ken and Chuck maxed.

S6A (A Streamer Duration)

The max times were 120/180/240 seconds for each round in A Streamer Duration. Fliers for the US Team were Art Rose, Harry Rose, and Frank McMullin. Frank had put in more practice than anyone on the US Team, making a series of over 150 practice flights in the previous year. This event, however, is one determined as much by the ability to find thermals as it is to build light, high performance models. Things started out promising, Art Rose maxed his first flight, but Harry Rose's model went into sink at first, before hitting lift late to land at 118 seconds, just 2 seconds short of maxing. Frank McMullin's bird tipped off slightly at launch, possibly missing a thermal, and got dumped into down air for a short flight of 99 seconds. George Cassaway was watching thermal streamer poles and a digital thermometer for clues of thermal activity to indicate good times for launch. Clues which had worked well during Parachute duration earlier were not working out as well later in the day. Luckily, recovery was not as big a problem for this event as it was for PD. In Round 1, 20 fliers managed to make the 120 second max.

In Round 2, Harry got a decent flight of 142 seconds. Air did not look good and time was running short, so Art launched into what seemed to be poor or average air, only to fly off into a booming thermal. The same was true for Frank's model, as the air did not seem good, but it also maxed in a boomer. Art had back to back maxes, and looked good.

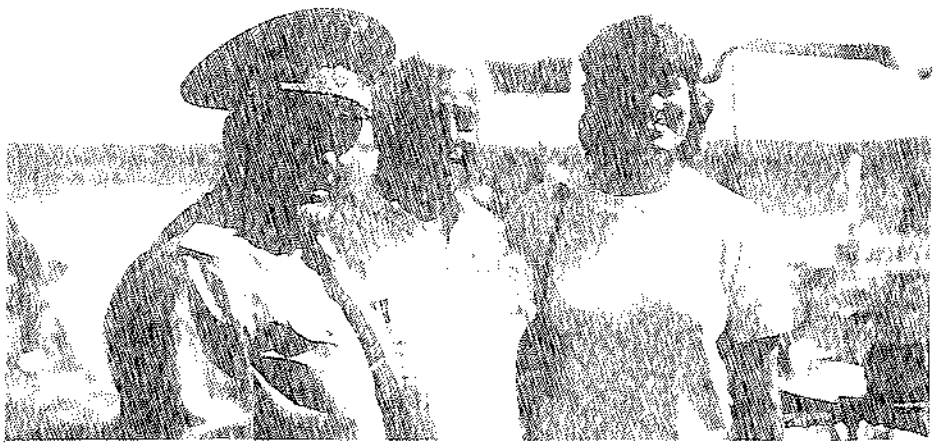
In Round 3, both Harry Rose and Frank McMullin had flights of 124 seconds. Art, trying to hit another booming thermal, launched into down air that surrounds a thermal and was down in only 100 seconds - far short of the 240 second max.

There were actually 6 maxes in Round 3, but only three of those were by people who also maxed the first two rounds. Those three only needed only flyoff Round (Round 4), which resulted in Djulijan Spasov of Bulgaria winning the gold medal with 242 seconds. Yuri Firsov of Russia took the silver medal with 220 seconds, and Atanas Marinov of Bulgaria took the bronze with 186 seconds in the flyoff Round. The team standings saw Bulgaria take first with 1560 seconds, Russia second with 1485, and Czechoslovakia third with 1441. The US Team took 5th with a total of 1187 seconds.

US Team Individual Places:
16) Frank McMullin, 403 (99/180/124)
17) Art Rose, 400 (120/240/100)
19) Harry Rose, 384 (118/142/124)

The Astronaut and the Cosmonaut

Late Wednesday afternoon was very unusual. The Russians sent a cosmonaut to be on hand for the contest, particularly on Sunday during scale. NASA, in return, sent an astronaut, Shannon Lucid, who will be a shuttle mission specialist. The U.S ambassador scheduled a reception in our honor at the U.S Embassy. This was a great thing to do, but would have been far better Monday or Tuesday night, before the contest flying started.



Left:

The Soviet Cosmonaut, the Contest (Dis) Organizer, and NASA Payload Specialist Shannon Lucid all posed for photographers on the flying field. It was interesting to see how much priority the Soviets placed on their spacemodeling team.

for reasons known only to the US Embassy, they scheduled it for Wednesday starting at 6 PM. Since Ken was "fortunate" enough to run out of parachute models, the U.S. team was through by little after 6 PM, so we loaded up into three embassy supplied vehicles (bullet-proof vans and a station wagon) and went on to the embassy for the reception. Phil Barnes had a truly World-class rocketeer look, having gone knee-deep in slime and hip deep in muck chasing PD models. There were a few dozen well-dressed people waiting for us at the outdoor reception, and in marches the US Team, looking like most rocketeers do after a long day at the field. Amazingly, the guests seemed to understand and made us feel quite welcome.

S1A (B Altitude)

Since this event was saddled with the requirement that at least 50% of the model be at least 18 mm diameter, the main US Team strategy was to use staged models with 18mm first stages and micro 11mm diameter upper stages, using micro A's for both stages. That choice was even more complicated by the requirement that all stages use a recovery device, so first stages had to use an unusual arrangement to ignite the upper stage while the first stage motor contained a regular delay and ejection to deploy its own recovery system. Only the US and Bulgaria flew staged models, the other countries used single stage models - some using special long burn low thrust motors for the maximum efficiency.

Skies were clear, so there would be no serious tracking problems. Using a conservative strategy for the first flight, Matt Steele flew a single stage micro B6 bird to 612 meters. Jeff Vincent's staged model flew to 728 meters. Not being allowed to have motors until the beginning of each round added to the complexity and long prepping time of these models, so Chuck Weiss chose not to fly in order to launch early in Round 2.

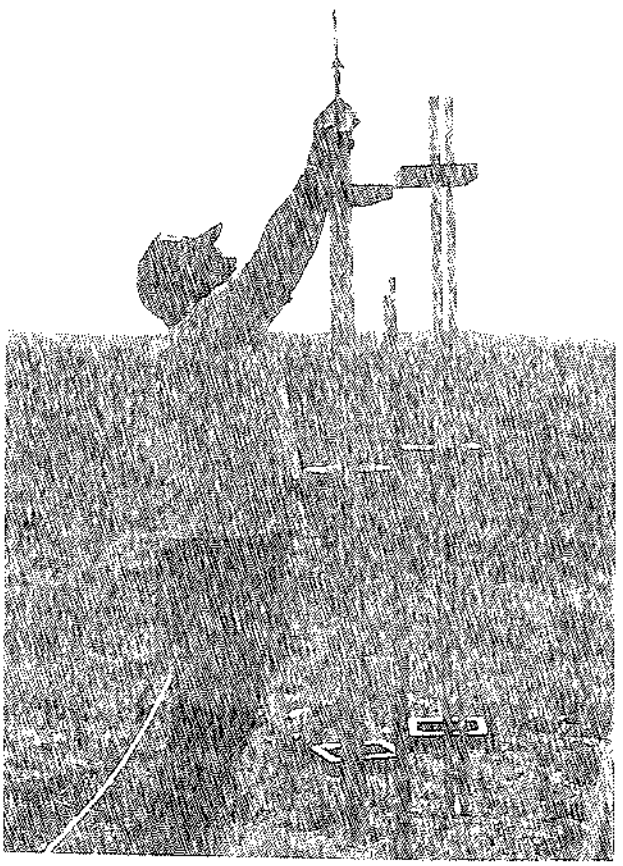
Chuck's staged model flew to about 662 meters in the second round, a bit below what a staged model was expected to achieve. Matt Steele went with 2 stage model, but it failed to stage, and core sampled in. Jeff Vincent had a great staged altitude flight, but it was DQ'ed because it failed to eject the streamer on the first stage. Needless to say, it was a frustrating round.

In Round 3, Matt's staged model was damaged beyond repair, so he took his 10" single stage model and cut 4-5" off of it to turn it into a minimum length "bullet bird". That model flew to an incredible 844 meters, 232 meters higher than the first flight! Jeff and Chuck had very successful staged flights, Chuck's final flight being his best at 721 meters.

It became clear early in Round 3 that the Yugoslav single stage models were flying very high, despite being 18mm in diameter. Their B motors burned for about almost 6 seconds, and were sending their models up well over 800 meters. When the flying ended, the Yugoslavia team won all three top places, with Marjan Cuden (948 meters), Bogo Stempihar (943 meters), and Miroslav Stancevic (881 meters) taking the gold, silver, and bronze medals respectively. Matt Steele came in 4th place with his final flight of 844 meters, and actually had beat all of the Yugoslavians except for one flight each. Jeff Vincent came in 8th with 728 meters and Chuck Weiss 9th with 721 meters. Naturally, the Yugoslav team won the gold medal, with a 2742 meter total. The US team took the silver medal with 2293 meters, followed by the Russians with 2181 meters.

US Team Individual Places:
4) Matt Steele, 844 (612/000/844)
8) Jeff Vincent, 728 (728/000/678)
9) Chuck Weiss, 721 (000/662/731)

Below: Matt Steele loads his two stage B altitude model into the tower. The model crashed when the upper stage failed to ignite.



S48 (B Boost Glide)

Max Times: 150/240/300 seconds in each successive round. All of the models for this event were flexwings. A recent rule change required that flexwing gliders had to weigh at least as much as the prepped booster rocket that carried them up, including engine weight. In the end, this new "Kuhn" rule did nothing to discourage the use of flexwing gliders, only to make them more complex and to open more avenues for possible cheating. The route the US team chose to meet the rule requirement was use an enlarged canard design with 28" long spars on the main wing. The main wing spars were hinged at the middle so that the 28" spars folded in half to be little more than 14" long. The entire flexwing could be folded into a 15" long package to fit inside the boat tailed BT-20 booster rockets. The large flex-wings carried the same wing loading as previous designs, but weighed about 20 grams, just a bit more than the 19-19.5 gram prepped mass of the booster with engine. No similar large or double-fold designs were used by other countries. Most made use of relatively small flex-wings with a higher wing loading which seemed to glide fairly well. One notable difference was a Russian model which rear-ejected out of its booster rocket, with the burned out motor casing mounted to the flex-wing. In this way, the glider obviously outweighed the booster at check-in, yet weighed significantly less in glide due to the loss of the burned propellant (very legal, and very clever).

The weather for the event was good, although the wind was enough to make the models drift fairly far. George Gassaway made the first U.S. flight, maxing easily but flying too long before dethermalizing. It landed far away in a tree but was recovered by Phil Barnes climbing some 60 feet up to get it!!! Harry Rose was up next. His model suffered some melted mylar at ejection, but more seriously, one of the double-fold elbow hinges got bent. Still, it glided OK and maxed, recovered by a Phil and a friendly Yugoslav cooperative worker from the roof of a huge grain elevator. Art Rose's model ejected and deployed without damage, but his model tumbled around after ejection. It finally pulled out into a glide and looked like it might have lift to max before sliding off again unstable to the ground for 133 seconds (apparently, there was a strange yaw interaction between the canard and main wing). In Round 1, 20 fliers maxed.

In Round 2, George's model missed a thermal and got caught in massive sink that put the model down at 141 seconds. Harry's #2 model ejected with the same damage as his first model suffered, but this time it was severe enough to spiral down for only 79 seconds. Art tried a new bird this time, only to spiral down due to half the canard getting stuck closed. At least everything worked out for the third round and all three maxed easily, but by then the only objective left was to achieve a better team standing.

Six fliers had perfect scores after three rounds to force flyoff rounds. By now it was late enough in the day that the winds were much calmer, leading to easier recovery and ironically enough even longer flights due to the air being more stable. Round 4 managed to eliminate just one flier, and Round 5 saw four fliers manage to make the 420 seconds max. Of those four, only three were able to fly in Round 6, as one flier had run out of models. Those three fliers went on to make the 480 second max of Round 6. By then it was too dark to fly another round. It was initially planned for a seventh round to be flown to decide the winner on Sunday, but it seems that all three fliers "ran out of models". Being all "out of models" and left tied, all three won the gold medal - Andrei Jankov of Bulgaria, Stefan Gerencer of Czechoslovakia, and Evgeny Chistov of Russia. No other medals were awarded - FAI policy being such that, for example, if you ended up behind the top three then you must be in 4th place, not second (this is similar to the Olympics method). Russia took the team gold with a total time of 2126 seconds, Czechoslovakia the silver with 1950, and Romania the bronze with 1834 seconds. The US Team ended up in 6th place with 1677 seconds.

US Team Individual Places:
11) George Gassaway, 621 (180/141/300)
16) Harry Rose, 559 (180/79/300)
21) Art Rose, 497 (133/64/300)

The Cultural Excursion

Here was a schedule change that really helped out. The "cultural excursion" was originally planned for Sunday, but the Opel factory we were to tour was closed on Sunday. So, the excursion was moved to Friday, and the flying was shifted back a day. The excursion was to several "interesting" places, like a foundry and a disco. *(LOTS of action at a Yugoslavian disco at 3 in the afternoon with 100 male rocketeers! Sure!)* The buses for the excursion were overcrowded (standing room only), and even though they had air conditioners (a rarity), they were never turned on. At least that's what we were told. Yes, the US TEAM survived by NOT going at all, instead catching 10-12 hours of sleep, and walking around beautiful Belgrade. By this point most team members were very tired from the jet lag, different food, and long days with a lack of sleep, so this was a badly needed opportunity to get recharged.

S5C (C Scale Altitude)

As in Altitude, the US Team strategy in this event was to fly staged models. Art Rose, Jeff Vincent, and Dan Winings chose to fly Nixe-Tomahawks, while Matt Steele's choice was the Australian Aeolus. Art, having won the event in 1985, was entered as defending champion and was not flying for the US Team. These models were incredibly small, particularly to be powered by staged micro B motors.

Art Rose led static with 694 points, with Jeff Vincent and a Czech, Jan Kotuha, tied for 2nd with 660. Dan Winings and Matt Steele both had scores in the low 500's, but could move up quickly due to the altitude potential of over 1000 meters. Art chose not to fly at all, saying his goal was to win static and not keep US Team members from getting medals. Art was also mentally and physically tired by then, despite the Friday off. But, had Art known what was looming ahead, he might have decided to fly after all.

Prepping these models was quite difficult, yet the Yugoslavs refused to let the US Team use the table they had prepped the altitude models on. They simply said, "Put a motor in your model and go fly it", but it just wasn't that simple! Matt's Aeolus took off with some tipoff as it left the tower, and was never heard to stage. The first stage was found, but with one fin missing. The upper stage was never found. No altitude score - and no more flights. Dan Winings' Nike-Tomahawk went wild out of the tower, as though unstable, hit the ground and staged, smashing itself. No altitude score - and no more flights.

Jeff Vincent was slowly prepping his bird and gave up flying Round 1, instead flying in Round 2. It flew well, but the first stage failed to deploy a streamer and was DQ'ed. It had been tracked to a very high altitude. Round 3 was the last try. This time the first stage worked perfectly and the model was tracked to about 1000 meters, which would easily win. But, the second stage lost its streamer and so rather than a gold medal, Jeff got a zero altitude score. The strategy the team chose was high-risk with a big payoff if everything worked, but if something went wrong it could go very wrong. In this case, if anything could go wrong, it did.

Only one other flier chose to use a staged model, with everyone else used single stage models. Jan Kotuha, who had been tied for 2nd in static, went on to win the gold medal with 1400 points, with a flight of 740 meters. Russians Sergei Ilyin and Yuri Firsov took the Silver and Bronze medals, respectively, with scores of 1384 (785 meters) and 1353 (772 meters) with the two highest official flights of the event. The team gold went to Russia with with 4005 points, Czechoslovakia the silver with 3879 points, and Poland the bronze medal with 3582 points.

US Team Individual Places:
20) Art Rose, 694
21) Jeff Vincent, 660
23) Dan Winings, 508
24) Matt Steele, 502

Left:

The US Scale Altitude team of Jeff Vincent (Nike Tomahawk), Dan Winings (Nike Tomahawk), and Matt Steele (Aeolus). Due to a combination of factors, the US scale altitude team missed out on winning a medal in this event for the first time since 1976.

Below: George Gassaway with his "Synchronicity III" radio controlled rocket gliders. RC gear was Cannon Super Micro servos and receiver, with a Futaba transmitter.

S8E (E R/C R/G)

Maxes in this event: 300/360/420 seconds. This was one event the US team was favored to do well in, due to the success in 1983 and 1985, the Aerotech E6, and Cannon R/C micro radio equipment as light as anyone makes. However, this was the first time that the Rocket Glide event was an officially recognized world championship event, and a lot of countries improved very much. The Czechs had new composite E motors that seemed to be close to the E6, as well as two channel micro gear. The Russian motor was hard to evaluate visually, but did the job of putting up their relatively heavy flop-wing models high enough to make use of their good glide sink rate. The Poles were also much improved, with decent motors and slightly heavy, but clean models. In other words, this was going to be tough and probably the most competitive event.

The members of the US team used models that differed somewhat in size and characteristics of boost and glide. Phil Barnes, winner of this event in 1983 and 1985, once again used the Dark Star 5 design. His Dark Star-5 had a wing area of 132 sq in, boost mass of about 195 grams, and being relatively small it boosted significantly higher than any other model. His model could do well in nearly any type of flying weather. George Reibeseh1 created an enlarged version of that design, called the Dark Star 160 due to the wing area of 160 sq in. His model weighed more, about 220-230 grams. It boosted high, though not as high as Phil's, around 1000 feet. Being a bit heavy, it could handle windy weather well, but would need to find some lift to make the longer maxes. George Gassaway used his Synchronicity design, a relatively large model with a wing area of 180 sq in. Combined with a boost mass of about 200 grams, his model had a good glide to make up for a lower boost than Phil or George Reibeseh1, intended to do well in light lift but would have had trouble in high winds.

Round 1 (300 seconds): The sky was mostly clear, winds were low, and thermals were around. Phil Barnes was first off, and he maxed easily. George Gassaway was up next, though the last half of the boost he got into trouble, leaving the model with a poor altitude. Matt Steele, George's regular flying partner, spotted other airborne models and helped guide George into an area of lift which led to an easy max. Matt also provided some similar spotting for George Reibeseh1 and Phil Barnes. George Reibeseh1 flew last, and found plenty of lift to max.

The US Team was in great shape so far by all members maxing, but it turned out that round one was all or nothing - everyone maxed it except for two fliers who had suffered crashes. A real shocker was Jordan Pavlov of Bulgaria, Silver medalist from 1985, losing a winglip panel on boost, resulting in a spiral crash. Arthur Hanziker of Switzerland, using Aerotech E6's bought in the US, had an unusual destruction of his primary model. At ignition, the E6 thrust spike overstressed the whole model, and the wings fell off (left wing, right wing), plus the fuselage also broke, all from just the acceleration of the motor. The engine pod came off and fluttered around the launch area for 7 seconds. That was apparently his first use of an E6, and he did not know about the severe spike. Ironically, both Hunziker and Pavlov went on to max the next two rounds with their back-up models, but they were out of contention for a medal.

Round 2 (360 seconds): Gassaway was ready to fly first, so he went up, found lift, and maxed without trouble. It was notable that some models were going up in groups and when someone was in lift other models would steer into the same area to fly in the lift. Then

would steer into the same area to fly in the lift. Then Phil Barnes went up. After 2-3 minutes, Phil realized his model was lower than it should have been. He was in sink, and couldn't get out of it. There were a lot of suggestions about where to find a lift area for him to fly into, but nothing worked - the lift was just not there. Phil landed at 296 seconds, over a minute short, and several other models flown at about that same time also landed short of maxing. George Reibesehl managed to find lift in at the end of the round to max. There was only one more crash in the event, a Bulgarian bird that shredded its wings during a poor boost. There were nine fliers left who had maxed both Round 1 and Round 2.

Round 3 (420 seconds:) Gassaway again launched first among the US Team. He found a soft thermal to carry the model up. He had been circling the model left for about three minutes in the lift and wanted to bring it back upwind, but it didn't respond. It kept circling left, refusing to turn right or to respond to elevator commands. A back-up transmitter and back-up frequency module were quickly tried, but still no response. The fault was onboard the model, suspected now to be a defective battery switch. It was a bad situation, but at least the model continued to fly by itself, and finally maxed. The model was seen for about 15 minutes, and Ken Mizel who took off in pursuit reported it had come down to about 100 feet before hitting another boomer and thermaling off. So much for George's prime model and $250 worth of radio gear. Despite that confusion, George Reibesehl managed to launch at a good time and found enough lift to help make his max. Phil Barnes flew last in order to allow his teammates the early shots at the lift, and ended up launching into poor air for a 377 second flight.

In addition to George Reibesehl and George Gassaway, six other fliers had maxed out to make it into the flyoff rounds. As an indication of the improvements in this event, the eight fliers represented five different countries: Bulgaria, Czechoslovakia, Poland, Russia, and the U.S.

Round 4 (480 seconds) George Gassaway had to forget about the loss of his primary "light air" bird and switch to his monokote covered back-up "windy weather" model, which was about 10 grams heavier. He managed to get off one D12 trim check flight, which indicated a pitch and roll trim problem that was corrected before the flyoff started. George Reibesehl had no such problems to deal with, and was ready to go.

Each flier was assigned his own launch area and timers, and the round was now15 minutes long starting at about 5:30 PM. The wind was calmer and late afternoon "dead air" conditions were starting to develop. Most fliers took off early, and when the air looked decent the rest did. There was not any strong lift around, but enough, and both George Reibesehl and George Gassaway maxed. Three fliers failed to max and dropped out, leaving five fliers in contention for the medals.

Round 5 (540 seconds) Piggybacking really came into its own in this round, as Matt Steele, Phil Barnes, and Dan Winings were watching the other fliers closely enough to see who was in decent air and indicated where to fly to stay up. George Reibesehl had barely maxed Round 4, and knew there would be less lift so he took out his 100 mah nicads and put in his 75 mah pack. Lightening his model helped some, but not enough, and he landed just short of a max at 360 seconds. Gassaway managed to find enough decent air or to stay out of bad air to max. Juri Taborsky, Czechoslovakia's finest flier, finally dropped out with a 376 second flight. When the round ended there were only three fliers left with maxes, so they had already won medals but now needed to determine who would get what.

Round 6 (600 seconds) In addition to George Gassaway, the remaining fliers in the flyoff were Svetozar Rusev of Bulgaria and Victor Kovalev from Russia. As described earlier, all three flyers made the max, setting up a confrontation for the gold medal on the following day.

Round 7 (660 seconds) There was some talk about increasing this round to a 20 minute max, but by starting at 8:30 AM it was unlikely that two or more models would max. "Big George" now the crowd favorite, was ready at the start of the round, but waited to fly when the rest did to try to make it as much of a dead air performance contest as possible. There did not seem to be any lift developing. Finally the Bulgarian Rusev went up, and George followed him up 30 sec later, followed by the Russian Kovalev. George got into some trouble late in the boost and lost about 100-150 feet from what he was usually getting. That was important, since Rusev obviously had the best sink rate and to beat him George needed as much initial altitude over him as possible. It became evident that George was relatively low, and in trouble relative to the other models. By 7 minutes it was clear that Kovalov was going to win, and it was close between George and Rusev. Svetozar Rusev landed at 540 seconds. "Big George" just couldn't stretch it and landed at 525 seconds to take the bronze medal behind Rusev's silver medal. Victor Kovalov went on to put in a 645 second flight to wrap up the gold medal.

Based on the flight times of the first three rounds, Czechoslovakia won the team gold with a total of 3121 seconds, just 79 seconds short of a perfect max-out.

A mere 28 seconds behind was the US team taking the silver team medal with a total of 3133 seconds. The team bronze went to Russia with 2870 seconds.

US Team Individual Places:
3) George Cassaway, 3225 (300/360/420/480/540/ 600/525)
5) George Reibesehl, 1920 (300/360/420/480/360)
10) Phil Barnes, 973 (300/296/377)

Scale S7

Three persons had been chosen for the US Scale team in 1986, but only Bob Biedron stuck with it. Bob Biedron was unable to finish his main model of the Ariane in time, as he had just finished work on his Phd in Aerospace Engineering. Bob ended up entering his Nike-Tomahawk which won scale at NARAM-28. Bob knew his Nike-Tomahawk would not score high, but it is a credit to him that he went ahead to provide an entry and make the trip. Bob got some valuable experience from seeing the other scale models, which should help in his future efforts. Bob also was extremely valuable in assisting other US Team members recover models.

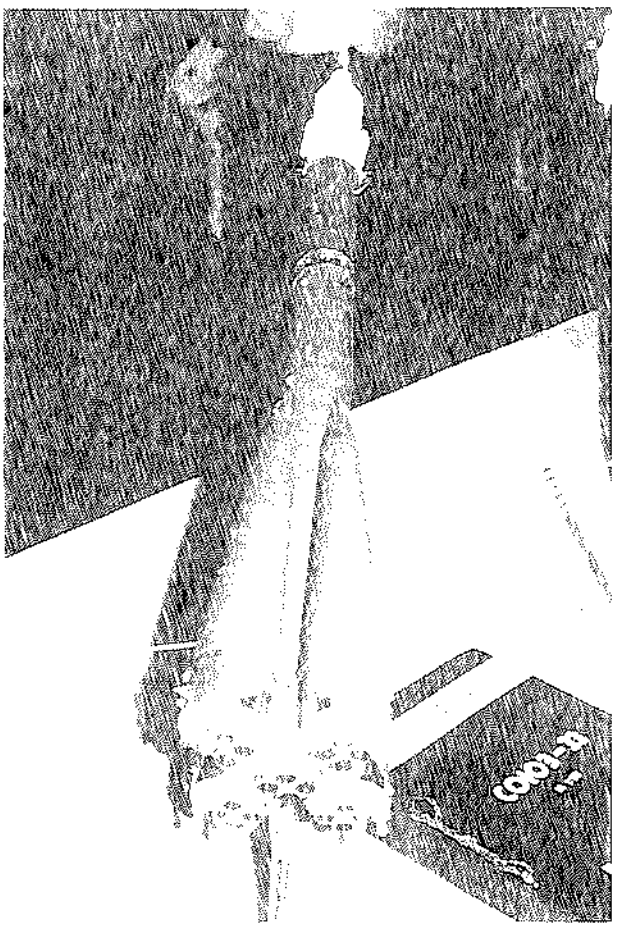
Some of the scale models were absolutely incredible, with at least 1200 hours worth of work put into them! That works out to 30 weeks, 5 days a week, 8 hours a day, of doing nothing but working on a model! The detail on some of these had to be seen to be believed. Everyone turned out to watch the scale models fly. They were so impressive. There were probably 200 spectators watching the scale models, everyone with cameras trying to get good pictures.

As usual, the most popular scale models were the T-33 Soyuz, the Saturn-1B, and the Ariane 1. Most impressive were the Russian Soyuz models, which used radio control to activate various tricks. At launch, all 5 motors would ignite (1 in the center and 4 in the strap-ons). At burnout, the strap-ons jettisoned and deployed chutes, then the second stage ignited to fly by itself, and THEN open the clamshell fairing and deploy the Soyuz spacecraft, all coming down on separate chutes. A couple of these failed to separate from the first stage core when they staged, and one model failed to deploy a chute for its plummeting first stage core/ second stage stack combo, crashing to the ground. It's interesting to note that at least two flights staged with the model horizontal or coming down. However, the first one off the pad worked perfectly, and it was absolutely fantastic! During the week, sometimes we would hear motors being static fired behind one of the rows of tents. During scale, we heard a small motor static fired near the Russian tent, no, make that IN the Russian tent! Apparently while prepping an upper stage for flight, a glitch set off the motor (didn't sound like it thrashed around, must have been held or strapped down). A few models bit the dust, but not nearly the number that had in 1985. Some of the Polish Saturn 1B's streamlined in due to poor chute construction.

Bob Biedron's Nike-Tomahawk was buried in 19th place in static. He had a misfire before getting the model off for a decent flight which resulted in a 17 point flight score. According to the judging criteria, it is virtually impossible for a stable model with proper chute deployment to score so low, so that might be a fair indication about how Bob's model was also treated in static judging. Not that it really mattered so much this time around, but certainly when the US Team fields stronger models in the future, fairer judging will be expected.

Paul Clark of England had an impressive X-15, about 32" long. It was too heavy though, over 750 grams, so it was not allowed to fly in scale (it lacked some detailing, as rocket aircraft are very difficult to

Below:
Once again, the Soyuz models were spectacular!



get regular scale data for, and was in 20th place in static judging). But, he flew it anyway. He had not arranged to obtain any JS type F motors to fly it with (it would have taken about an F41), so he used a Yugoslav type F motor used for "cloud seeding". It was a motor about 1.6-1.7" diameter, 3.5-4" long, and with "inconsistent delay and ejection". The Yugoslav F took the X-15 up to about 300 feet, and down to about 30% feet when it failed to eject. It smashed the nose to bits, but it could be repaired for a nice display model.

In the end, the special flight bonus points available made a major difference in the outcome of the event. In past years, models have been less than 10 points apart from 1st to fourth in static, and yet little changed in the flying as the flight points were also very close. The leader in static judging was Stefan Gerencer of Czechoslovakia with 808 points, a commanding 29 point lead over his closest competitor. At least that would have been a commanding lead before this year. Gerencer's Soyuz had some inflight tricks for a flight score of 129 points, the fourth best flight point score. However, the Russian models scored from 150 to 204 flight points due to the features mentioned previously, two of those models dropping Gerencer to third for the bronze medal with a 937 total. The winner of the gold medal was Alexander Korchagin with 981 points (777/204), the silver went to Anatoly Klochkov with a total of 977 points (779/198). With another flier, Arnis Batsa, coming in fourth, Russia easily took the team gold with 2884 points. Czechoslovakia took the silver with 2721 points, Bulgaria the bronze with 2620 points.

US Team Individual Places:
19) Bob Biedron, 624 (607/17)

The Demo Flights

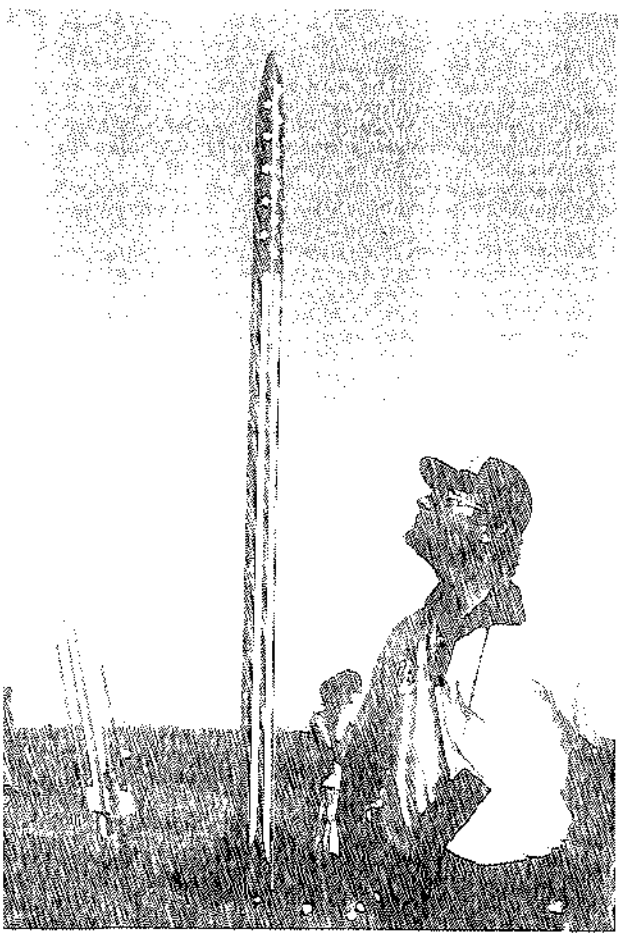
Following the scale competition, some demo launches were held. Matt Steele and George Gassaway launched an NCR Star Spangled G Bird that got a lot of attention. Most of the teams that attended don't build "fun" model rockets. Both the size of the model and the size of the motor really attracted attention. Quite a few people wanted to have their picture taken with the model and when it was time to launch, the Contest Judge and the FAI jury members had to have a long discussion on how far back spectators needed to stand to be safe. They were really concerned! Of course the launch was greeted with cheers and applause as many spectators saw their first G motor fly.

The Gala Dinner

Sunday night was the "gala dinner" and awards presentation. The individual awards were presented out on the field with the 3 tiered steps, the national flags in the background, and the national anthem of the winning country. The banquet was kind of anticlimactic after the intensity of the week, but nice. The Altitude team and the R/G team got silver medals, plus one beautiful crystal cup for each event. The U.S. Team has a good policy of letting the highest placing team member not to win a medal take such extra team awards like a cup, so Matt Steele kept the Altitude cup and George Reibesehl took the R/G cup. The Soviets were named the overall meet winners, followed by the Czechs, Bulgarians, and the USA.

After that, some trading of pins, post cards, plastic model kits, and motors commenced. Also some talks with other modelers, or as much as possible in the cases when neither party knew a common language. Phil Barnes' wife Yolanda was working overtime translating as much as she could. Without an official translator, Yolanda helped us out many, many times. Many of the foreign modelers made their way over to shake hands with the US Team, and trade autographs. It was a fun time.

Below: Chuck Weiss looks over the "Star Spangled G Bird" prior to it's impressive demo flight on a G15.



Back in the USA

The team was scheduled to depart for the airport at 6AM, but the bus to take us didn't show up. The result was a frantic panic as everyone tried to get to the airport via a city bus that ran between several hotels and the airport. There was only one flight from Belgrade to Frankfurt each day, and no one wanted to get stuck in Yugoslavia for another night. We all barely made it on the plane, after frantically checking our baggage, paying the airport tax, and going through the passport check. Of course, the plane was late arriving in Frankfurt. There, the majority of the team rushed to switch planes for New York. After an eight hour flight, the team heard some of the most wonderful words of the whole trip: "Ladies and Gentlemen, Welcome to the United States of America". Once back in the USA, the team members split up to go back to their respective homes.

Overall, the team performed well, although the final results may not show it. The US fielded a very competitive team, and certainly earned the respect of the world spacemodeling community again. Now, the US team will begin to prepare for the Eighth World Championships, rumored to be held in Romania.

Acknowledgements:

The U.S. Team would like to thank several people and companies for their assistance. Estes Industries provided model supplies and motors useful in making some models and for test/practice flying in several events. Mary Roberts and Bruce Carey of Estes arranged the supplies and made up rub-on markings for the scale altitude team's models. As mentioned before, Aerotech provided special plugged versions of the E6 motor for the R/G team. NAR member Chuck Mund provided special assistance to the team in many ways, including obtaining the special igniters required to ignite the staged micro motors. Also, the US Team would like to thank Art Rose of HO Hobbies, who provided much of the blood, sweat, and tears for the motors. And, lastly, the team would like to thank all of the NAR members who made contributions to the US Team Fund. Each team member personally paid roughly $2000 to make the trip, with the NAR contributing an additional $300 per person. Your donation, either through direct contribution or the purchase of an FAI stamp, helped make it possible for the NAR to send the best team to the world championships.

Left:

The SSE medal winners during the playing of the Soviet National Anthem. "Big George" Gassaway was a big hit with the crowd, and you would've thought he had won the gold. While the organizers had problems, the sportsmanship exhibited by the modelers was world class.

E Prime Aerospace/North Coast Rocketry/Vulcan Systems
LOFT Update

Plans for the launch of the E Prime Aerospace/ North Coast Rocketry/Vulcan Systems LOFT -1 vehicle at Cape Canaveral are currently on hold, pending the resolution of several issues between E Prime and the Air Force Space Command. The maiden LOFT flight, originally scheduled for mid- October, is now expected before the end of the January, 1988 .

The LOFT-1 (Launch Operations Flight Test) was designed to afford E Prime Aerospace an opportunity to simulate a launch of a Scout without the cost. As such, E Prime contracted with North Coast Rocketry to provide a low cost sounding rocket. The LOFT was also created to help E Prime cut through the "red tape" in it's efforts to become the first US commercial space company to launch from the Cape. From that stand point, E Prime President Bob Davis said: "The LOFT has already been a 100% success. When we go to testify to Congress in February on space commercialization, we will be the only commercial company able to tell them what obstacles are out there."

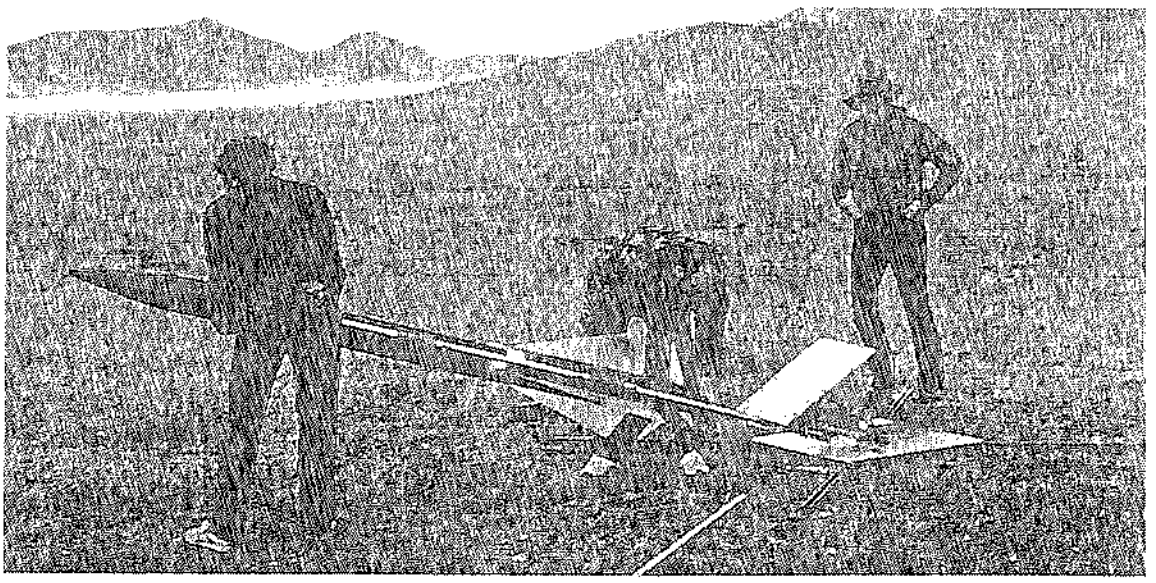
E Prime has already signed the commercialization agreement with the Air Force's Space Command. However, an Air Force official has required $10,000,000 insurance coverage before the launch. This sticky point is the major stumbling block before the NCR "Santa Maria" vehicles can become the first commercial vehicles to be launched from the Cape.

The North Coast Rocketry "Santa Maria" is a 6.125" diameter, 9.5' tall sounding rocket. Recovered by twin chutes, the vehicle weighs over 80 lbs at liftoff. Powered by a Vulcan Systems N5000 Smoky Sam motor, the Santa Maria is capable of altitudes in excess of 17,000' and velocities in excess of Mach 1.5.

North Coast Rocketry and Vulcan Systems recently qualified the N5000 powered Santa Maria in a test launch in Colorado, with E Prime representatives in attendance. The flight was extremely successful, reaching an estimated altitude of 22,000', due to the mountain launch site's altitude. The Smoky Sam motor was extremely impressive, prompting one E Prime engineer to remark that "it looked like a shuttle SRM". Chris Pearson noted that the rocket was "a quantum leap from anything done at Lucerne or any other high power launch. This is the big time."

E Prime is currently marketing other sounding rocket vehicles through North Coast. Currently, there is Air Force and NASA interest in future LOFT launches, as well as the University of Alabama, Huntsville, who is providing the payload integration for the LOFT-1 launch.

Of course, complete scale data will be published after the inaugural launch, and North Coast intends to offer a kit of the Santa Maria in the spring.



Right and opposite page:

Chris Pearson and Matt Steele load Santa Maria S/N 000 onto the pad for its qualification flight.

Photos by Wayne McCain.

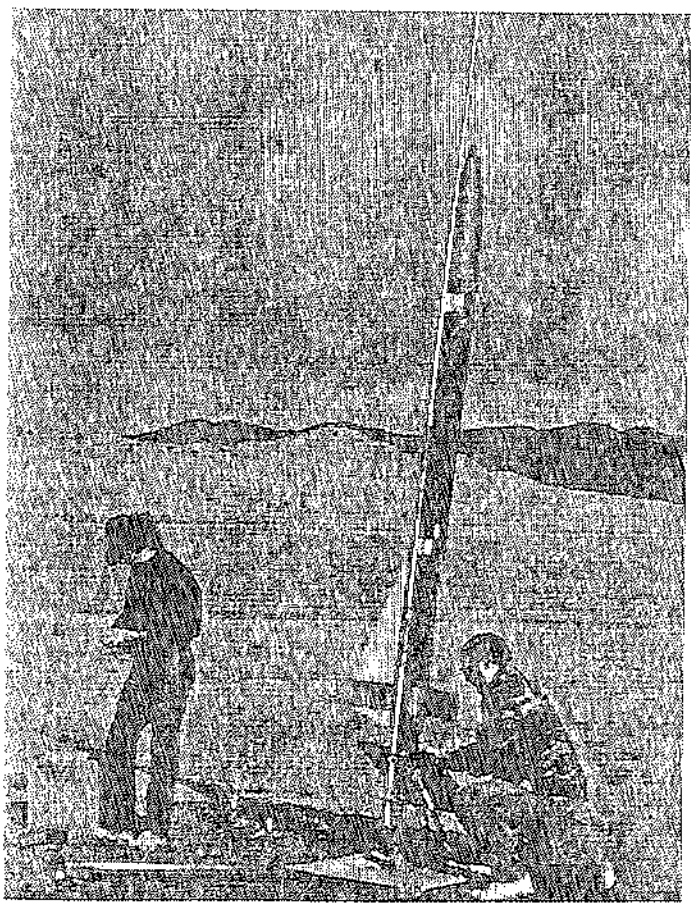
VEHICLE DATA:

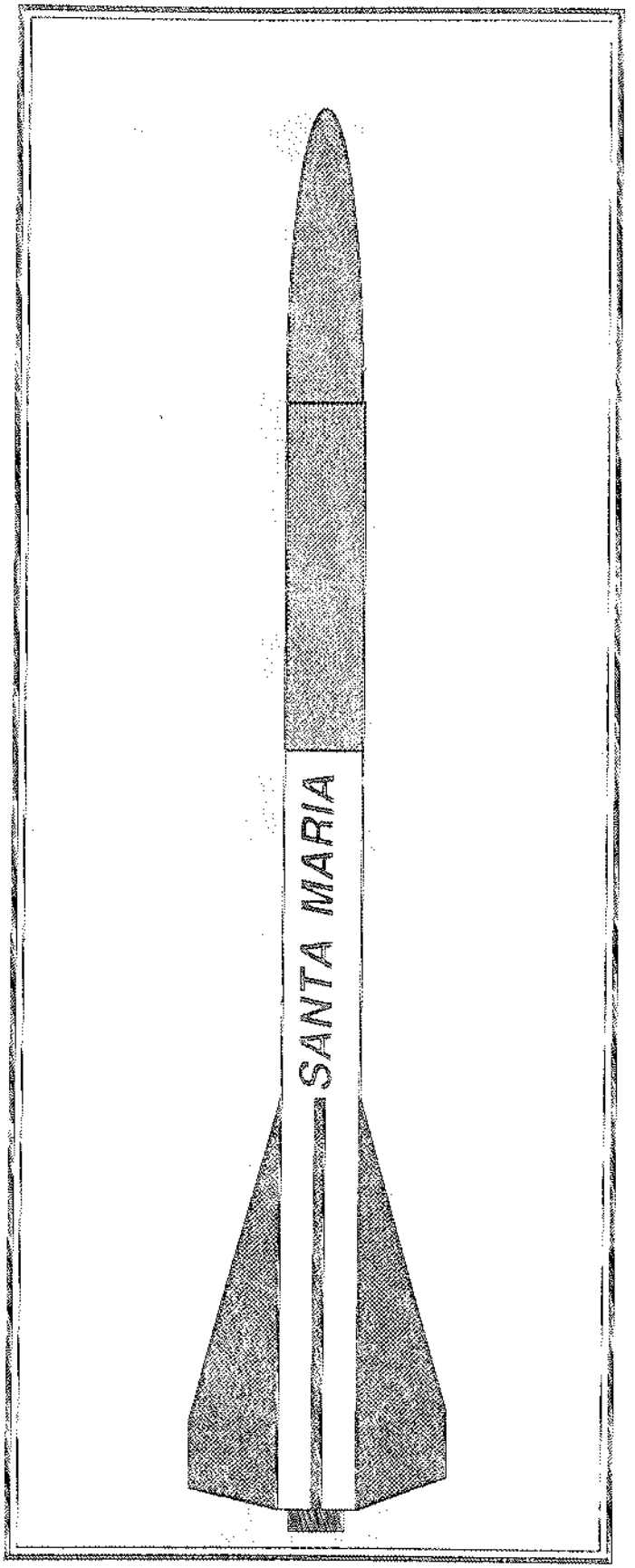
Vehicle Diameter:	6.25"
Vehicle Length:	134.25"
Vehicle Liftoff Mass:	81.28 lbs
Payload Mass:	31.4 lbs
Airframe:	1/8" wall, filament wound fiberglass
Fins (3):	1/4" fiberglass
Nose Section:	Fiberglass

Recovery System:
One 60" diameter main airframe parachute;
One 72" payload section parachute

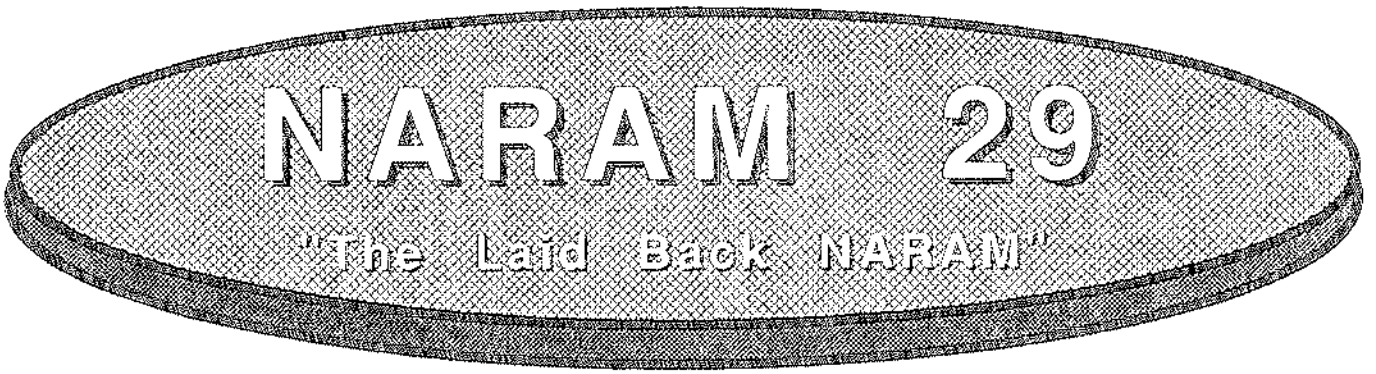
MOTOR DATA

Designation:	Vulcan Systems N5000 35
Motor Diameter:	4.0"
Motor Length:	45"
Motor Mass:	36.8 lbs
Propellant Designation:	HTPB "Smoky Sam"
Propellant Mass:	29.95 lbs
Initial Thrust:	437 lbs
Burnout Thrust:	1522 lbs
Max Operating Pressure:	400 psi





Like, wow, man! A NARAM in California.... warm weather, gentle breezes, good lookin' ladies. It should have been a great big contest, too, as California has more NAR members than any other state, and flying to LA is relatively cheap. But, Pat Miller and the LA Rocket Society were just *"California Dreaming...."*



by Matt Steele, Robyn Steele and Dan Kafun

Southern California in August is hot and dry. What little green was in the hills in the spring, is long gone by August and the hills are a dry, dusty brown. The beaches are crowded with people trying to escape the heat and the freeways are bumper to bumper even when it is not rush hour. But this is LA and those who came to NARAM 29 came to fly rockets first and to enjoy the surroundings second. (Well, at least some of them did!) There are some rocketeers who never miss a NARAM no matter where the location. These hard core NARAMites come to see friends that they haven't seen since the last NARAM, make new friends and fly rockets. Then there are the first timers or those who can only come to a NARAM if it is relatively close to home. At NARAM-29, there was a good mixture of both, although the California High Power crowd failed to appear. Housing and meals for NARAM -29 were provided through the University of Cal, Irvine dormitories and our stay there coincided with the week long high school cheerleading camp. We saw more short skirted, screaming, bouncing, look alike, dress alike cheerleaders out to prove who had the most school spirit than anyone could possibly digest in a week's time. To quote Chris Pearson," BARF!"

The LA Rocket Society seemed to host the meet. I say "seemed to" because there was only six that showed up. The folks from NCRA chipped in and helped run things. The atmosphere was laid back, the planning appeared to be random, and the attendance was horrible...less than 50 people. The meet seemed like a big regional, which kept the mood mellow and the competition easy.

The competition for the championships was wide open in A Division. Don Linder, Jr, William Moser, and Tim Barklage all looked good in A Division.

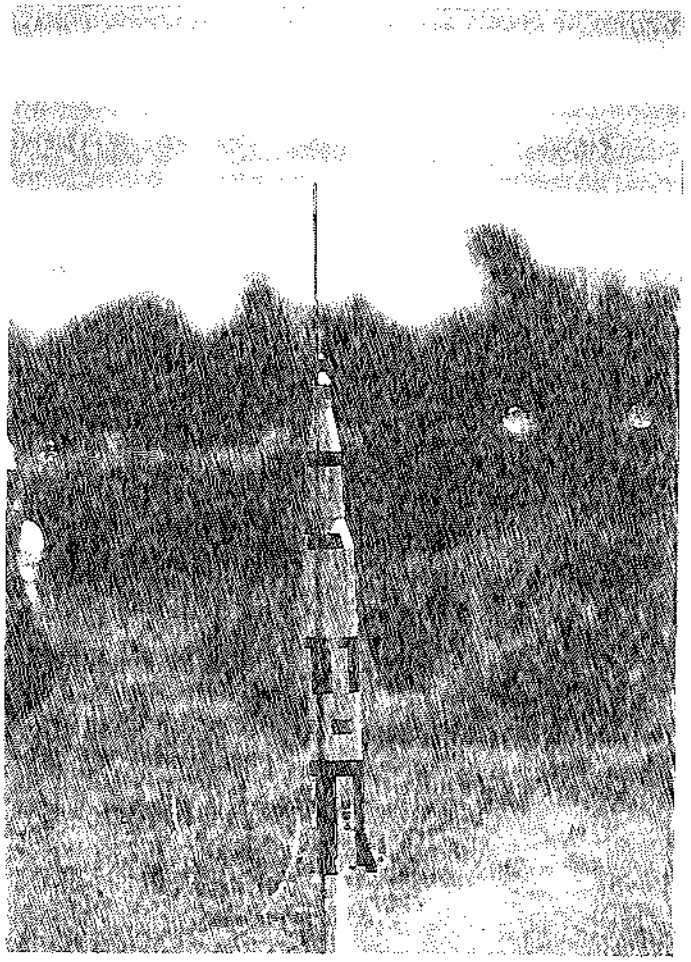
B Division looked pretty well decided, with only two entries! Andy Apel from NCRA was the only B divisioner in attendance. His only competition was Lee Olyniec, from ISARA (Matt's new section), who was flying proxy. They had first and second wrapped up, although Andy had to fly most of Lee's models, and suffer the disgrace of getting beat in most of the events

In the Senior circuit, the Reserve Championship could have went to any one of five individuals. Dan Domina, a former world class indoor model airplane champ, was in the driver's seat for the C Division title.

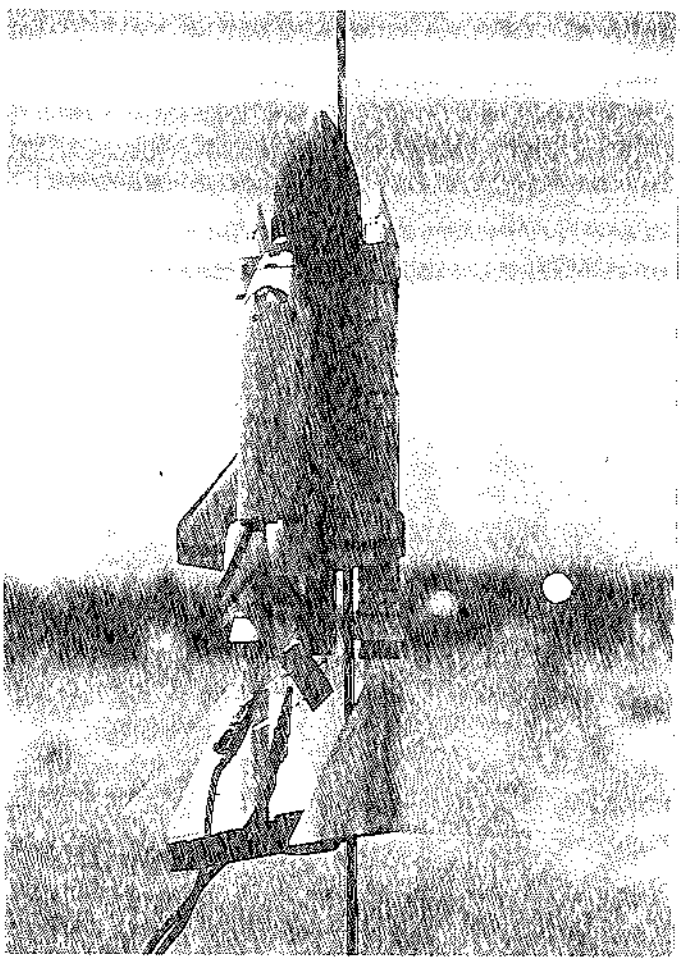
The Team race was also pretty much over, as the Zunofarks had a commanding lead. The only question was if the East Meets West Team of Ken Mizoi and Ross Hironaka could catch the Dual Egglofters (Bob Kaplow and Alan Jones). The section championships was also a cinch for NCRA, with 28,000+ points going in, and nine members making the trip out. The real contest was for reserve champion section.

NARAM-29 began bright and early on Monday the 3d of August with 1/2 Parachute Duration and A Streamer Duration. The first signs that this NARAM was doomed to mediocrity was the range was suppose to open at 8:30, but was not open until 9:30. The first flight of NARAM, a milestone which declares everything has begun, did not happen until almost 10:00. After which the swarm of competitors began to prepare for launch. As usual with any timed event, everyone was ready to fly when only a couple of timers were available.

The Zunofarks, with Matt flying for George Gassaway and Chas Russell, took first out of the teams fly-



Above: Sid "Vicious" Maxwell's Saturn V moved up in the standings with a beautiful flight.



Above: William Moser had an interesting 1/200 Shuttle conversion, but the chute failed to open.

ing in 1/2A PD, latching onto a nice lazy California thermal. Dan Kafun, the only full fledged SNOAR member in attendance, didn't get any lift, and finished about eighth.

In A Streamer, the Zunofarks crashed and burned literally, as the streamer melted and then separated on successive flights. Kafun again placed eighth, starting some sort of trend.

The two events flown on Tuesday, August 4th were A Boost Glide and B Eggloft Duration. (Eggloft being, of course, one of our all time favorites. It's so much fun to see those egg capsules coming back oozing smashed egg!)

A Boost Glide saw the Zunofark team really find a good thermal, taking second place and beating the dreaded Dan Domina, who was so tough last year. Don Linder Sr. took 1st place, showing that the NERA folks really can do more than talk about fixed wing birds.

B Eggloft Duration had more than it's share of smashed eggs. (Robyn thinks there is something inherently sadistic about this event, but she hasn't quite figured out exactly what it is!) Before this event was over, the trash can near the judges table was full of broken eggs, as there was a lot of asphalt near the flying field. Those fortunate few who waited until afternoon to fly were treated to some real boomer thermals. The East Meets West Team's model was in a thermal only 100' off the ground that nearly doubled its time. A 14:45 flight finally thermailed away, out of sight! Matt's first flight did not deploy its chute. The capsule came in hard and bounced about two feet up. The egg came out of it just fine and Matt flew it to a second place finish in teams and fifth overall. Dan spent most of his time ducking eggs.

The tone of this NARAM was evident when more people wanted to enter Kitbash than the other scheduled events. Dan came up with a parasite glider contraption that actually glided.

Wednesday was another hot, slightly smoggy California day which was perfect for D Eggloft Altitude!

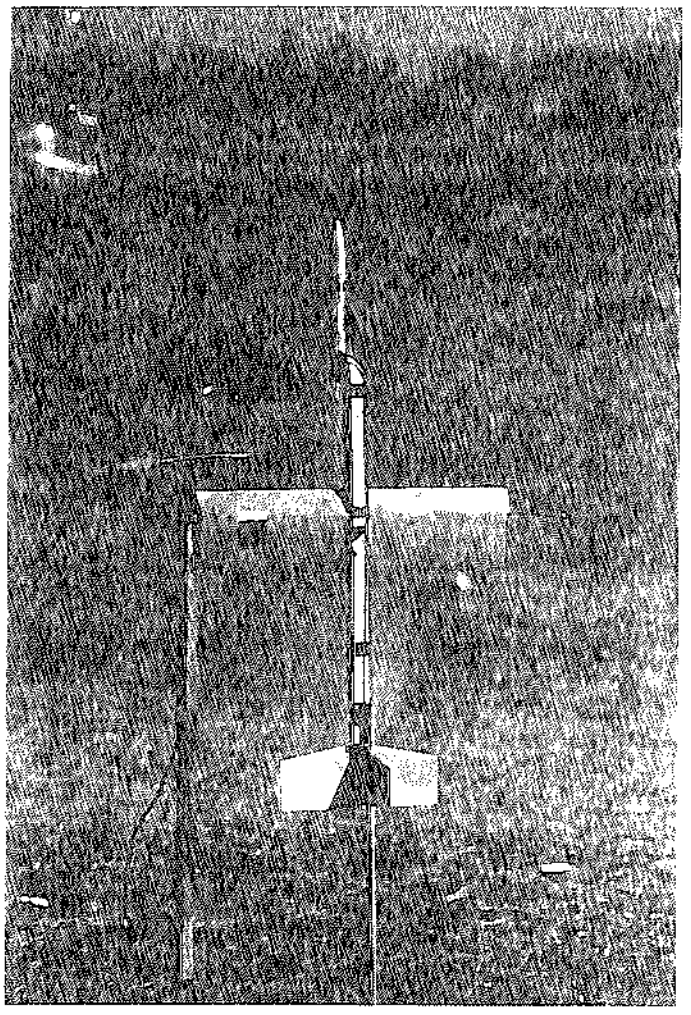
The skies were partly cloudy, the event was high powered, the rockets were small, and not enough people were using tracking powder. To add more to the problem, Aerotech D8-8 were the engines of choice. These are composites with no smoke which were sending the models to record setting altitudes above 700 meters. Very few participants got qualified flights out of D Eggloft Altitude. In A Division, there were only two qualified flights, and B Division had none! The Aerotech D8 was the rage, although the trackers couldn't track them. The contest organizers had standard Sky Traks that pegged out at 70 degrees elevation. The East Meets West Team a 1st place when they were allowed a reflight due to a pegged out tracker.

Most participants breathed a big sigh of relief when eggloft was finished and they could move on to helicopter. C Helicopter was a lot easier, both on participants and models. Designs were primarily Rotaroes, Rose-A-Roes, and Helex's. The Zanofarks ended up third, while Dan ducked rotor blades.

Wednesday evening was the annual NAR BBQ and auction. (which were 2 different events, by the way!) The BBQ was held outdoors with BBQ chicken and ribs and assorted salads and other fixings. It was the usual lousy food, just outdoors in the grass, with paper plates. The auction, ran by Connie Pursley raised over $1,250 for the NAR and $175 for the Internats team. There were lots of good items, folks! An unopened Cineroc donated by Estes went for $160! Matt donated a Czechoslavakian micro (6mm) motor (there are only 3 others in the country) that sold for $41. There were various models, motors, old catalogues, & a copy of the Model Rocketry Handbook autographed by G. Harry Stine, (who attended NARAM-29) just to mention a few. The auction was a lot of fun and a great success! Dan bought an autographed glossy photo of Traci Reeves.

Also of note was the range store. It was the best one that has ever been at a NARAM! Nettie Hunsicker had nearly $10,000 worth of stock, from everyone...

Below: A D8 powered flop wing lifts off!



Below: Matt and Robyn Steele check in the Pilgrim

CMR, Estes, NCR, Aerotech, even US Rockets. Ironically, Jerry sold very little, even when people could actually put their hands on his products! Stuff was even sold at discount! Due to the success of the range store, NARAM-29 was able to make a profit. You can bet next year's range store will be as good. Dan bought a lot of stuff.

Thursday morning, August 6th was hot! Maybe that was a contributing factor, maybe not, but we saw a lot of shreds and prangs in the two events flown Thursday. Thursday's scheduled events were D Boost Glide and Plastic Model Conversion. The Plastic Models had been judged the evening before for the static points, so all that needed to be done today was just a qualified flight to finish out the judging. There were some pretty impressive plastic models from all Divisions ranging from William Moser's shuttle model to the Pilgrim

Below: Dan took this one to prove model rocketeers can have fun at a NARAM!

flown by the Zunofarks (and featured on the first color cover of American Spacemodeling). Unfortunately, a lot of those models failed to achieve a qualified flight- with chutes failing to open or just out and out pranging.

Donald Linder (NTRA) was the only A Divisioner who achieved a qualified flight with his F-15 jet model. In B Division both Lee Oyniec and Andy Apel had qualified flights with their F-14 and V-2 models with Lee taking 2nd and Andy the first place award. C Division was extremely close with only 30 points out of over 900 separating 1st and second place. The Dual Egglofter Team took 4th place with a jet, Sid Maxwell came in 3d with a Saturn V, Zunofark Team was 2nd with 905 points and Dan Domina took the first place trophy with 915 points and a model of an old Lindberg Mars Probe. Matt chose to catch his model rather than take the chance of having it damaged upon landing and that made the difference in the points. *(Hard to figure that one out, as the Pilgrim was 30 points ahead, with only 25 to lose for damage, and Dan Domina misfired at that! Bob Sanford, the PMC judge, obviously has a bit to learn)* Dan spent most of his time dodging plastic shrapnel.

The other exciting event of the day was D Rocket Glide. There were some pretty spectacular shreds and prangs in this event, certainly enough to keep me on my toes. One of the first and most spectacular shreds of the day was a model that George Gassaway sent for Matt to fly for the Zunofark Team. It was a pretty impressive looking model and knowing George's past record, one would expect a lengthy glide, right? Wrong! 20 feet off the pad, it shredded into at least 25 different pieces, each of which came fluttering down at a different speed. One spectator pointed out that the tail section was gliding, but the RSO declined to give it a qualified flight based on the tail section only. *(OK, so he did tell me to test fly it!)* This was only the first of many shreds of the day, however. One glider flown by Kat Seki very nearly took out C.D. Tavares. This guy loaded his unusual bird on the pad (how this got by check-in only God knows!), stepped back about 30 feet, crossed his fingers, and covered his head! It lifted off straight for 10 feet then broke apart. The thrusting D12 kicked over and went straight for Chris, and man did he ever move fast to get out of that thing's path! One spectator noted, "It would have been a qualified flight if only he had hit him!" The Zunofark Team took 3d, in spite of George's shred. Dan ducked balsa bits for most of the day.

Thursday evening were the Research and Development presentations. Only one A Divisioner entered this event and his project was so good that he won the event over the 6 C Divisioners that entered. Tim Bark-

lage gave his R&D report on the angle of rotation of helicopter blades and took home the first place trophy.

Friday morning was the first cloudy morning that we had, but it burned off by about 11 am and the rest of the day stayed sunny and hot. Scale for the C Divisioners and Sport Scale for the A & B Divisioners was the only event for Friday. All the models were judged on Thursday evening, with last minute judging assistance from the crowd (Tom Hoelle and Tom Beech helped out). B Division had Lee Olyniec win with an IQSY Tomahawk. In C Divison, Don Linder Sr. (NIRA) was 4th with a D Region Tomahawk, the Zunofark's with trusty Vostok took 3d, FredWilliams 2nd with a Saturn I, and Tom Beach won the first place award with a superb model of the Little Joe II. Fred Craven had a nice jayhawk that pranged when the C6 ignited, but the D12 didn't. It later flew perfectly. Dan watched all the scale models fly, and took pictures.

Flying was now officially over and so everyone headed for the beach. Hey, when in California...!!! We managed to get ourselves full of sand and salt and a little sunburned on gorgeous Laguna Beach before it was time to head back and get ready for the banquet, so it was definitely a good day! Dan took plenty pictures of the California vixens on the beach.

The banquet is traditionally one of the high points of a NARAM. Folks usually get dressed up to pay more money to eat the same food they've been eating all week. Brad Bowers, in town for a job interview, even made it out. Door prizes included a trip to NARAM-30 paid for by the NAR (won by Ric "Holy Shit!" Gaff), a completely stuffed range box, and cash ($50 & 100 bills) The LDRS starter set (about 6 NCR kits complete with glues, parts etc.) was won by Andy Linder of NIRA . Andy probably was the most excited of all the door prize winners. His, "Hey that's me!!!" when they called out his number, was the most enthusiastic response of the night. The kits are bigger than Andy, who is about 12 years old! (Andy's mother spent the rest of the banquet trying to figure out how in the world they'd get it all home after NARAM, and Andy's brother Donald was overwhelmed with envy, since his mother wouldn't let him buy any North Coast kits the night before at the range store because they had no room in the car to get them home!!!)

In addition to the NARAM trophies, other awards were also given out. The NARCON participants also received trophies for their efforts. Dan Kafun won Kitbash contest, proving he could fly a model at the meet. The 'Best Midwest Qualified Flight Award" (otherwise known as the Prang Trophy) contenders included the East Meets West Team who not only pranged their plastic model, but buried the nose cone of their scale model 2 inches into the asphalt! Since they won last year, we figured that they were trying too hard to be the first back to back winners, so they only got an honorable mention. Other qualifiers included Kat Seki, with his D Rocket Glider nearly taking out Chris Tavares, Connie Pursley who built a rocket out of a plastic NAR cup which promptly hung up on the launch rod and Tom Pastrick, for his D8 disaster. Bob Sanford of Aerotech won the coveted prize with his incredibly dumb flight in B Eggloft Duration that was only powered by a 1/2A6-2!

The Howard Galloway Award (donated by Rockwell International) was presented to a group including Jack Kane, Chris Tavares, Dane Bowles, & G. Harry Stine and others who worked so hard to get the laws changed in the state of Massachusetts to allow model rocketry within the state.

The LAC Newsletter Award winner was T Minus 5 of Huron Valley (MI) Association Of Rocketry (HUVARS). Honorable Mention went to SNOAR NEWS. I guess that's about the 11th time in 14 years (plus the two wins).

Meet Champions included: in A Division, Tim Barklage; B Division, Lee Olyniec (by proxy, no less); C Division, Dan Domina; and Teams, the Zunofark Team.

The highlight of the evening, was of course, presentation of the Championship Awards. The 1987 A Division Champion was Donald C. Linder of NIRA with Tim Barklage the Reserve Champion. The difference between first and third was less than a few hundred points.

The 1987 B Division Champion was Andy Apel of NIRA, with Lee Olyniec of HARA as the Reserve Champion.

C Division Champion for 1987 was Dan Domina and Fred Williams as the Reserve Champion. The 1987 Team Champions were the Zunofark Team, with the Dual Egglofters Team of Bob Kaplow and Alan Jones being the Reserve Champions.

One of the big surprises of the evening came when they announced the 1987 Section Champion and Reserve. NIRA won (again) the Section Championship with 42,727 points, but HARA came from 8th place going in to NARAM to win the Reserve Section Championship with 18,524 points! It sort of gave the folks from NOVAAR and the Vikings something to think about.

With the end of the banquet, NARAM-29 began winding down to a close. People began packing and making preparations to leave the next day. It had been a long, hard, satisfying week, but already talk had turned to, "Next year in Huntsville!

NARAM 29 Quotable Quotes

"I know what I forgot to pack...my underwear!
Unidentified NAR member

So now we're going to vote on whether to vote. ..OK...Now we're going to vote on the motion."
J. Pat Miller, obviously in charge

"How many of you people are going to brag about flying a "B" motor at LDRS?"
Jack Kane
"Who flew the B???"
Anonymous

"I resisted the temptation to tell the newspaper about Plastic Model on Thursday"
Marc McReynolds, explaining the press coverage for NARAM

"Well, at least now I work for someone taller than me!"
Mary Roberts, commenting on Dane Boles leaving Estes

"Model rocketry is a filthy habit"
J. Pat Miller

"It didn't go very far ..but the people around it did!"
Jack Kane, referring to a cato

"This has been a very frustrating thing.. we have everything but the Russians!
Pat Miller, on the USA/ USSR meet

"A NAR flyer in every Tupperware bowl!"
Someone overheard talking about the NAR "Tupperware" style membership drive

"It was $11 of terror!"
Tom Beech, about Tom Pastrick's D RG prang

St. Louis Hobby Industries of America Show Preview!

A brand new Saturn V kit is in the works!!!

Enertek, you ask? No, ESTES is bringing out a new beautifully detailed Saturn V standing 42 inches tall. It will retail for $47.95, and will use a substantial number of injection molded plastic parts. Another new Estes kit will feature helicopter recovery. On ejection, the main body will descend with a parachute, while the nose section deploys rotor blades and becomes an autogiro. Also in the works is a new eggloftер kit, which will have a blow-molded payload section.

MRC recently showed a new kit called the Enforcer, which is completely covered with aluminized Mylar. There will be new igniters with enamel-insulated leads, which has to be an improvement. MRC parachute kits are available now, and all include snap swivels.

FSI has repackaged their kits, and is planning on adding 10 new kits. The 10 new kits include some "Sport Scale" models that were rumored about ten years ago, but never hit the streets. The Wasp, Javelin and Nike Tomahawk kits are new kits designed for E60 or F100 engines. FSI has also submitted (again) some 18 mm, 2.75" A, B and C engines to Standards and Testing.

North Coast is planning on introducing a large scale (2.6" diameter) Black Brant II in the spring that will be scale quality.

Get a complete report on what's new at the HIA show in an upcoming issue of SNOAR NEWS! Count on SNOAR NEWS to get all of the latest news. That's what's been holding up this issue.... yeah, that's it! Hmmm, I wonder if I'll get the next one out in December?

Thanks to Doug Pratt for the tips!

The LDRS Story

The LDRS story actualy started several years before the first LDRS which was held in Medina, Ohio. After getting into high-power rocketry, as it existed back in 1976, I soon got in contact with many people all over the country that were involved in the emerging high-power hobby. Some of these people were Gary Rosenfield, then of Pro-Jet, Roger Johnson (aka The Rocket Clown), Korey (The Ace from Space) Kline of Ace Rockets, Mark Mahyle of Small Rocket Sounding Systems along with others who were at the time taking the existing model rocket technology (MRT) to its limits.

At the time about the only thing there was for the high-power crowd was either clustering D12's or using FSI motors. Enerjet has ceased to exist some years before although some motors were still available and used. This was before any of the existing composite model rocket motor companies. Some people that are visible in the high-power scene today were around back then, most notably Scott Dixon of Vulcan Systems, and Irv Waite, formerly of Rocket Development Company, father of the Enerjet line of rocket motors. They were producing professional rocket motors for military and industrial use.

Before this time, there were many notable and now very rare and collectable high-power rocket motors. Pro-Dyne, maker of F and G class composite motors, Coaster, who made large black powder motors and Centuri Mini-Max, also D, E and F black powder motors. They had all vanished from the rocketry scene by 1970. Gary Rosenfield was one of the new breed of composite motor manufacturers, as his first company Pro-Jet produced F and G composite motors. Mark Mahyle of SSRS (later known as Crown Rocket Technology), entered the foray with E through H composite motors, and a little known company, Plasmajet, run by John Krell and Randy Sobszak, made F through I motors. So with those new motor manufacturers producing a new generation of motors, several kit manufacturers soon followed suit. Unfortunately, as with most businesses, many people entered the business and left just as quickly. Gary Rosenfield soon joined forces with John Davis and formed Composite Dynamics, who gave us the first mass-market composite motors. Other companies produced specialized items for the high-power community, such as launchers, launch pads, electronics, etc.

In 1981, I journeyed to Smoke Creek, Nevada to attend the annual Memorial Day amateur rocket launch. This was sponsored by Rocket Research Institute, and is primarily for the zinc-sulfur crowd, but they allow the launching of model rockets and other MRT vehicles, along with a lot of professional fireworks people. While there I heard Roger Johnson talking about the "Large and Dangerous Rocket Ships" that they were going to fly.

To tell you the truth, I was actually somewhat disappointed by what I saw, except for the zinc-sulfur stuff. It was nothing like what is flown at LDRS today. Primarily a lot of 4 inch stuff with clusters of F or G motors, and a occasional H or I motor.

Later that year, the NAR section that I belonged to had a regional meet in which we flew a lot of E and F events, which was very rare for sections at that time. We advertised it as a meet for "you Large and Dangerous Rocket Ship fans". Several G motors were flown there, and later that year at NARAM-22, another SNOAR member and I were called on the carpet by Mark Bundick, the National Contest Chairman. This is where the famous quote "Who flew the G?" came from. It was only a few months later that I let my NAR membership lapse. When asked the reason, I explained it was because I wanted to fly rockets that would exceed the NAR's limits, and didn't want to cause problems. It was that next year that I organized the first national high-power rocket launch. The name, LDRS, was an acronym for Large and Dangerous Rocket Ships, just as I had heard Roger Johnson say it at Smoke Creek the year before. LDRS was the first MRT type event that was promoted as such, and the first to get a FAA waiver. I even managed to get the event listed in the Model Rocketeer before they discovered its true nature. After that, they ran a disclaimer in the next few issues, warning about the "amateur rocket activity" and urging NAR members not to attend. We were under a great amount of pressure from the NAR, and they even attempted to coerce certain NAR members that they knew would be attending to write down names, take photographs, and

generally rat on everyone that was there. Three NAR members were contacted about alleged 'safety code violations', and one was expelled. In the next two years the NAR zealots tried every which way to prevent LDRS from happening. They said that they contacted the FAA to check the waiver, got in touch with the Medina city prosecutor, fire and police departments, even the Bureau of Alcohol, Tobacco and Firearms (otherwise known as the Secret Service), in attempts to shut it down. They failed.

Each year, LDRS got bigger, the rockets and motors got bigger, and the NAR saw its Senior membership shrinking, as more and more of them entered the high power rocketry sport.

By the time LDRS-3 rolled around, the NAR was forced to admit that we might be right, and started the first of the Blue Ribbon Commissions for the study of high-power rocketry. Pat Miller attended LDRS-3 to observe, and walked away very impressed by what he saw. Negotiations began after that with the HPR/ LDRS committee, which had such notable high-power people as Chuck Mund and Jim Dunlap along with SNOAR members Chris Johnston and Bob Grier. Guidelines were drawn up by the committee along with a proposed safety code, and submitted to the Commission. Experiments were conducted by Trip Barber to ascertain the power limits of the new composite motors. Some high-power manufacturers were contacted to give their input in certain subjects, such as motor design and airframe construction. Others donated materials for the testing. The Blue Ribbon Commission gave its findings, and out of this came the new revised NAR/HIAA Safety Code, which was the most profound change in the hobby since its inception. I am proud to say that I, Matt Steele and North Coast Rocketry had some input into the decisions the Commission made and with the resulting changes in the Safety Code. Soon after this, the so-called "Son of Blue Ribbon Commission" was formed to study the true LDRS type of rockets, over and above the 3.3 pounds which were now called model rockets. Members of this commission visited LDRS-5, and were impressed by the quality of workmanship of the rockets, the reliability of motors and vehicles in flight, and especially the strict safety rules which were enforced at the meet. The results of this were the new NAR code for high-power rocketry which allowed NAR members to fly LDRS type rockets.

Unfortunately, LDRS-5 was the last national high-power launch to be held in Medina, as the field we flew on was leased to a farmer soon after that and plowed for crops. Also, after the problems that happened that year, I was reluctant to organize any other events, and allowed the copyrighted term "LDRS" to be used by the Tripoli Rocketry Association for the name of their national launch. Others have followed the example that was started by LDRS and have organized other national and regional type events, some with more success than others. LDRS-6 was the first national event sponsored by Tripoli with conjunction with Vulcan Systems Inc. The Z launches held in Pennsylvania have been very successful, also held by Tripoli, however the Cuban Missile Crisis sponsored by Mike Nelson and High Power Research magazine has had poor attendance after a good turnout at the initial events.

LDRS was the first, and set the example for others to follow, and I can only hope that the number of high-power launches continues to increase all over the country, as the sport of high-power rocketry continues to grow.

I would like to believe that LDRS was a deciding factor in the Model Rocket Safety Code change, and that it was also a factor for the emerging interest in high-power rocketry, as with LDRS came the development of many of the leading high-power rocketry companies that are in existence today.

I urge the sponsors of future LDRS's to continue the tradition of well-run meets stressing safety, as LDRS is the standard all others are judged by.

Below: John Fleischer and Chris Pearson load up a Sidewinder scale model at LDRS-5

Quotable Quotes from LDRS-6

"That Ace Monocopter has just transitioned into its "lawnmower mode"."
Chris Pearson

"ACS motors are the worst junk I've ever seen!"
John Riconin

"Some of these people must have a death wish!"
Scott Starkey Dixon before the "M" motor launch

"Come on Chris...is anything I did that bad?"
Jerry Irvine

"You're right Chuck...she is f***** ugly!"
Chris Pearson to Chuck Munz

"Well, that was interesting."
Gary Rosenfield, after watching a rocket with 2 J360 motors shred

"The ends justify the means."
Jerry Irvine

"I guess that means he can lie, cheat and steal from his customers and vendors, and as long as he makes money doing it, its OK by him!"
Name withheld by request

"Jerry Irvine is like a bad case of herpes...you can never get rid of him!"
Heard at LDRS-6

"I propose that we change LDRS to mean "Lets Do Rocketry Safely."
Tom Blazinir

"I kinda like "Large D*** Rocket Shoot" myself!"
George George from New York, NY.

"How high is it going to go?"
Range urchin to the "M" crew

"Pretty f***** high!"
Appropriate response

"How fast?"
Same urchin

"Pretty f***** fast!"
What else could be said?

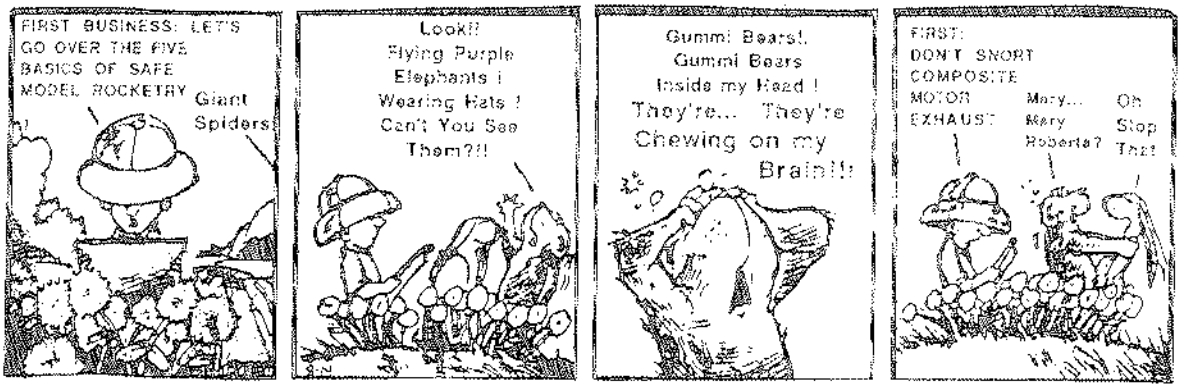
"Other than the fact its marginally stable, has epoxied on fins, will have low take off velocity and will probably have the nose cone ablate away, it'll probably work!"
Scott Starkey Dixon, before the "M" motor flight

"But that's standard Lucerne (Dry Lake) technology!"
Jerry Irvine after having one of his rockets not permitted to fly

"This isn't Lucerne!"
Tom Blazanin

"I wouldn't sell Irvine an electric match!"
Scott Starkey Dixon

BOOM COUNTY



Modelnet Conference

The following is an edited transcript of ModelNet Conference, Wednesday August 21 on COMPUSERVE. The subject was ROCKETRY.

(Doug Pratt) Well, folks, let's talk rockets. I'm hoping to get some feedback from people who are flying rockets as well as the industry people (Pat Miller and G. Harry Stine). I've been assigned to write an article on the rocketry market for *Model Retailer* magazine which goes to all the hobby shops. They feel that with MRC and Enertek coming in that rocketry has a new face from the 10 years of Estes dominance. Are any of you flying rockets?

(Arthur Louszko) I fly rockets a lot. But have a problem with finding a place since I live in New York.
(Doug Pratt) I see yer point. Recovery would be tough in Central Park.

(Bruce Canino) I also have been flying a bit, twenty years off and on now. I just join GSSS in NJ and I travel about 100 miles just to get to there launch site. I know what a problem it is to get a site to launch from.

(Doug Pratt) Wow! When I lived in NY I used to go to Pittsburgh for conventions and stuff, though that was about as far as anyone got.

OK, next question: What have you guys built lately.. and what are your favorite kits?

(Bob Hegwood) Just thought I'd add a bit to the field problem. Fred Williams and myself have been traveling from Dayton, OH to Columbus every weekend for a place to launch. You might try the following as we finally did to find a field. First, we went to a high school and got permission from the school super intendant for sport launches. Parks can also be used, but they often require WRITTEN permission beforehand. Just thought you might try some of those options. Also, if any Air Force bases are near to you, you can sometimes get permission from those guys.

(Doug Pratt) Good thought.

(Bruce Canino) I just got started in competition rockets, super roc's , and at the last contest I build my first PMC. (I think I'm hooked on this!) I tried two of the new MRC rockets.

(Bunny (Mark Bundick)) Bruce, as a charter member of the Plastic Model Prangers association, good luck with the PMC's. If you drop me a letter with a SASE I'll send you some of my hints and tips for successful conversions. Bob, when I came in, you were talking about getting use of fields. Let me relate an interesting story about NIRA's use of Chanute AFB. When I first visited I spent about a hour with the base commander. He then delegated our NARAM to a subordinate colonel and now he's gone. We're down to working with a master sergeant who is a member of the base airplane club. The point being if you stick with it eventually, you can become a part of the bureaucracy and your use of the field becomes nearly automatic. Works the same with other government organizations like park districts.

(Doug Pratt) I like that.

(Bob Hegwood) Bunny, I also have had a park ranger pull his gun out and tell me to FREEZE! Honest!

(Arthur Louszko) I know what you mean Bob. I have a difficult time with the parkies around here in Staten Island.

Question: What is the difference between 1/2A and an A in competition flights?

(Bunny) First, the 1/2A and A question. The only difference is in the class of engine you fly for an event and of course 1/2A's have half the power of A's. Now back to the field use question. Let me suggest as taxpayers, you all have the right to use publicly supported parks for flying rockets you will have to do some legwork to convince public officials that (a) you are not dangerous, and (b) you are providing a good outlet for young people to learn science and engineering. We did exactly that when a group of softball players complained about our launches and were quite successful. I also suspect without provocation the ranger who pulled the gun could come in for some disciplinary action.

(Doug Pratt) No kidding!

(J. Patrick Miller) I guess just when I think I've heard it all, Bob tells us that a ranger pulled a gun on him for having flown model rockets! Bunny is correct when he says that the first thing you need to do when convincing a park district, school board, city council, or public safety official that you want to fly model rockets on one of the fields is to convince them that you are a reasonable person trying to follow the rules & regulations. Indicate that you have come to them for their wise advice and assistance. When necessary, pull out a copy of the State Health & Safety code which they likely do not know. Most of these codes permit model

rocket activity in most of the states. You can obtain a copy from the State Fire Marshal. Too, you can obtain a packet of state laws including NFPA 1122 from Mary Roberts at Estes. If you know they law and the officials do not, you generally get the upper hand.

(Bunny) I've also found that having an NAR section with insurance is a big help. We also try to pitch our work with youngsters. It's sort of like Little League or Boy Scouts If you can show that you're doing something constructive and useful for kids. The park boards and the like are more inclined to let you fly for a while. Then you get entrenched (NIRA has used the same field for over 20 years).

(Doug Pratt) Lotsa local clubs, airplane and rocket, have done just that.

(Bob Hegwood) Thanks again for GOOD advice Pat At the time I had that event happen, I was just getting into rocketry, and didn't know BEANS about the law. I have gotten wiser since then however, and I have managed to play the game successfully in a number of places in Ohio now.

(Doug Pratt) That's what it takes.

Pat, I'd like to ask you to talk about the rocket industry especially any news you might have that you can share as I mentioned earlier, I've been assigned.. to do a cover feature for *Model Retailer* magazine.. on the new directions in the rocketry market emphasis on the effect of the new weight limits.. and new companies. Care to expound?

(J. Patrick Miller) The big change coming is the resurgence of Centuri under the new name of Enertek. Leroy Piester, Bill Stine, and others in Phoenix who were involved in Centuri back in the 1970's are rebuilding the company with the focus on the new weight limits (3.3 pounds liftoff weight) and G motors. I knew in August that Aerotech was making. E,F, & G motors for Enertek but what I didn't know until it was announced at NARAM is that Enertek, effective 1 January, will be the sole distributor of the Aerotech Class C motors. This will have a long term effect which is difficult to predict at this time. However, I would venture to say that in the long term, it will be Enertek which has dominated the new end of the market. There is some scuttlebutt out of Enertek that it has come up with a revolutionary launch system design. I know nothing about the details other than a few references in my conversations with folks at Enertek that it is something special. Too, I understand that Enertek is looking seriously at R/C and its use in the model rocketry. I even heard one rumor that a radar tracking device is being looked at which would be a simple instrument sitting on the ground to pinpoint the altitudes of rockets within inches. This is something, if it really works, the NAR will purchase for its NARAM range.

Got a call today from MRC. I don't know what's up on this front but the conversation clearly indicated that it was in the midst of new product development I doubt we will see anything on the high end of things however.

Estes continues to chat with me every week or so. We are trying to arrange a beginners' competition at NARAM-30 sponsored by Estes which has massive national promotion and a Space Camp trip as the grand prize. I should hear something within the a few weeks on the proposal to do this.

So, that summarizes what I know is happening. I have seen a few ads in the retailer publications promoting U.S. Rockets and High Sierra (a retailer). Of course North Coast Rocketry has switched over to Vulcan motors, given the Aerotech change to Enertek. I don't see any of these manufacturers becoming giants of the industry. We'll see.

(Doug Pratt) Thanks a bunch. Some interesting news there, to put it mildly. I assume you meant that Enertek is going to distribute all model rocket engines from Aerotech, and Aerotech will continue with pro stuff.

(J. Patrick Miller) Yes.

(Bruce Canino) Mr. Miller, since you talk with the people from Enertek and since these are the same people from Centuri, I hope you put in a word for me. One thing I liked about the Centuri kits is they always had the odd-ball kits like the X-24 Bug and Mach-10. I miss kits like that.

(Doug Pratt) I, too, have fond memories of Centuri kits.

(Bunny) Well, if they try to go with the X-24 Bug and Mach 10, I'll take a pass, having nearly been beaned too many times by both of them.

(Doug Pratt) Gee, they worked great for ME!

(Bunny) Those monsters! But if they come out with kits similar to the Centuri Little Joe II I just finished building, then I'll be standing in line with wallet open, letting them take my money. Also, having spent part of the past weekend tracking the old way, I'll be opening the wallet again for one of those radar trackers.

(Bruce Canino) Don't get me wrong. I like the other Centrui kits but the different ones were what made them fun.

(Doug Pratt) I agree, they were always very innovative.

(Arthur Louszko) Speaking of innovative, looking at the design of the Astrocam, the wind drag caused by the camera is really something. How about the vehicle itself? Can anyone come up with a better design?

(Doug Pratt) Me, I want a Cineroc!

(J. Patrick Miller) You commented that the Centuri kits were novel and certainly interesting to build and

fly. I think the person there responsible for that "flavor" in the Centuri rockets was Grant Boyd. Grant was involved in the groundwork at Enertek, but recently left to work on other projects. Hopefully some of his twists in design will show up in the initial line of Enertek kits.

(Bunny) I'm surprised that Doug didn't mention that he wrote an article for *American Spacemodeling* that outlined how to upgrade the Astrocam to FSI F100 power. I'd suggest you forget about the drag and simply add more power. With the wide range of composite engines out there, the Astrocam could easily gain more altitude. Also, a series of article in the HU VAARS newsletter, *T MINUS 5* shows how to convert inexpensive 110 cameras for rocket use. There's even a motorized version.. that shoots multiple pictures per flight.

(Doug Pratt) Wow, I'd love to get a copy of that. Any chance that some of those articles could get uploaded?. A motorized Astrocam or equivalent ? It would make much better use of expensive, big motors. As for my ancient *AmSpac* article (which was printed when it was still *Model Rocketeer*) I was hoping everyone had forgotten it since the thing was marginally stable

(Bunny) Whoops!

I forgot to mention that the *T MINUS 5* article has some of the best Astrocam photos I've seen.

(J. Patrick Miller) Last May at the Dallas Convention, a fellow showed up from Sherman, Texas with a converted 110 camera. He built a balsa housing for it, tinkered with the internal mechanisms to get the frequency he wanted in photos, and had some really nice shots of his neighborhood. The whole project cost him $20 or so. I wish he had come to NARAM to give an R&D paper and have repeatedly encouraged him to write an article for the magazine. There is a lot of this kind of activity going on out in the field which goes unreported due to the people not writing an article.

(Doug Pratt) I sure like the sound of these cameras and now that we have the new weight limit it's not out of the question to lift bigger, better cameras. I've seen lots of work with disc cameras from model planes.

Well, let me re-ask one question that I did earlier. What are you guys building lately? What kits interest you the most? I get the impression that contests are catching your attention.

(Bunny) Well,the statistics from the 86-87 Contest Year indicate that competitions ran at a slightly higher level than the 85-86 year. That's a good sign. I've already gotten a ton of results and team applications. I think that means that contest activity is on the rise and I'm glad. I've always felt that competition flying raised the general level of craftsmanship required to build competitive models. And I've certainly had lots of fun flying contest. As for me personally I haven't had as much time to build as I'd like with the twins here, but I did just finish a Little Joe II, and started a scratch build Russian VERTICAL sounding rocket so I guess I'm into scale stuff; NIRA is having a Peanut Scale contest this weekend with sport scale model under 18" tall.

(Doug Pratt) That news about applications is encouraging!

(Arthur Louszko) I'm building a Saturn V right now and I like the 1/2A competitions. I am hoping to enter on break the world parachute duration with my design.

(Doug Pratt) Sounds great, go get 'em!

(Arthur Louszko) So you guys like Scale. Would you like to see more Scale or Scale-like kits. Of course, the problem is there aren't that many REAL rockets to model

(Bunny) Well, let me disagree. I think there's plenty of real rockets to model, and the trouble is people get hung up on data. Peter Alway in Michigan uses simple photos to scale his rockets, and he's done some great stuff with the Atlas. Who's got any good drawings on that beast? No one. But it didn't stop Peter. He just went out and built the bloody thing. If you want better data, you've got to become a detective. Tom Beach and I spent about 4 hours in the photo archives at JSC in 1985, and got some excellent Little Joe photos. I spent about 3 hours measuring the launcher in Houston as well. So data can be had if you're willing to spend the time digging. If anyone here needs some leads on data, I'd be happy to help. I have a complete set of *Model Rocketry Magazines*, *Model Rocketeers* and *American Spacemodeling* magazines, as well as some interesting commie rocket data I copied from Rob Justis' collection.

(Doug Pratt) Da, comrade I think there are some real interesting sounding rocket designs out there which are usually much easier to build since they have REAL fins.

(Bunny) The Little Joe I and II both had big fins and the Mercury Redstone, available as a kit, has sufficient fins. Also the new Estes clear plastic fin units which are used on the Gemini Titan are excellent for modeling sport scale versions of many finless rockets.

(Arthur Louszko) Does anyone know the current 1/2A word parachute record?

(Bunny) Give me a second to look in the file here the current world record. As of December in A parachute duration (that's the smallest class you can set a world record in) is held by a Polish modeler and is 2166 seconds, about 36 minutes.

(Doug Pratt) Whew, that must have been one

heckava thermal. Arthur, what kind of design are you contemplating for the attempt?

(Arthur Louszko) The chute is going to be held in a nose cone. That will open and ride above the chute for less drag. The materials will be things like mylar and the body may only be made of paper.

(Doug Pratt) Sounds interesting. hope you'll keep us posted on it.

(Bunny) I saw some of Frank McMullen's Streamer Duration models from the world championships this past weekend. He had some interesting design concepts that might be worth copying. He'd peeled the inside of his body tubes, standard BT-20 from Estes, down until there was but one layer of paper left. He had his weight down to 2 grams per model, without engine and recovery device of course, but it just goes to show you what you can do if you think a bit about the engineering. I like the idea about the nose cone, Art. Go get that record!

(Bruce Canino) Arthur , A US record was set just across the river from you in NJ at the GSSS contest last month by Charlie Sykos. He had a great flight on Sunday. I think it was about 20 min on a 1/2A.

(Doug Pratt) Hey, Harry's here! Welcome aboard, daddy.

(G. Harry Stine) I just wanted to bring everyone up to date on the latest nonsense from the FAA. At the AOPA convention in Las Vegas on Saturday last, it became known that the FAA intends to lower the Continental Control Area (airspace in which ALL airborne vehicles must file FAA IFR flight plans and carry a Mode C radar transponder) from the present 18,000 feet MSL to 1200 feet above ground level. You heard me right! That would mean that it would become very difficult to get sport rocketry clearances. On a similar note, the FAA in Houston has been attempting to shut down the NASA Johnson Space Center NAR Section even though they are flying under the exempt portions of Part 101 because the operations do not conform to the exempt provision that they be conducted in such a way that they pose no hazard to persons or property. Time we really got on that FAA outfit!

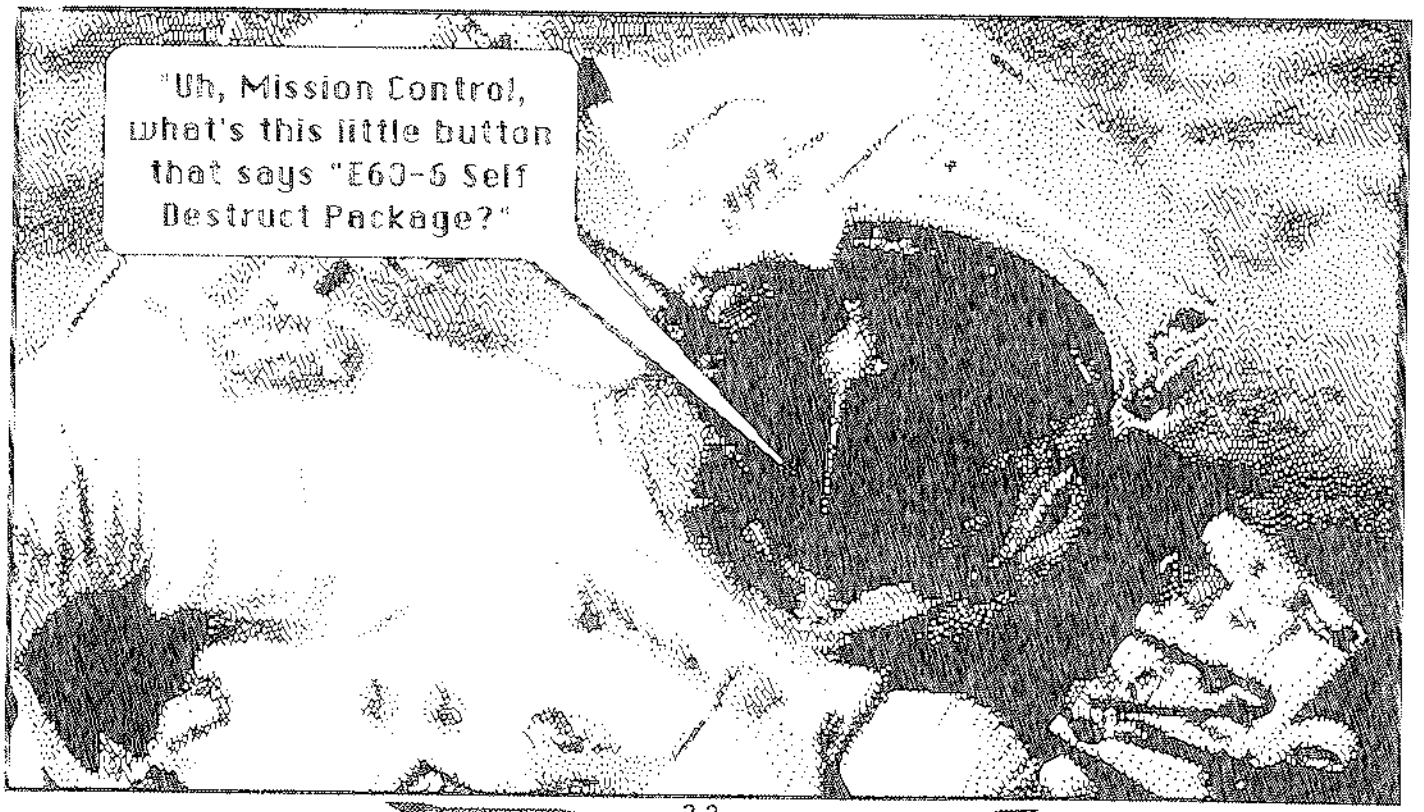
(Doug Pratt) What the heck are they doing? Don't they have enough trouble with near misses? I haven't heard about any problems with low stuff.

(Bunny) I was wondering if the proposal to lower the Continental Control Zone to 1200 AGL wouldn't affect rocketry because of Part 101.

(Doug Pratt) Harry, can you elucidate?

(G. Harry Stine) It may well do so, and that may be the reason why the FAA has dragged its feet on our petition to change Part 101. Incidentally, Doug, please in-

CATO COMIX



form John Worth of this possibility because it will severely impact model aviation, too. Like all model airplane having to carry radar transponders Have John touch base GENTLY with contacts in FAA.

(Doug Pratt) Already done, we discussed it this morning; he was aware, and will be in touch.

(Bunny) It's a sure bet that lowering the Control Zone will kill VFR cross country flying, and as a private pilot who has gone from Chicago to Houston and Chicago to Pennsylvania, I certainly don't want that to happen.

(G. Harry Stine) 1995 pilot: "Whaddaya mean, 'VFR'?"

(Doug Pratt) Harry, I was hoping to ask you for some news and comments on the state of the rocket industry now that we have some new companies on the horizon .. and the new weight and power limits. Care to talk for a bit?

(G. Harry Stine) MRC called today and wanted to know if they could recommend the use of nose cone screw eyes as substitute launch lugs in an emergency on the field. Guess what I told 'em!

Enertek: I understand they will be at the St. Louis HIA show with their new line. Other than that, I don't know.

Estes is in the process of a new catalog at the moment. I'll be able to quiz Mary Roberts on it at the upcoming NFPA Pyro Meeting in St. Louis.

Haven't really been following other manufacturers except that North Coast is making small sounding rockets for E-Prime, a commercial aerospace launch company in Titusville FL.

(Doug Pratt) Thanks, chief. Well, folks, since we've been at it for a few hours now. Shall we have one last round of questions and comments and wrap it up for tonight?

(Arthur Louszko) What do you think of using BT-20 for fins??

(Bunny) Works great, assuming you use 6 pieces glued around the bottom of the tube.

(G. Harry Stine) Shades of the old Centuri Groove Tube! Not a real good idea for flying in strong winds as the flow thru the tubes tends to "choke off" and the bird goes ape.

(Doug Pratt) Thanks a lot, folks been a good one we'll see you all later!

Compuserve is a great way to keep in touch with all the latest goings on in the hobby. In the near future, we'll be featuring other Modelnet conferences, as well as Modelnet files. If you have a computer, you need to get in on the fun. For more information on model rocketry on Modelnet, get in touch with Mark Bundick at: 1523 Cleveland Street, Evanston, IL 60202.

(Continued from Page 2) credible job. In my opinion, Mr. Bundick was not, and I said so.

Apparently, there were other trustees who thought there were problems with Mr. Bundick's handling of the Dan Domina affair. By the time I got to the Board meeting, action had already been taken. The Board moved to insure that the Contest Board Chairman would remove himself from conflict of interest situations. Of course, by the time the Board met, the damage had been done. NOVAAR lost the Reserve Section Championship....ironically to the club I now fly for, HARA.

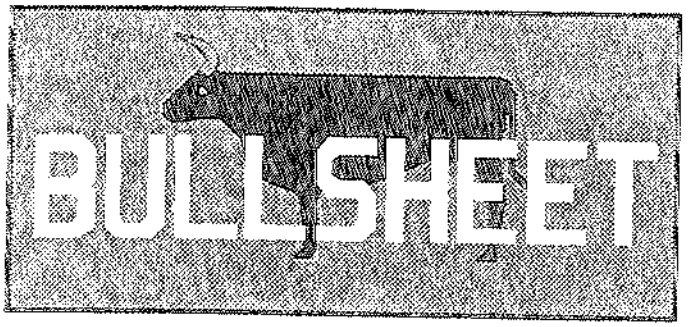
I have also seen the Mr. Bundick's response to the direction from the Board. It just barely fulfills the intention of the Board, biasing arguments for his preferred course of action, rather than just presenting the facts.

Basically, using the "quiet, behind the scenes methods" that Mr. Miller favors is slow, awkward, and cumbersome. It did nothing to prevent NOVAAR from losing many contest points. And, it hides less than competent NAR personnel.

I'm not certain that the SNOAR NEWS article was responsible for the Board's action. I do know that a lot of people were surprised to learn that Mark Bundick would use his position to help his club.

That's the purpose of this newsletter....to keep YOU informed. Unlike American Spacemodeling, we can air dirty laundry, if need be. Who else can?

Matt & Mac II



Enertek announced at NARAM 29 that Aerotech would become their exclusive manufacturer of Class C rocket motors as of the first of the year. Enertek is expected to announce their product line at the January trade shows. Rumors have centered on a movie camera, a large scale model, and perhaps an RC boost glider, but the only "revolutionary" thing that we expect to see announced is some sort of new launcher/launch control system. There are a large number of consultants on retainers to Enertek, including people like Harry Stine, Art Rose, and Marc McReynolds. Somewhat surprising is that Grant Boyd has left Enertek to concentrate on his own business. Supposedly, he will return when things are moving along better. That leaves Lee Piester and Bill Stine as the prime movers at Enertek.

Write your Congressman, and have him jump on the FAA for not approving our 3.3 lb limit. No other kind of pressure has worked, so we need you support to get the FAA off their duff after two years. Simply ask your congressman why the FAA has failed to respond in a timely way to a citizen's group petition who is asking for a minor change in the FAA regulations.

If you don't think this is causing problems, think again. The NARAM range was almost shut down when some jerk from the FAA came out to see what was going on. Only Harry Stine's smooth talking prevented him from doing it. A similar incident has happened at the Johnson Space Center, previous site of NARAM 12, 21, 25 and 27. Who knows when a big head bureaucrat can mess up your flying.

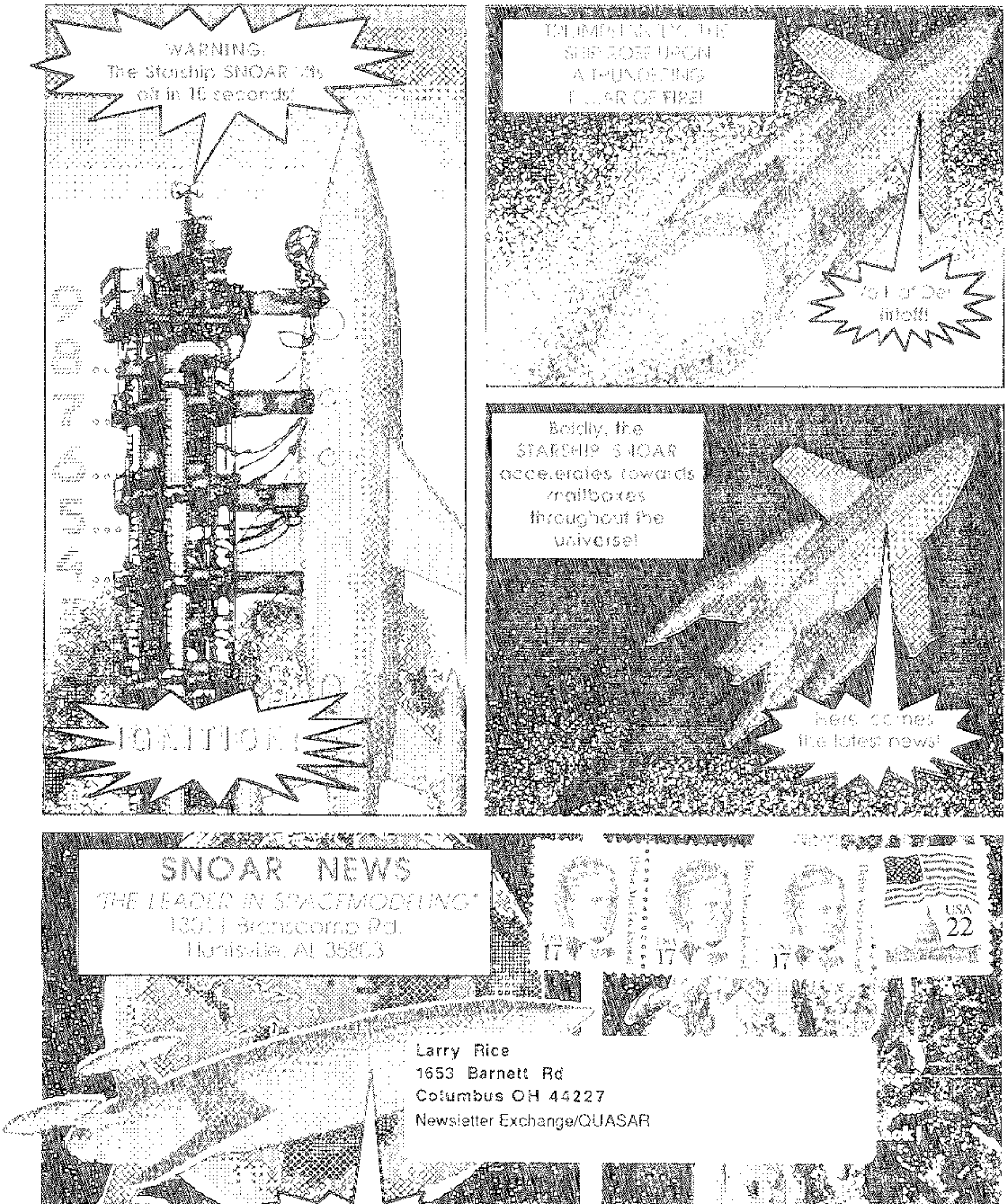
Contrary to his advertising claims, Jerry Irvine is without a reputable motor supplier. AeroTech informed the NAR recently that as of August 1, 1987, AeroTech was no longer supplying U.S. Rockets with relabeled motors under the U.S. Rockets name. Irvine recently had a number of AeroTech motors recertified by Standards and Testing under his label. The reason for this, you ask??? Well, one source told us that Jerry took delivery of about $1200 worth of motors from AeroTech, and ordered about the same amount more. US Rockets then refused to pay for the delivered motors, and refused to return the motors in lieu of payment. Jerry also took a pre-payment for production of the new AeroTech catalog, and we hear that they can kiss that money goodbye, too. It goes without saying that Jerry and AeroTech had but a few words between themselves at LDRS.

U.S. Rockets selling Vulcan motors? Fat chance!" says Scott Starkey Dixon of Vulcan Systems. Jerry recently advertised in the *Tripolitan* that he was a Vulcan Systems dealer. False. Scott hasn't sold him a thing since Jerry screwed Scott over that special effects deal for the movie "Top Gun". Scott refuses to even speak to Jerry now. By the way, it was Vulcan Systems's motors in that appeared in "Top Gun". So much for the claim of Jerry being a "special effects supplier for the movie!" Also, the motors that Jerry is using for "The Running Man" movie are also Vulcan motors.

No FAA waivers for Lucerne. Contrary to the claims in his launch advertisements, and in the coverage in the popular high-power magazines, Jerry Irvine has NEVER filed for an FAA waiver for any of his launches (Winterfest,Summerfest, Octoberfest)! This matter was brought to our attention by some other California rocketeers and verified by the Riverside Flight Standards District Office and Los Angeles Flight Control Center. This means that people attending these launches were flying rockets in violation of Federal Air Regulations. People who are planning on attending future launches sponsored by him should be wary of this (if for no other reason his past reputation of making such false claims), and be prepared for the possibility of having the launch shut down by the FAA the first morning.

While we are on the subject of Jerry, it was recently learned that another one of his suppliers has cut him off because of excess debt. Ric Loehr of Space Dynamics says "no more". He is the producer of some nice parachutes and produces a series of fiberglass nose cones that he uses on his own line of experimental vehicles. Well, Jerry also used them on his 6 inch diameter kits. No more! Ric refuses to deal with Irvine because Jerry owes him too much money. So don't go ordering one of those big kits because you will get it sans nose cone, if you get it at all! Can you believe this guy??!!

NAR HQ now has a new home, allowing Doris Meyer to retire after many, many years of dedicated service. The new HQ manager is Marie Stumpe, and she can be reached at: 2140 Coiburn Dr., Shakopee, MN 55379. You can telephone her at (612) 445-2106.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