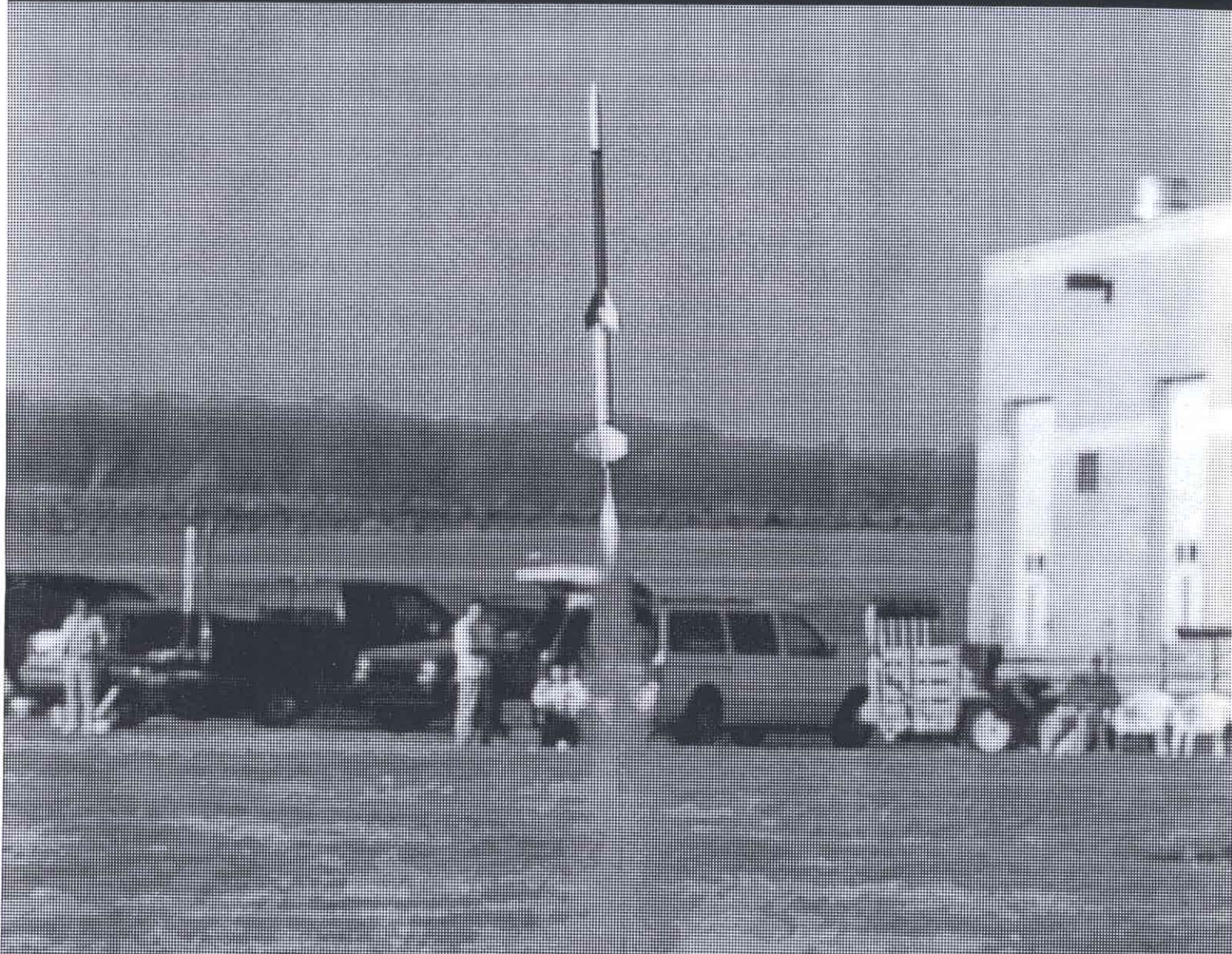


COUNTDOWN

Official Newsletter of SPAAR
THE SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY



*Annual
Almanac
Issue!*

COUNTDOWN

Volume 11, Issue 1
January/February 1998

President

Mark Kamide

Vice President

John Yost

Secretary-Treasurer

George Beever

Section Advisor

Glenn Feveryear

Member at Large

Renee Feveryear

Tripoli Prefect

Ed Miller

Newsletter Editor

Randy Brust

COUNTDOWN is the newsletter of SPAAR, the Southern Pennsylvania Area Association of Rocketry, NAR Section #503, as well as Tripoli Susquehanna #71. **COUNTDOWN** is published 6 times a year for the benefit of SPAAR club members. Any information contained in **COUNTDOWN** may be used as long as proper credit is given. Please address all correspondence to:

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<http://www.cyberia.com/pages/feveryear/index.htm>

**The Editor's Corner**

This month, thanks go out to George Beever, Guy DeStefano, Dave Grumbine, Rick Hackman, and Mark Kamide for contributing to this issue of the Countdown. *Thanks guys!*

As you've probably already noticed, I'm trying out a new format for the Countdown. The copier is willing to produce this format for the same price, and I think it makes our newsletter easier to read and more "magazine like". If you have any comments, pro or con, let me know.

The President's Corner

As a club we have a challenge before us that must be resolved. As many of you know the clubs dues are barely covering the cost of our newsletter. This has placed a burden on the clubs newsletter editors in the past to personally absorb the cost for getting it published and mailed. This must change. We will be discussing ways to resolve this issue at the next club meeting. One method to bring money into the club is the auction we have discussed. I will be donating two Mountainside Hobbies, Inc. Discontinued 4" diameter V2 kits. We will be soliciting other club members for items of value so they may be auctioned off as

I'd like to do an impromptu survey and find out how many SPAAR members have internet access. If you do, please take a minute to drop me an email at rcbrustee@aol.com.

One last thing, and I admit that I'm begging here, *please, please, please*, everyone fill out their flight cards clearly and completely at the club launches. Once you get your rocket prepped, you're anxious to launch, but take an extra minute to fill out your card properly. Thanks!

Randy

well. This will be discussed in detail at the next club meeting.

The clubs equipment is in minor need of repair (connectors on the older launch system) and we should be looking into purchasing one Impulse Aerospace Launch Pad. As it stands now, we have just the one and rely upon other club members to bring their high power pads. This has turned out to be a hit or miss type effort and should be fixed.

We have a great club moving in the right direction and according to the calendar of events for this year. It promises to be a fun filled one. Let us make it a safe and fun one for all.

Mark

In this Issue

Editor's Corner	Page 2
President's Corner	Page 2
Section News Notes	Page 3
Section Meeting Minutes	Page 3
Special Events Report	Page 4
Sport Launch, December 28 th	Page 5
Sport Launch, January 4 th	Page 8
Live Video Rocket	Page 11
SPAAR Section Records	Page 12
SPAAR Roster	Page 13
1997 Fun Facts	Page 13
NAR/TRA Motor Certification List	Page 14

On the Cover

Bob Utley's Estes Terrier-Sandhawk is off on an Aerotech E18-7W RMS at the January 4th sport launch. (*Brust*)

Section News Notes

New Officers for 1998:

The votes have been tabulated and the results are in from the elections for the SPAAR 1998 officers. The new President is Mark Kamide, Vice-President is John Yost, Secretary-Treasurer is George Beever, Section Advisor is Glenn Feveryear, and Member at Large is Renee Feveryear.

Spring Launches Set for Kirkwood:

The spring launch dates for the Kirkwood Farms site have been set. The first launch is April 5th, with a rain date of April 12th. The second launch is May 10th, with a rain date May 31st. Please update your 1998 calendar to include these launches. If you have any questions or need directions, contact Ed Miller at 717-865-5240.

Helicopter Workshop:

We are trying to set up a workshop on models that use helicopter recovery. This will make use of the QCR Rotaroc kit, and will explain how these types of models work, and on contest models in general. A date hasn't been set, and will depend on

the response of the members. Anyone interested should contact George Beever at 717-733-4170 by February 28th.

SPAAR's 10th Anniversary:

1998 marks the tenth anniversary of SPAAR, which was formed in May, 1988 and chartered by the National Association of Rocketry as Section #503 in October of that year. Some special events are planned to mark the occasion, and a series of articles are planned for the Countdown. We are asking that any member, new to the club or who might have been around in those long ago prehistoric times, who has some special memory to share, jot it down and send it in to SPAAR, P.O. Box 127, Reamstown, PA 17567. Thanks!

Upcoming Events:

Saturday, February 28th, 1998 - SPAAR Monthly Meeting/Winter Workshop, 9AM to 1PM, APRIA Community Room, Lancaster, PA.

Sunday, March 8th, 1998 - SPAAR Sport Launch (Best Military Sport Scale Rocket), 1PM to 5PM, Cocalico High School, Denver, PA.

Saturday, March 14th, 1998 - Opossum 2

Open Meet, 10AM to 4PM at Middletown Park, MD. Contact John McCoy at 202-563-1448.

Saturday, March 21st, 1998 - SPAAR Monthly Meeting/Winter Workshop, 9AM to 1PM, APRIA Community Room, Lancaster, PA.

Sunday, April 5th, 1998 - SPAAR Sport/High Power Launch (Best Upscale Rocket), 9AM to 5PM, Kirkwood Farms, Chester County, PA.

Friday, April 17th, 1998 - SPAAR Monthly Meeting, 7PM to 9PM, APRIA Community Room, Lancaster, PA.

Saturday, April 18th - Sunday, April 19th, 1998 - RATS VII High Power Meet, 9AM to 5PM at Cedarville, NJ. Contact Damian Russo at 609-794-2689.

Saturday, May 2nd - Sunday, May 3rd, 1998 - Battlepark 98 High Power Meet, Culpeper, VA. Contact Mike Showalter at 540-547-2539.

Sunday, May 10th, 1998 - SPAAR Sport/High Power Launch (Best Mercury Redstone Rocket), 9AM to 5PM, Kirkwood Farms, Chester County, PA.

Section Meeting Minutes

by George Beever

December 19th, 1997

Present: G. Beever, R. Dwyer, G. Feveryear & Family, D. Greene, R. Hackman, M. Kamide, E. Miller, T. Rossi, D. Weinhold, J. Yost.

Committee Reports:

Due to the circumstances of the meeting, the committee reports were dispensed with.

Discussion was held on the club trip to the National Air & Space Museum, scheduled for January 31st.

The results of the elections of club officers were announced. The club officers for 1998 are: President, Mark Kamide; Vice-President, John Yost; Secretary/Treasurer, George Beever; Member-at-large, Renee Feveryear; Section Advisor, Glenn Feveryear.

January 17th, 1998

Meeting called to order at 9:10AM.

Present: G. Beever, G. Feveryear, R. Feveryear, D. Greene, M. Kamide, E. Miller, T. Rossi, D. Weinhold.

The President, Mark Kamide, opened the meeting by thanking Glenn and Rita Feveryear for donating some unused RAMTEC trophies for use at club events.

Committee Reports:

Treasurer: Reported by George Beever. Balance brought forward as of 1 January 1998, \$215.67. Income since last meeting, \$125, all in dues; expenditures, \$101.62 to Randy Brust for newsletter expenses, and \$70 to Glenn Feveryear for NAR charter and insurance renewal. Current balance, \$169.55

Section Advisor: Glenn reported that the NAR charter was renewed as was the club insurance. He will work with Randy Brust to help update the club's database in regards to the current NAR membership status of the club members. There are 2 to 3 inquiries per week on the club website.

HPR: Ed Miller reported that the FAA waiver application for the spring launches

have been mailed.

Competition: No report.

Newsletter: No report.

Old Business: President reviewed the plans for the NASM trip.

New Business: Discussion held on financial condition of the club. The newsletter is the largest expense, followed by equipment purchase and maintenance. Question: should dues be increased? The club's dues rate has been the same for 10 years, but during that time period the cost of living has risen. The president asked that the financial situation be the focus of the February meeting.

Safety Issues: The president expressed some concern for safety at club launches, with so many people now regularly attending. He proposed having a senior member oversee safety issues at launches, and make a monthly report at club meetings. Some of his concerns are crowding around the LCO, as well as younger members being too close to the pads. Discussion: there was a *club procedure for launching rockets* worked out in the early 90's, and was issued to members as part of a member's handbook. It called for specific jobs to be done by various people in control positions (LCO, RSO, etc). The president asked that this be reviewed and updated as needed.

Auction: An on-line auction will be held to raise funds for the club. The

president asked for donations of kits or other items to be auctioned off. Tony Rossi volunteered to handle the computer end of it. The auction will kickoff soon.

Helicopter Workshop: The president announced that the club will sponsor a workshop on helicopter recovery, with participants building the QCR Rotaroc kit. This will be followed by an informal B Helicopter Duration contest among the participants, possibly in July.

Equipment Maintenance: Ed Miller volunteered to replace the micro-clips on the launch system. Other equipment issues were discussed, and the system itself will be brought to the February meeting.

A Mercury-Redstone building workshop was held, ending at noon. **CD**

Special Events Report

by G. Beever and M. Kamide

SPAAR Family Dinner a Success:

Approximately 30 SPAAR members and their families gathered at the Sunset Diner in Ephrata for the Annual Family Dinner. It's a neat tradition that was begun years ago, and besides, we're very good at eating.

After the Prime Rib Buffet dinner (see what you missed?), new club president Mark Kamide presented immediate past president Dale Greene with a trophy to honor his service for the past two years in that sometimes rather thankless position (thanks Dale). Mark then outlined some future events and projects, such as the upcoming club trip to the National Air & Space Museum in Washington, DC.

We should give a big thanks to Rita Feveryear, for once again conducting the now-famous *Gift Game*, and providing everyone with a door prize. And amazingly enough, everyone behaved themselves, except for Roger, whose disruptive behavior was a terrible distraction (just kidding).

SPAAR Goes to NASM:

What a great trip we had on Saturday January 31st traveling down to the Air &

Space museum in Washington D.C. The meeting place turned out to be a buzz of activity prior to leaving. The scramble to get everyone loaded and ready to go went like a well-planned NASA launch. The count down was given and we left the parking lot at 8:00AM. The next stop, the parking garage located on the south side of the museum. All went well traveling down as a group, except for one car taking a short cut and arriving at the meeting place quite a few minutes later. We found out they took the scenic route down Interstate 95 by mistake or was it Dan? Dan mumbled something about not reading the map. Oh well, we all made it there.

We all met at the Apollo 11 mission capsule and proceeded with a brief discussion of the planned activities for the day's events. An Air & Space questionnaire with mind stumping questions was handed out to everyone. The questionnaire proved to be a lot of fun and kept everyone very busy running around searching for the answers. At one occasion I witnessed a collaboration of efforts by two club members. The winner of the questionnaire will be announced at the next club meeting. The prize is an undisclosed discontinued rocket kit. (By the way, I am sorry to let you know this Mark B., but the Space Shuttles Crawler has quite few less than 5,000,000 cleats on one track)

One of the great features of the mu-

seum are the Imax movies. Quite a few club members attend the showing of "Mission to Mir". Wow, about explains this movie. To see a Soviet Soyuz being casually rolled out with on lookers strolling along side, really makes you think how common place this has become with them. Very little fan-far is shown. The Cosmonauts walk out to the rocket and board an elevator for the ride up. I must admit one thing though, on the way back to earth, I would prefer the gentle landing of the shuttle, as opposed to a parachute landing on terra firma. They made it clear in the movie it is not a very pleasant experience. Once the movie ended we all headed down past the Lunar Lander to eat the buffet lunch.

After lunch we were all on our own to roam the great halls viewing the displays. For those scale buffs in the group, boy, what an opportunity to take photos of the real articles. With so many things to look at and to learn about, spending one day is not enough to take it all in. Well, our day finally came to an end and once again we met at the Apollo Capsule to come back together as a group. After a quick conversation or two, we left the museum and headed home.

The trip seemed to be an overwhelming success with smiles all around. What better way to spend a day with a great group of people admiring our nations best space artifacts. **CD**

SPAAR Sport Launch

December 28th, 1997

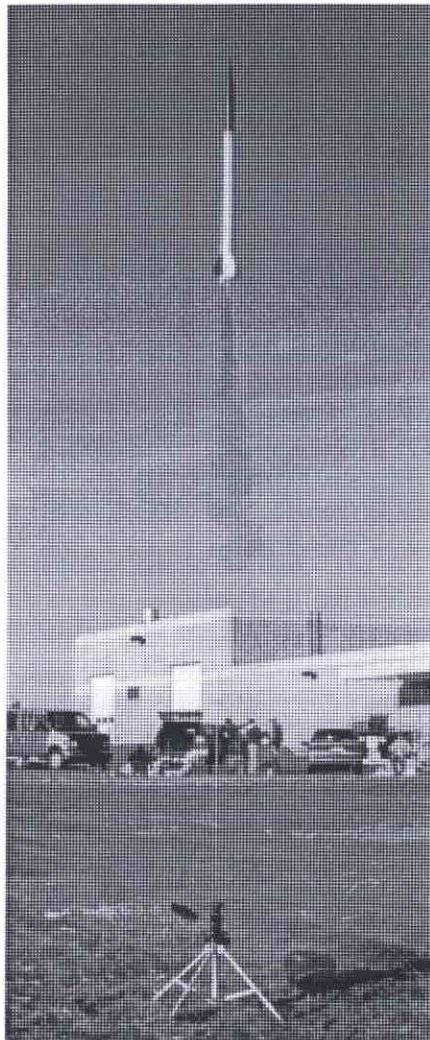
by George Beever

SPAAR's last sport launch of 1997 was held on a beautiful late December day, with temperatures in the high 30s and light wind. Twenty-two flyers took advantage of the great weather to make a total of fifty-eight flights.

New SPAAR members Kathy Gilliland and Bob Utley came up from Maryland, and got in some really neat flights. Kathy's bright yellow Estes Shadow, which she calls *Tweetie Bird*, had a great flight on an Aerotech F24 reload. Bob flew his Estes Impulse on a cluster of two Aerotech E3Os with some hair-raising results. Only one of the motors ignited at first, with the second lighting when the first one burned out.



Rick Hackman's UFO-24 is off on a D12-3. (Beever)



Jamie McCauley's HV Arcas heads skyward on a F50-6T. (Beever)

The flight was still stable, with little or no damage to the model. Clustering composite motors can be a bit tricky.

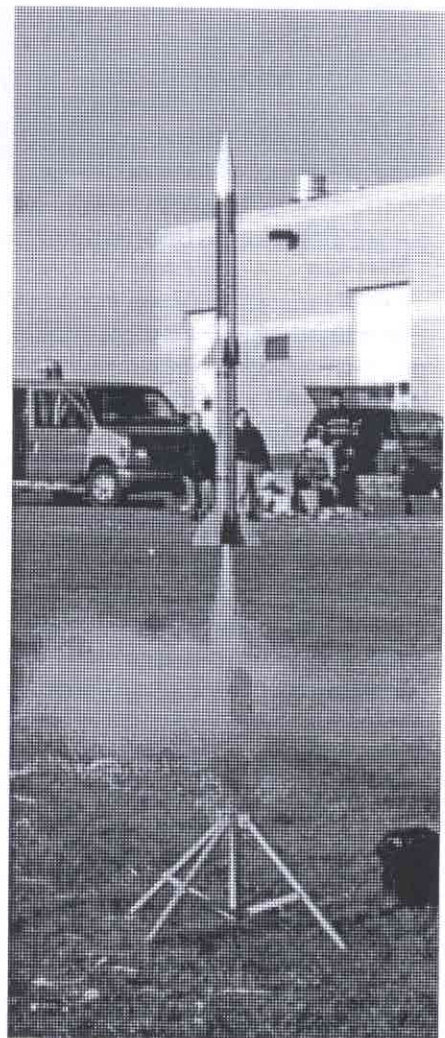
Frank Sombers flew a much modified Estes Fat Boy that he calls *The Charger*. It's painted in the colors and logo of Frank's favorite NFL team, the San Diego Chargers. The body tube is extended to about twice its normal length, with a 24mm motor mount and lightning bolts on the sides. It had great flights on an Estes D12 and then an Aerotech E15. Frank's inspirations were two other rockets seen flying at launches this year, *The Raven* and *The Eagle*. See a pattern developing here?

John Yost flew not one, but *two* sport models! John's venerable LOC Onyx made another great flight on an E30. Mark Kamide made his first flight of a contest model, with a QCR Rotaroc heli-

copter duration model and a C6-3. Too bad we didn't record the time, as it flew great and hung in the air quite a while.

Dave Grumbine, otherwise known as *Captain Video*, flew a tiny little itsy-bitsy TV camera aboard a rocket he calls *Red Eye*. It sent back live feed of the flight to a monitor on the ground. All of this on what looked like a 3" diameter rocket powered by an F24. Things have come a long way in a short time. Only about two or three years ago, SPAAR's John Balmer did the same thing, but he used a 4" diameter LOC Magnum powered by an I motor to loft the equipment. Talk about miniaturization.

For a few years, Dale Greene's NCR Big Brute was considered SPAAR's mascot, picking up where Glenn Feveryear's *Grumpy Dog* left off. Then, one day, Dale's Big Brute met a, shall we say,



George Beever AMRAAM on two D12-5s. (Beever)



Frank Sombers' Arrow takes off on an Estes D12-7 while SPAAR club members look on. (Beever)

Flight Log 12-28

#	Flyer	Manufacturer	Model	Motors	Result
1	George Beever	MRC	AGM-78	Estes B4-4(2)	Good Flight
2	George Beever	Launch Pad	AMRAAM	Estes D12-5(2)	Good Flight
3	George Beever	Launch Pad	Anubis	Estes C6-3	Good Flight
4	George Beever	Estes	Nike-Apache	Estes A8-3	No Chute
5	George Beever	QCR	Rotaroc-17	Estes D12-3	Good Flight
6	George Beever	Estes	Strikefighter	Estes B4-4	Good Flight
7	Steve Biers	Estes	Big Bertha	Estes C6-5	Good Flight
8	Steve Biers	Estes	Big Bertha	Estes C6-5	No Chute
9	Steve Biers	Estes	Sidewinder	Estes C6-5	Good Flight
10	Steve Biers	Estes	Sidewinder	Estes C6-5	Good Flight
11	Kathy Gilliland	Custom	Equinox	Estes D12-3	Good Flight
12	Kathy Gilliland	Estes	Maniac	Estes D12-5	Good Flight
13	Kathy Gilliland	Estes	Shadow	Aerotech RMS F24-4W	Good Flight
14	Kathy Gilliland	Quest	Shockwave	Quest B4-6	Good Flight
15	Dale Greene	North Coast Rocketry	Big Brute II	North Coast Rocketry F62-4	Good Flight
16	Dale Greene	Centuri	Explorer	North Coast Rocketry F62-6	Separation
17	Dave Grumbine	Scratch	Red Eye	Aerotech RMS F24-4W	Good Flight
18	Rick Hackman	Scratch	F3A Tiger	Estes D12-5	Good Flight
19	Rick Hackman	Scratch	Petrol	Estes C6-5	Unstable
20	Rick Hackman	Scratch	Sargeant	Estes B6-4	Good Flight
21	Rick Hackman	Scratch	Sidewinder	Estes A8-3	Unstable
22	Rick Hackman	Estes	Skyhook	Estes A8-3	Good Flight
23	Rick Hackman	Ed Miller	UFO-24	Estes D12-3	Good Flight
24	Mark Kamide	QCR	Rotaroc	Estes C6-3	Good Flight
25	Stephen Knight	Launch Pad	Bullpup	Aerotech RMS E18-7W	Good Flight
26	Stephen Knight	Aerotech	HV Arcas	Aerotech RMS F52-5T	Good Flight
27	Stephen Knight	Estes	Loadstar	Estes B6-0/C6-7	Good Flight
28	Jamie McCauley	Aerotech	HV Arcas	Aerotech F50-6T	Good Flight
29	Jamie McCauley	Aerotech	Initiator	Aerotech F25-6W	Good Flight
30	Craig Myers	Estes	Corkscrew	Estes B6-4	Good Flight
31	Craig Myers	Aerotech	Initiator	Aerotech RMS E23-5T	Good Flight
32	Craig Myers	Aerotech	Initiator	Aerotech RMS F22-5J	Good Flight

spectacular end (ask Dale for the gruesome details). Well, in the mean time, NCR gets bought by Estes, they release their own version of the Brute and of course Dale buys one. He flew it on one of the new Estes/NCR F62 motors and had a great flight. On the flight card, Dale noted, "it's baaaack".

Another new member, Jamie McCauley, flew an Aerotech Initiator and then an HV ARCAS. Both were great flights. Craig Myers got some good flights in with his Initiator, first on an E23 and then an F22. Tony Rossi put a B6-4 in one of the new, smaller Estes R2-D2 models. The four second delay was just a bit long. However, good old R2 looked none the worse for wear, and he'll probably fly again. **CD**

33	Chris Rhymer	Estes	Athena	Estes B6-4	No Chute
34	Tom Rhymer Jr.	Estes	NovaPayloader	Estes B6-4	Good Flight
35	Tom Rhymer Jr.	Estes	Shadow	Aerotech E30-4T	Good Flight
36	Tom Rhymer Jr.	Custom	Venture	Estes A8-3	Good Flight
37	Tom Rhymer Sr.	Estes	Sidewinder	Estes C6-5	Good Flight
38	Tom Rhymer Sr.	Mountainside Hobbies	V-2	Estes D12-3	Good Flight
39	Tony Rossi	Estes	Astrosat LSX	Estes B6-4	Good Flight
40	Tony Rossi	Estes	Big Bertha	Estes C6-5	Good Flight
41	Tony Rossi	Estes	Fat Boy	Estes C6-5	Good Flight
42	Tony Rossi	Estes	R2-D2	Estes B6-4	Good Flight?
43	Brinton Schlegel	Estes	Sidewinder	Estes C6-5	Good Flight
44	Jillane Schlegel	Estes	Mean Machine	Estes D12-5	Good Flight
45	Jillane Schlegel	Estes	Silver Comet	Estes D12-5	Good Flight
46	Robin Schlegel	Estes	Maniac	Estes D12-5	Good Flight
47	Justin Schmidt	Estes	Bandit	Estes A8-3	Good Flight
48	Justin Schmidt	Estes	Flash	Estes A8-3	Good Flight
49	Frank Sombers	Scratch	Arrow	Estes D12-7	Good Flight
50	Frank Sombers	Estes	SR-71	Estes C6-3	Good Flight
51	Frank Sombers	Scratch	The Charger	Estes D12-3	No Chute
52	Frank Sombers	Scratch	The Charger	Aerotech E15-7W	Good Flight
53	Bob Utley	Estes	Impulse	Aerotech E30-7T	Good Flight
54	Bob Utley	Aerotech	IQSY Tomahawk	Aerotech RMS F22-7J	Good Flight
55	John Yost	LOC/Precision	Onyx	Aerotech E30-?T	Good Flight
56	John Yost	Estes	Sizzler	Estes B6-6	Good Flight
57	Matt Zimmerman	Scratch	CDR	Estes C6-5	Good Flight
58	Matt Zimmerman	Estes	NovaPayloader	Estes C6-5	No Chute

Launch Statistics - December 28th, 1997

Number of Flyers: 22 Weather: Cold, Slight Breeze

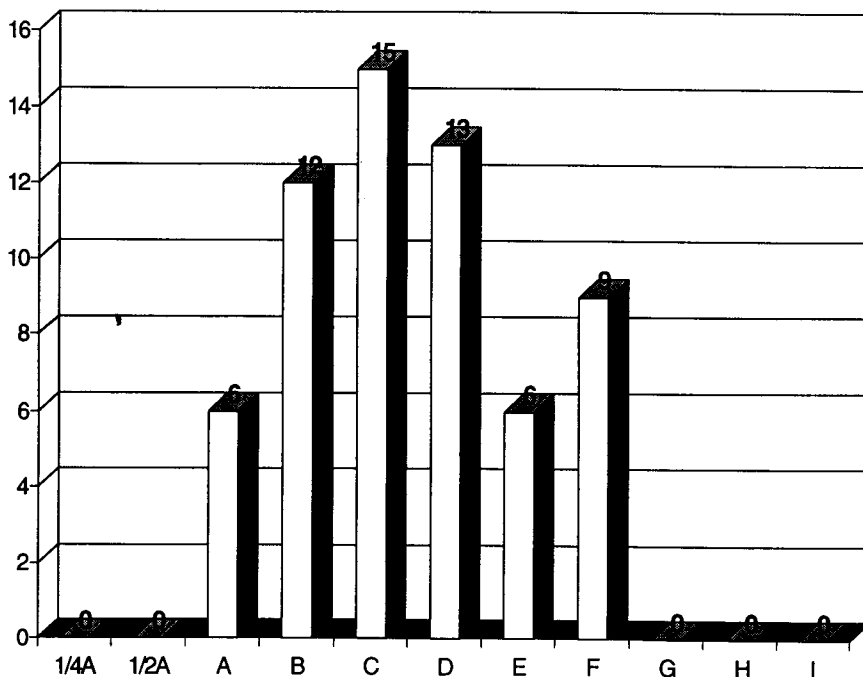
Models Flown:

Estes	27
Scratchbuilt	8
Aerotech	5
Launch Pad	3
Custom	2
QCR	2
Centuri	1
Ed Miller	1
LOC/Precision	1
Mountainside Hobbies	1
MRC	1
North Coast Rocketry	1
Quest	1

Motor Usage:

Estes	45
Aerotech RMS	7
Aerotech	6
NCR	2
Quest	1

Impulse Distribution:



SPAAR Sport Launch

January 4th, 1998

by Guy DeStefano

Somebody pinch me! All we needed was the ocean, some sand, and bingo... a beach party! This *is* January, right? It was a perfect day... for crashes and other bad things. It was very nice to see a large crowd, especially the kids. It's a great sight to see the young ones get excited.

Let's get the crashes out of the way first. Some major crash trophies go out to Mark Kamide whose Mercury-Redstone had an early ejection and took a core sample of the high school property. Kathy Gilliland crashed her *Tweety Bird* rocket. It boosted on an E30, ejected, and then separated. Tweety, however, was able to bail out and land safely. Guy DeStefano's Juice boosted and crashed on an F25. He has flown this rocket many times on F25s, but this time, something didn't add up. Better luck next time to all.

Craig Myers' flew an Initiator on an E18 for a nice flight. Randy Brust's Initiator flew great on one of the new NCR F62 motors but landed on the school roof. He was hard to talk to after that. Dave Grumbine had a lot of minds wondering about his Red Eye that had a video camera on board. Did the camera part land on the roof or not? Not!

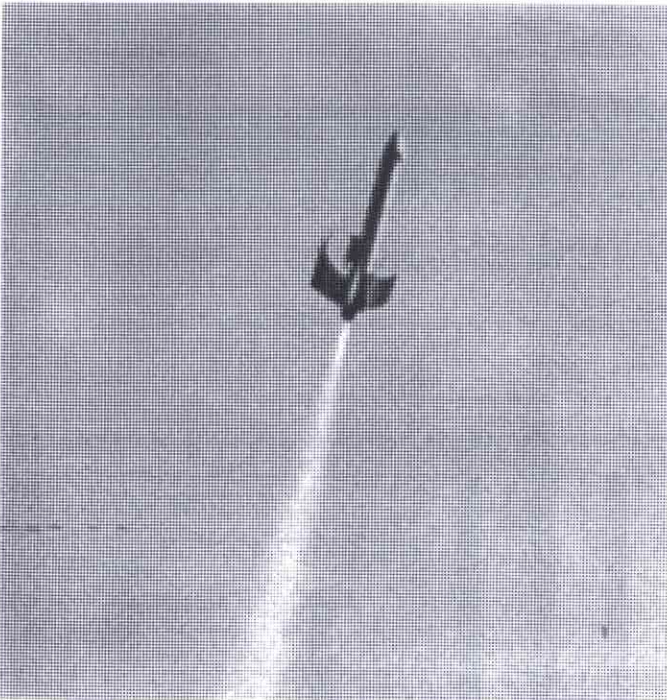
Bob Utley, Nelson Wallace, Guy DeStefano, and Mark Kamide had some nice flights. Bob flew his Terrier-Sandhawk on an E18, Guy flew his Thoy Ibis on an F40, Mark flew his Hermes on an F50, and Nelson flew his modified Mean Machine on an F20. Tom Rhymer flew his V-2 on an E15 and his sons showed Guy DeStefano every one of their rockets before flight. They were all neat!

Tony Rossi flew a rocket that blew up into many pieces... it was supposed to! Had us all fooled. Brian Royer, whom we haven't seen in a while, made a grand appearance. He's recovering from neck

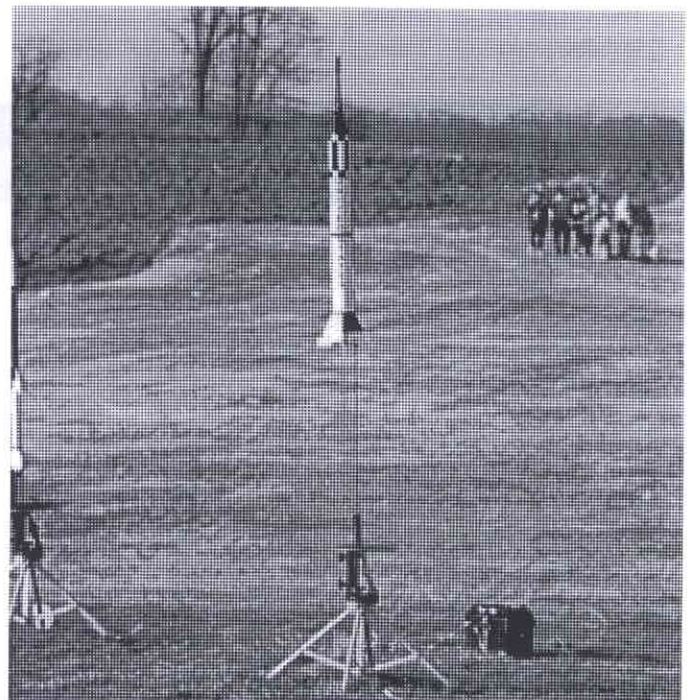
surgery. Hang in there Brian. Glenn Feveryear flew 1/2A, C, and D duration rockets. I noticed Matt Zimmerman didn't fly his CD rocket. Matt, I was wondering when you're gonna modify your John Deere rocket to fly on a K550! When will we see you at a RATS launch?

I would like to express a concern at this time, a safety concern. This is for the youth in our club. On many instances, I have seen rockets being caught before they hit the ground. This is a safety hazard. Some may say that they're very light and no bodily harm can be induced. These people will be ignored. You can never rule out that the rocket may suddenly shift and poke an eye or puncture skin. Never rule out the impossible. I'd rather see a rocket get damaged versus a club member. So, instead of saving your paint job, save your body. Let the rocket land first.

See you all at the next launch and remember, fly high but fly safe. **CD**



Matt Zimmerman's Zarconian Destroyer, winner of the Best Science-Fiction Rocket award. (Hackman)



Mark Kamide's SPAAR Winter Workshop Mercury Redstone on a F52-5T. (Brust)

Flight Log 1-4

#	Flyer	Manufacturer	Model	Motors	Result
1	George Beever	Custom	Equinox	Estes D12-5	Good Flight
2	George Beever	QCR	Rotaroc D	Estes D12-3	Good Flight 112.27s
3	LaRue Bowser	Estes	?	Estes C5-3	Separation
4	LaRue Bowser	Estes	?	Estes C5-3	Good Flight

5	Randy Brust	Scratch	Dart-24	Aerotech RMS F24-7W	Good Flight
6	Randy Brust	Estes	Fat Boy	Aerotech RMS F24-7W	Good Flight
7	Randy Brust	Aerotech	Initiator	North Coast Rocketry F62-6	Good Flight
8	Guy DeStefano	Thoy	Ibis	Aerotech RMS F40-7W	Good Flight
9	Guy DeStefano	Scratch	Juice	Aerotech F25-4W	Prang
10	Guy DeStefano	LOC/Precision	Legacy	Aerotech RMS F40-7W	Good Flight
11	Guy DeStefano	Scratch	Spirogyra	Aerotech F25-4W	Good Flight
12	Glenn Feveryear	Scratch	1/2A Helicopter	Estes 1/2A2-2	Good Flight 34.24s
13	Glenn Feveryear	Scratch	C Streamer	Apogee C4-5	Good Flight 122.27s
14	Glenn Feveryear	Scratch	D Helicopter	Estes D12-5	Good Flight 47.53s
15	Dereck Fritz	Estes	Flash	Estes B6-2	Good Flight
16	Dereck Fritz	Estes	Flash	Estes C6-7	Good Flight
17	Dereck Fritz	?	Goliath	Estes B6-2	Good Flight
18	Dereck Fritz	?	Goliath	Estes C6-5	Good Flight
19	Dereck Fritz	?	Goliath	Estes C6-7	Good Flight
20	Dereck Fritz	?	Navy	Estes B6-4	Good Flight
21	Dereck Fritz	?	Spitfire	Estes B6-4	Good Flight
22	Dereck Fritz	?	Spitfire	Estes C6-7	Good Flight
23	Kayla Fritz	?	Navy	Estes A8-3	Good Flight
24	Kayla Fritz	?	Navy	Estes A8-3	Good Flight
25	Kayla Fritz	?	Navy	Estes A8-3	Good Flight
26	Harvey Fuqua	Scratch	A3	Estes A10-3T	Good Flight
27	Harvey Fuqua	Scratch	LRD-D-1	Estes 1/2A3-2T	Good Flight
28	Harvey Fuqua	Estes	SR71	Estes C6-3	Good Flight
29	Harvey Fuqua	Estes	SR71	Estes B4-4	Good Flight
30	Harvey Fuqua	Estes	Wizard	Estes B4-4	Good Flight
31	Harvey Fuqua	Estes	Wizard	Estes C5-3	Good Flight
32	Adam Gerhart	Estes	Alpha	Estes B6-4	Stripped Chute
33	Adam Gerhart	Estes	Alpha	Estes C6-3	Good Flight
34	Adam Gerhart	Estes	Alpha	Estes C6-3	Separation
35	Adam Gerhart	Estes	Alpha	Estes C6-5	Separation
36	Kathy Gilliland	Custom	Equinox	Estes D12-3	Good Flight
37	Kathy Gilliland	Estes	Maniac	Estes D12-3	Fireworks
38	Kathy Gilliland	Estes	Python	Estes D12-5	Good Flight
39	Kathy Gilliland	Estes	Shadow	Aerotech E30-4T	CATO
40	Kathy Gilliland	Estes	Shockwave	Quest B4-6	Good Flight
41	Dave Grumbine	Scratch	Black Mosquito	Estes C6-5	Good Flight
42	Dave Grumbine	Scratch	Red Eye	Aerotech RMS F24-4W	Good Flight
43	Rick Hackman	Scratch	F3A Tiger	Estes D12-5	Good Flight
44	Rick Hackman	Estes	Klingon Battle Cruiser	Estes C6-3	No Chute
45	Rick Hackman	Scratch	Polaris	Estes 1/2A3-2T(4)	Good Flight
46	Rick Hackman	Scratch	Tartar	Estes A8-3	Unstable
47	Rick Hackman	Ed Miller	UFO-24	Estes D12-3	CATO
48	Mark Kamide	Scratch	Hermes	Aerotech F50-6T	Good Flight
49	Mark Kamide	Scratch	Mercury Redstone	Aerotech RMS F52-5T	Prang
50	Stephen Knight	Estes	Comanche	Estes C6-0/B6-6	CATO
51	Stephen Knight	?	Gemini Titan II	Estes C6-3	Good Flight
52	Stephen Knight	Estes	Hawkeye	Estes 1/2A3-2T	Good Flight
53	Stephen Knight	Launch Pad	Maverick	Estes D12-5	Good Flight
54	Stephen Knight	Estes	MR-20	Estes C5-3	No Chute
55	Stephen Knight	Scratch	Spear	Estes D12-3	Good Flight
56	Craig Myers	Estes	Firebird	Estes C6-5	Good Flight
57	Craig Myers	Aerotech	HV Arcac	Aerotech RMS F40-4W	Good Flight
58	Craig Myers	Aerotech	HV Arcac	Aerotech RMS F52-5T	Good Flight
59	Craig Myers	Aerotech	Initiator	Aerotech RMS E23-5T	Good Flight
60	Craig Myers	Estes	Phoenix	Estes D12-3	Good Flight
61	Craig Myers	Estes	Phoenix	Estes D12-3	Good Flight
62	Matthew Myers	Estes	Corkscrew	Estes C6-5	Good Flight
63	Matthew Myers	Estes	Corkscrew	Estes C6-5	Good Flight
64	Chris Rhymer	Estes	Athena	Estes B6-4	Good Flight
65	Chris Rhymer	Estes	MK-109	Estes A8-3	Good Flight
66	Chris Rhymer	Quest	Totally Tubular	Estes A8-3	Good Flight
67	Tom Rhymer Jr.	Estes	Big Bertha	Estes C6-3	Good Flight
68	Tom Rhymer Jr.	Estes	Corkscrew	Estes C6-7	Good Flight
69	Tom Rhymer Jr.	Estes	Flash	Estes B6-4	Good Flight
70	Tom Rhymer Jr.	Scratch	Mini Totally Tubular	Estes 1/2A3-4T	Rocket Lock
71	Tom Rhymer Jr.	Scratch	Mini Totally Tubular	Estes 1/2A3-4T	Good Flight
72	Tom Rhymer Jr.	Scratch	Neptune E1	Estes A8-3	Good Flight
73	Tom Rhymer Jr.	Estes	Sizzler	Estes C6-3	Good Flight
74	Tom Rhymer Sr.	Custom	Dynamic ?	Estes B6-4	Good Flight

75	Tom Rhymer Sr.	Estes	Phoenix	Estes D12-3	Good Flight
76	Tom Rhymer Sr.	Mountainside Hobbies	V-2	Estes D12-3	Good Flight
77	Tom Rhymer Sr.	Mountainside Hobbies	V-2	Aerotech E15-7W	Good Flight
78	Tony Rossi	Estes	Astrocam	Estes C6-7	Good Flight
79	Tony Rossi	Estes	Astrocam	Estes C6-7	Good Flight
80	Tony Rossi	Estes	Astrocam	Estes C6-7	Good Flight
81	Tony Rossi	Estes	Death Star	Estes C6-5	Good Flight
82	Tony Rossi	Estes	Python	Estes D12-3	Good Flight
83	Tony Rossi	Estes	R2-D2	Estes C6-5	Good Flight
84	Brinton Schlegel	Estes	Gemini DC	Estes B4-4	Good Flight
85	Brinton Schlegel	Estes	Sidewinder	Estes C6-5	Good Flight
86	Brinton Schlegel	Estes	Silver Comet	Estes D12-5	Good Flight
87	Jillane Schlegel	Estes	Mean Machine	Estes D12-5	Good Flight
88	Robin Schlegel	Estes	Cobra	Estes A10-0T/1/2A3-4T	Good Flight
89	Robin Schlegel	Estes	Maniac	Estes D12-7	Good Flight
90	Robin Schlegel	Estes	Sizzler	Estes C6-5	Good Flight
91	Justin Schmidt	Estes	Bandit	Estes B6-6	Good Flight
92	Justin Schmidt	Estes	Bandit	Estes B6-6	Good Flight
93	Justin Schmidt	Estes	Flash	Estes B6-6	Good Flight
94	Frank Sombers	Mountainside Hobbies	V-2	Aerotech E30-7T	Good Flight
95	Bob Utley	Aerotech	IQS-Y Tomahawk	Aerotech F25-6W	Good Flight
96	Bob Utley	Estes	Terrier-Sandhawk	Aerotech RMS E18-7W	Good Flight
97	Robert J. Utley, Jr.	Estes	Astrosat LSX	Quest B6-4	Good Flight
98	Robert J. Utley, Jr.	Estes	Pathfinder	Estes D12-5	Good Flight
99	Robert J. Utley, Jr.	Estes	Turbocopter	Estes A8-3	Separation
100	Oscar Valent	Launch Pad	Exocet	Estes D12-3(2)	Good Flight
101	Oscar Valent	Aerotech	Mustang	Aerotech RMS E11-3J	Good Flight
102	Oscar Valent	Scratch	Scotty's Wonder	Estes D12-3	Good Flight
103	Nelson Wallace	?	Astrobee D	Aerotech F50-4T	Good Flight
104	Nelson Wallace	Estes	Jayhawk	Estes D12-3	Good Flight
105	Nelson Wallace	?	Magnum	Estes D12-0/D12-3	Good Flight
106	Nelson Wallace	Estes	Mean Machine	Aerotech F20-4	Good Flight
107	Nelson Wallace	?	MIG Spy	Estes C6-0(3)/C6-7(3)	Shredded Chute
108	John Yost	?	Groove Tube	Estes C6-5	Good Flight
109	Matt Zimmerman	Estes	Silver Comet	Estes D12-?	Good Flight
110	Matt Zimmerman	Scratch	Zarconian Destroyer	Estes D12-5	Good Flight

Launch Statistics - January 4th, 1998

Number of Flyers: 31 Weather: Unbelievable!!!

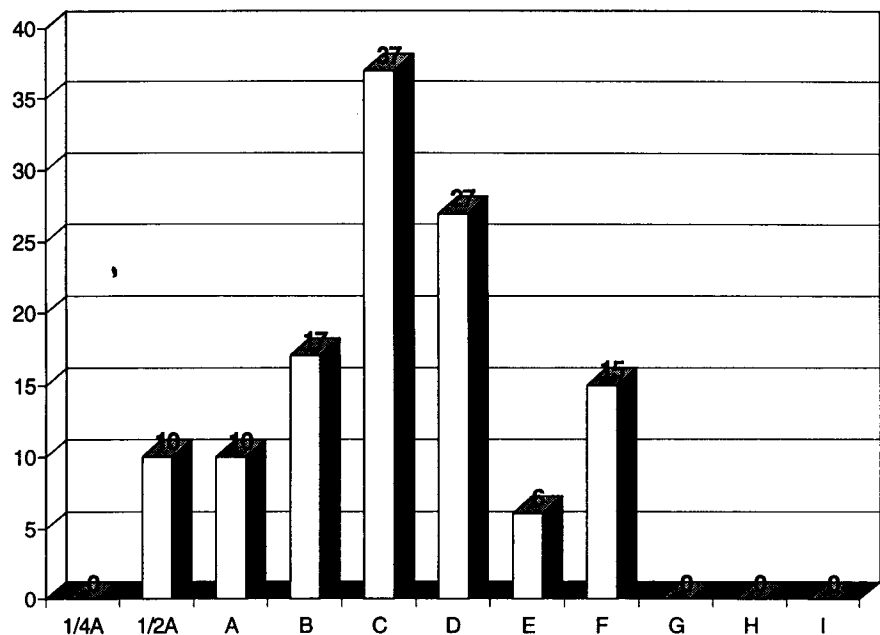
Models Flown:

Estes	44
Scratchbuilt	20
Aerotech	5
Custom	3
Launch Pad	2
Mountainside Hobbies	2
Ed Miller	1
LOC/Precision	1
QCR	1
Quest	1
Thoy	1

Motor Usage:

Estes	98
Aerotech RMS	11
Aerotech	9
Quest	2
Apogee	1
North Coast Rocketry	1

Impulse Distribution:



Live Video Rocket

by Dave Grumbine

Since the first two flights of my video rocket, people have been asking questions about it. Hopefully this article will answer some of them. If you have Internet access, for a more detailed description of the project see the web page <http://straylight.ml.org/~grumbine/rap.shtml>.

Before starting work on the project I set some design goals. These are fairly simple but have served as a guideline as work has progressed. First of all this was to be a "Model Rocket" class rocket, not something that would have to wait for a high-power launch. Secondly it would have to fit into the largest currently available Estes body tube, the 2.6" BT-80. I chose Estes over other tubes because they are lighter.

Now that the body size was specified construction of a booster could begin. A single full-length piece of BT-80 was used, to which three clipped delta balsa fins were epoxied. I used double-glue joints to surface mount the fins. Since it's not a high-power project I didn't feel the extra strength or weight of through-the-wall mounting was required.

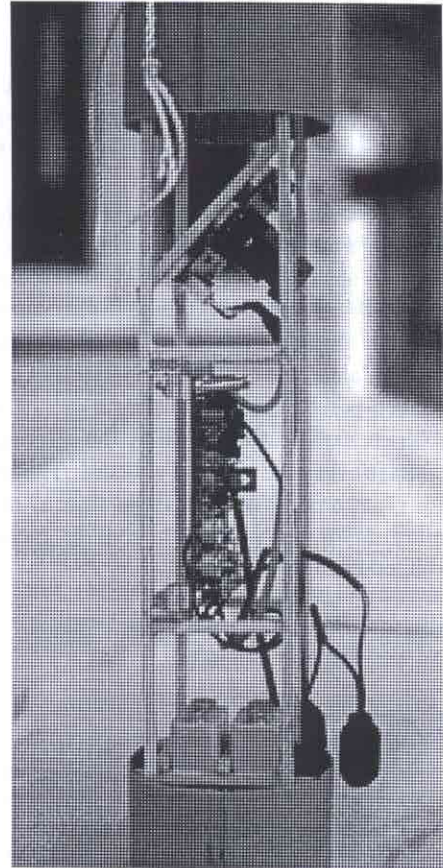
The motor mount is also a standard Estes 24mm mount like the one used in their Phoenix. I chose to use the longer

"E" size motor hook to avoid problems with Aerotech RMS casings. I mounted a screw-eye on the forward centering ring as an anchoring point for the recovery system. A length of steel cable salvaged from a plotter connects the screw eye to the 1/4 inch elastic shock cord.

The payload section is a second full length piece of BT-80 tubing. At the aft end a bulkhead was fashioned out of cardboard epoxied to a tube coupler. Two screw-eyes are mounted on the inside of the bulkhead. A length of 30lb monofilament runs through a hole about 2 inches from the front of the tube down to one screw eye, across to the other screw eye, and back up the tube through a hole on the opposite side of the tube. The two ends are long enough to be joined below the bulkhead for attachment to a second shock cord. This arrangement allows the payload to recover right-side-up.

The payload was constructed using balsa struts between two halves of a second tube coupler. The camera and transmitter were each mounted on two pieces of balsa which were then epoxied between the four main supports running between the two couplers. Two 9V NiCad batteries are used for power and are stored in the aft tube coupler half. A 1/8 inch ear-phone jack was used as a power switch.

The electronics are fairly simple.



The video payload with camera, transmitter, and batteries. (Grumbine)

The camera is a SuperCircuits PC-18 series wide-angle B&W video camera. The transmitter is a 1W 439.25MHz North Country Radio ATVjr. The transmitter comes as a kit but with care is easy to assemble and comes with very thorough instructions. The ground reception equipment is simplified because the transmitter frequency happens to fall on a cable-TV channel (ch. 60). I use a simple 1/4 wave antenna plugged directly into a cable tuner box to receive the signal. This is then fed to a VCR and/or TV for viewing and recording. A deep-cycle marine battery provides power and a 130W power inverter is used to supply 120V to the recording equipment.

The motor of choice for this rocket is the Aerotech RMS 24/40 F24-4W motor. The booster recovers under a home made 17 inch nylon parachute while I have been using a 24 inch nylon Cluster-R parachute for the payload section. With this setup flights last from 1 1/2 to 2 1/2 minutes depending on whether or not the rocket lands on the school roof. **CD**



A frame grab from Dave's second live video flight showing the range head, parking area and school buildings. (Grumbine)

SPAAR Section Records

The following list contains the various SPAAR members who hold club records as of January 31st, 1998. The purpose of this list is to record performance records set by anyone during a SPAAR launch.

There are no special rules on when and how a record can be set as long as it is done during a club launch. Timed flights can be made at any launch. The time must be record on the flight card and the model returned. Altitude flights can be made at a launch where the altitude trackers are setup. These are listed in the SPAAR Calendar.

Each person that establishes a record will receive a nice parchment certificate confirming the achievement. We want to encourage everyone to try for a record. This is not a competition, but it gives a purpose for a flight instead of just going up and coming down, as well as a goal to measure the modelers advancement.

CD

Category Club Member Motors Date Time/Alt/Points

A Division

1/2A Helicopter Dur	Daniel Yost	1/2A3-2T	09/05/93	26.00
1/2A Parachute Dur	Dave Bender	1/2A3-4T	11/03/91	44.50
1/2A Rocket/Glider	Daniel Yost		05/26/91	26.41
1/2A Streamer Dur	Dave Bender	1/2A3-2T	05/05/91	22.09
A Alt	Alan Shepard	A8-3	09/01/96	106.6M
A Helicopter Dur	Daniel Yost	A3-2T	09/05/93	33.00
A Payload Alt	Renee Feveryear	A8-3	09/05/94	28.67M
A Parachute Dur	Dave Bender	A3-4T	05/05/91	50.89
A Streamer Dur	Dave Bender		10/09/88	42.60
B Egg Loft Alt	Renee Feveryear	B6-4	05/28/95	42.9M
B Egg Loft Dur	Derek Yost		05/26/91	17.22
B Helicopter Dur	Daniel Yost	B4-2	09/05/93	71.00
B Parachute Dur	Aaron Newman	B4-6	05/27/90	157.60
B Streamer Dur	Jason Wingenroth	B6-4	10/14/90	40.00
C Boost/Glider	Aaron Newman	C6-3	10/14/90	93.26
C Egg Loft Alt	Renee Feveryear	C6-3	09/04/94	144.5M
C Egg Loft Dur	Daniel Yost		10/09/88	34.10
C Parachute Dur	Eric Marcella		09/03/89	66.44
C Streamer Dur	Dave Bender	C6-7	12/18/88	39.50
D Alt	Roger Dwyer Jr	D12-5	07/19/92	166.5M
D Parachute Dur	Dave Bender	D12-7	10/14/90	94.60
E Alt	Matt Weaver	D12/D12-3	05/26/96	315.2M

B Division

1/2A Parachute Dur	Bill Rhoat		07/23/89	36.50
1/2A Streamer Dur	Bill Rhoat		07/23/89	38.90
A Alt	Aaron Newman	A8-3	06/30/91	83.2M
A Parachute Dur	Bill Rhoat		08/14/88	27.60
A Streamer Dur	Bill Rhoat	A3-4T	07/22/90	85.70
B Alt	Dave Bender	B4-6	08/07/94	265.4M
B Egg Loft Alt	Matt Musselman	B6-4	05/29/94	39.6M
B Egg Loft Dur	Bill Rhoat	B6-2	05/27/90	10.73
B Parachute Dur	Bill Rhoat		04/16/89	79.00
B Streamer Dur	Bill Rhoat		07/23/89	50.90
B Super-Roc Dur	Bill Rhoat		07/23/89	832.50
C Alt	Dave Bender	C6-7	08/07/94	426.9M

C Egg Loft Alt	Matt Musselman	C6-5	05/29/94	100.4M
C Egg Loft Dur	Bill Rhoat		07/02/89	67.20
C Helicopter Dur	Bill Rhoat	C6-3	05/27/90	61.30
C Parachute Dur	Dave Wenrich		08/14/88	33.90
D Parachute Dur	Bill Rhoat		04/16/89	31.10
E Parachute Dur	Bill Rhoat		11/05/89	22.10

C Division

1/4A Boost/Glider	Glenn Feveryear	1/4A3-4	05/03/92	25.89
1/4A Helicopter Dur	Glenn Feveryear	1/4A2-4	09/28/97	67.00
1/4A Parachute Dur	Glenn Feveryear	1/4A3-4	11/08/92	102.38
1/4A Rocket/Glider	George Beever	1/4A3-2	05/24/92	16.12
1/4A Streamer Dur	Gary Feveryear	1/4A3-4	05/03/92	41.99
1/2A Alt	Glenn Feveryear	1/2A3-4T	09/03/95	163.0M
1/2A Boost/Glider	Glenn Feveryear	1/2A3-2T	07/23/89	71.50
1/2A Helicopter Dur	Glenn Feveryear	1/2A3-4T	09/05/93	61.00
1/2A Parachute Dur	Glenn Feveryear	1/2A3-4T	07/02/89	258.00
1/2A Rocket/Glider	Glenn Feveryear	1/2A3-2T	05/30/93	55.00
1/2A Streamer Dur	Glenn Feveryear	1/2A3-4T	09/03/95	139.00
1/2A Super-Roc Alt	Glenn Feveryear	1/2A3-4T	05/28/95	460.00
1/2A Super-Roc Dur	Glenn Feveryear	1/2A3-2T	07/22/90	233.00
A Alt	Rick Hackman	A8-3	08/07/94	81.2M
A Boost/Glider	Glenn Feveryear	A3-2T	07/02/89	84.30
A Helicopter Dur	Glenn Feveryear	A3-4T	09/05/93	166.00
A Payload Alt	Glenn Feveryear	A3-4T	09/04/94	110.9M
A Parachute Dur	George Beever	A3-4T	09/02/90	125.00
A Rocket/Glider	Glenn Feveryear	A3-2T	09/01/91	109.80
A Streamer Dur	George Beever	A3-6T	09/15/91	132.34
A Super-Roc Dur	George Beever	A10-3T	05/27/90	415.00
B Alt	Alan Rubright	B4-4	09/13/92	184.6M
B Boost/Glider	Glenn Feveryear	B4-2	09/02/90	112.30
B Egg Loft Alt	Glenn Feveryear	B7-6	09/03/95	106.0M
B Egg Loft Dur	Ed Miller		05/26/91	83.89
B Helicopter Dur	Glenn Feveryear	B4-4	09/05/93	139.00
B Parachute Dur	Dale Greene	B4-6	07/02/89	184.90
B Rocket/Glider	Glenn Feveryear	B4-2	10/30/88	154.00
B Streamer Dur	Glenn Feveryear	B4-6	08/12/90	168.53
B Super-Roc Alt	Gary Feveryear	B6-4	09/04/94	865.00
B Super-Roc Dur	Glenn Feveryear	B4-4	07/23/89	486.00
C Alt	John Balmer	C6-5	08/07/94	147.4M
C Boost/Glider	Fred Hoke	C6-3	05/27/90	83.70
C Egg Loft Alt	Gary Feveryear	C6-5	09/04/94	172.6M
C Egg Loft Dur	Glenn Feveryear	C6-3	10/09/88	156.00
C Helicopter Dur	Ed Miller	C6-3	05/24/92	197.70
C Parachute Dur	Dale Greene	C6-7	08/13/89	125.25
C Streamer Dur	Glenn Feveryear	C4-5	08/31/97	215.00
C Super-Roc Dur	Dick Rhoat	C6-3	09/03/89	533.42
D Alt	Glenn Feveryear	D3-7	09/01/96	820.8M
D Boost/Glider	John Yost	D12-3	09/02/90	67.38
D Dual Egg Loft Alt	Glenn Feveryear	D21-7	05/24/92	294.0M
D Helicopter Dur	George Beever	D12-3	05/29/94	112.00
D Parachute Dur	Ed Miller	D12-5	07/02/89	120.07
D Streamer Dur	Flirt'n With Disas.	D12-7	05/28/95	95.44
E Alt	George Beever	E18-7	07/19/92	269.9M
E Helicopter Dur	John Yost	E15-4	08/12/90	115.00
E Parachute Dur	Robert Balogh	E6-4	09/03/89	104.75
E Streamer Dur	Ed Miller	E25-10	07/22/90	106.00
F Alt	George Beever	F25-6	08/07/94	355.7M
F Parachute Dur	George Beever	F25-6	08/12/90	83.40
F Streamer Dur	Ed Miller	F25-12	07/22/90	138.50
G Alt	Ed Miller	G25-15	09/01/96	1527.7M
G Parachute Dur	Robert Balogh	G40-7	08/13/89	138.42
G Streamer Dur	Ed Miller	G25-10	07/22/90	181.60

SPAAR Roster

Presented below is the SPAAR mem-

bership roster as of January 31st, 1998. This list does not reflect possible changes from individuals who do not renew their

memberships. If you notice any errors, please contact Randy Brust so that the roster can be updated accordingly. **CD**

Name	Address	Phone#	Name	Address	Phone#
Jeffery Aughey	150 Speedwell Forge Road, Lititz, PA 17543	(717)626-1139	Dennis Lorah	1692 Heebner Way, Lansdale, PA 19446	(215)368-9856
John Balmer	34 Birch Avenue, Mt. Gretan, PA 17064	(717)964-3820	Marie Lorah	1692 Heebner Way, Lansdale, PA 19446	(215)368-9856
Robert Balogh	1200 Ash Lane, Lebanon, PA 17042	(717)273-7320	Paul Lorah	1692 Heebner Way, Lansdale, PA 19446	(215)368-9856
Laurel Balogh	1200 Ash Lane, Lebanon, PA 17042	(717)273-7320	Steve Machonis	145 Briarhill Lane, Ephrata, PA 17522	(717)656-4475
Karla Balogh	1200 Ash Lane, Lebanon, PA 17042	(717)273-7320	Greg Martin	1304 Marilynn Avenue, Ephrata, PA 17522	(717)733-3527
Christopher Balogh	1200 Ash Lane, Lebanon, PA 17042	(717)273-7320	Curtiss Martin	1304 Marilynn Avenue, Ephrata, PA 17522	(717)588-2707
Allan Bawell	1109 Simmontown Road, Gap, PA 17527	(610)593-6703	Randy Masure	1064 Pine Ridge, Bushkill, PA 18324	(717)733-3527
Erin Beever	231 Weidmansville Road, Ephrata, PA 17522	(717)733-4170	James McCauley	3736 Concordia Road, Columbia, PA 17512	(717)285-5809
Teresa Beever	231 Weidmansville Road, Ephrata, PA 17522	(717)733-4170	Edward Miller	316 E. Queen Street, Jonestown, PA 17038	(717)865-5240
George Beever	231 Weidmansville Road, Ephrata, PA 17522	(717)733-4170	Clint Mizell	571 North Middleton Road, Carlisle, PA 17013	(717)243-6431
Mark Beever	231 Weidmansville Road, Ephrata, PA 17522	(717)733-4170	Eric Munsing	1138 Reading Blvd., Wyomissing, PA 19610	(610)208-0503
LeRoy Bonawitz	115.5 Holstein Street, Bridgeport, PA 19405	(610)279-7482	Peter Munsing	1138 Reading Blvd., Wyomissing, PA 19610	(610)208-0503
Joseph Brust	6205 Domarray Street, Coopersburg, PA 18036	(610)282-1217	Janet Myers	849 Park Hill Drive, Manheim, PA 17545	(717)664-3867
Randall Brust	6205 Domarray Street, Coopersburg, PA 18036	(610)282-1217	W. Craig Myers	849 Park Hill Drive, Manheim, PA 17545	(717)664-3867
Andrew Buffenmyer	145 South Ridge Road, Reinholds, PA 17569	(717)336-3356	Matthew Myers	849 Park Hill Drive, Manheim, PA 17545	(717)664-3867
Dennis Buffenmyer	145 South Ridge Road, Reinholds, PA 17569	(717)336-3356	Shannon O'Neal	116 Columbia Drive, East Fallowfield, PA 19320	(610)383-1435
Harry J. Clark Jr.	127 Buckson Court, Bear, DE 19701		Dave O'Neal	116 Columbia Drive, East Fallowfield, PA 19320	(610)383-1435
Nicolas Colesanti	2445 Black River Rd. Apt. 9, Bethlehem, PA 18015	(610)867-7757	Melissa O'Neal	116 Columbia Drive, East Fallowfield, PA 19320	(610)383-1435
Gaetano DeStefano	499 Farmington Avenue, Pottstown, PA 19464	(610)323-1560	Chris Rhymer	687B Old Schuylkill Road, Pottstown, PA 19465	(610)970-6421
Shane Douglas-Snyder	1999 Mine Road, Paradise, PA 17562	(717)786-8976	Thomas Rhymer Jr.	687B Old Schuylkill Road, Pottstown, PA 19465	(610)970-6421
Roger Dwyer	6074 Goshen Road, Newtown Square, PA 19073	(610)353-3919	Thomas Rhymer Sr.	687B Old Schuylkill Road, Pottstown, PA 19465	(610)970-6421
Don Ewing	169 Hurst Drive, Ephrata, PA 17522	(717)738-0403	Tony Rossi	306 New Haven Drive, Lititz, PA 17543	(717)627-3410
Rita Feveryear	R.D. #1 Box 1-C, Delta, PA 17314	(717)456-5570	Brian Royer	344 Duke Street, Ephrata, PA 17522	(717)733-3952
Daniel Feveryear	R.D. #1 Box 1-C, Delta, PA 17314	(717)456-5570	Robin Schlegel	215 Marion Terrace, Ephrata, PA 17522	(717)738-3744
Renee Feveryear	R.D. #1 Box 1-C, Delta, PA 17314	(717)456-5570	Brinton Schlegel	215 Marion Terrace, Ephrata, PA 17522	(717)738-3744
Glenn Feveryear	R.D. #1 Box 1-C, Delta, PA 17314	(717)456-5570	Justin Schmidt	365 Lititz Road, Manheim, PA 17545	(717)626-9496
James Frisbie	1250 Creek Road, Lititz, PA 17543	(717)656-3232	Dorran Schultz	238 Jan Drive, Harleysville, PA 19438	(215)513-0381
Bradley Frisbie	1250 Creek Road, Lititz, PA 17543	(717)656-3232	George Sechrist, III	611 L Cranbrook Road, Cockeysville, MD 21030	(410)252-1169
Amy Frisbie	1250 Creek Road, Lititz, PA 17543	(717)656-3232	Alan Shepard	210 West Franklin Street, Ephrata, PA 17522	(717)738-2740
Robert Fuld	60 Tanglewood Court, Lebanon, PA 17042	(717)273-6706	Robin Shepard	210 West Franklin Street, Ephrata, PA 17522	(717)738-2740
Kevin Funk	24944 Kaywood Court, Escondido, CA 92026		Ricky Snader	435 South State Street, Ephrata, PA 17522	(717)733-9080
Adam Gerhart	224 Joshua Lane, Ephrata, PA 17522	(717)738-2811	Michael Snader	435 South State Street, Ephrata, PA 17522	(717)733-9080
Kathy Gilliland	12004 Livingston Street, Wheaton, MD 20902	(301)949-4118	Chris Snyder	4610 Ballygar Road, Baltimore, MD 21236	(410)256-7499
Dale Greene	244 Conoy Avenue, Elizabethtown, PA 17022	(717)367-8646	Mark Snyder	4610 Ballygar Road, Baltimore, MD 21236	(410)256-7499
David Grumbine Jr.	16 Memorial Drive East, Bethlehem, PA 18915	(610)758-1740	Carl Snyder	4610 Ballygar Road, Baltimore, MD 21236	(410)256-7499
Rick Hackman	1500 Furnace Hill Pike, Lititz, PA 17543	(717)627-1598	Courtney Sombers	217 Kimberly Lane, Ephrata, PA 17522	(717)738-0181
Fred Hoke	968 Jay Street, Lebanon, PA 17046	(717)272-2409	Frank Sombers	217 Kimberly Lane, Ephrata, PA 17522	(717)738-0181
William Jordan	1384 Perry Drive, Denver, PA 17517	(717)445-7341	Matt Sowers	2670 Thornbridge Road, York, PA 17404	(717)627-4907
Cindy Kamide	42 Eastbrook Drive, Ephrata, PA 17522	(717)738-3957	Tim Spader	48 East 2nd Avenue, Lititz, PA 17543	(717)626-4362
Mark Kamide	42 Eastbrook Drive, Ephrata, PA 17522	(717)738-3957	Robert Utley	11554 Sullnick Way, Gaithersburg, MD 20878	(301)330-2990
Eric D. Kane	56 Marshall Run, Northampton, PA 18067	(610)262-3605	Mathew Weaver	5 Lynch Drive, Lebanon, PA 17042	(717)273-8423
Peter Kazlouski	271A Murray Drive, King of Prussia, PA 19406	(610)265-9309	Ben Weaver	5 Lynch Drive, Lebanon, PA 17042	(717)273-8423
Corey Kline	2034 Shumaker Road, Manheim, PA 17545	(717)665-4816	Lester Weaver	5 Lynch Drive, Lebanon, PA 17042	(717)273-8423
Rick Knauer	680 Hopeland Road, Lititz, PA 17543	(717)738-3948	Daniel Weinhold	2 Spring Street, Salunga, PA 17538	(717)392-8231
Rhelly Knauer	680 Hopeland Road, Lititz, PA 17543	(717)738-3948	Brandon Wolf	120 Gregg Circle, Ephrata, PA 17522	(717)738-2191
Jason Knier	65 Brown Road, Ephrata, PA 17522		Joel Wood	505 Main Street, Akron, PA 17501	(717)859-4883
Stephen Knight	2 Richland Ln, Apt. 208, Camp Hill, PA 17011	(717)737-8803	Logan Wood	505 Main Street, Akron, PA 17501	(717)859-4883
Gary Kulp	137-1 East Walnut Street, Ephrata, PA 17522	(717)738-3416	Hollis Wood	505 Main Street, Akron, PA 17501	(717)859-4883
Robert Kurpiel	5 Circle Drive, Reinholds, PA 17569	(717)336-1174	John Yost	4112 Millbrook Road, Mt. Joy, PA 17552	(717)684-9519
Kurt A. Lacko	205 Hemlock Lane, Springfield, PA 19064	(610)544-2204	Matt Zimmerman	446 Wissler Road, New Holland, PA 17557	(717)354-7956

1997 Fun Facts

Total Number of Flights: 834 Total Number of Motors: 908 Total N-s Burned: 29554

Most Flights		Most N-s Burned		Motors Used		Impulse Distribution	
George Beever	40	Guy DeStefano	3825	Estes	630	1/2A	20
Guy DeStefano	33	Ed Miller	2170	Aerotech RMS	147	A	105
Dave Grumbine	31	Brian Royer	2156	Aerotech SU	90	B	128
Stephen Knight	31	George Beever	1643	Apogee	21	C	251
Brian Royer	28	Randy Brust	1370	Flight Systems	6	D	164
Ben Weaver	28	Ben Weaver	1098	Quest	6	E	47
Rick Hackman	26	Roger Dwyer	1070	Vulcan	4	F	83
Corey Kline	24	Dale Greene	955	NCR	2	G	87
Glenn Feveryear	20	Stephen Knight	900	MRC	1	H	16
Kathy Gilliland	20	Glenn Feveryear	887	Rocketflite	1	I	3

NAR/TRA Motor Certification List

As a service to National Association of Rocketry (NAR) members, the NAR Standards and Testing Committee publishes a list of certified motors twice a year in Sport Rocketry. For those who are unfamiliar with this magazine, it is the official journal of the NAR and is received by NAR members as part of their membership. The following information was obtained from NAR websire at www.nar.org.

As the NAR and the Tripoli Rocketry Association (TRA) maintain a reciprocal certification policy, motors certified by TRA are also included in this list. Motors that are provisionally certified by TRA because they have been submitted but not yet tested are not included in this policy. Duplicate certifications are not listed. Note that TRA currently lists certified motors without specifying their ejection delays.

Information is current as of the date this article was submitted for publication, September 15th 1997. The information for TRA-certified motors is based on the last published TRA Authorized Motor List (Summer 1996) as amended by subsequent announcements. A large number of TRA-certified motors have expired meaning that because they were not submitted by the manufacturer when requested for retesting, they will be decertified after three years (Summer 2000). During this three year period, only old motor stock remains certified for general use. Any newly manufactured motors of these types is not considered certified for use.

Key to Notes

- * Denotes certified for contest use. If no (*) motor decertified for contest use as of January 1, 1996.
- D Denotes a motor decertified for contest use as of July 1, 1998, but allowed for use at NARAM 40.
- E98 Denotes a NAR motor expiring for general use as of July 1, 1998
- E00 Denotes a TRA motor expiring for general use in 2000. See explanation above.
- H Denotes a hybrid motor
- R Denotes a reloadable motor certified only with the manufacturer supplied casing, closures, nozzle, and propellant.

Key to Manufacturers

- Ace Ace Aeronautics
- Aerotech Aerotech or ISP (Industrial Solid Propulsion)
- Apogee Apogee
- Centuri Centuri Engineering Co. (any year)
- Centuri75 Centuri Engineering Co. (motors dated 1975 or later)
- Energion Energion Systems, Inc.
- Estes Estes Industries
- Dragon Dragon's Breath
- FSI Flight Systems Inc.
- Kosdon Kosdon Truly Recyclable Motors
- MRC Model Rectifier Corp.
- NCR North Coast Rocketry
- Plasmajet Plasmajet
- Prodyne Prodyne
- Propulsion Propulsion Industries

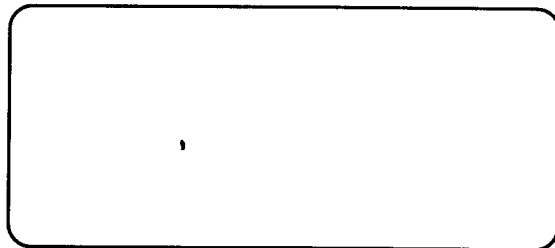
- Quest Quest Aerospace
- Rocketflite Rocketflite
- Synerjet Synerjet
- US Rockets U.S. Rockets
- Vulcan Vulcan
- Wood Wood

Note	Designation	Manufacturer	Size (mm)	Propellant Mass (grams)	Total Impulse (N-sec.)	Cert. Group
*	FX	MRC	8 x 38	Smoke Generator No Thrust		NAR
*	1/4A2-2,4	Apogee	10.5 x 38	0.8	0.62	NAR
E98	1/4A3-2T,4T	Apogee	13 x 45	1.2	0.62	NAR
*	1/2A2-2,4,6	Apogee	10.5 x 38	1.5	1.25	NAR
*	1/2A3-2T,4T	Estes	13 x 45	2.0	1.25	NAR
*	1/2A6-2	Centuri75	18 x 70	2.6	1.25	NAR
*	1/2A6-2	Estes	18 x 70	2.6	1.25	NAR
*	A2-0,3,5,7	Apogee	10.5 x 57	3.0	2.50	NAR
E98	A3-2T,6T	Apogee	13 x 45	3.3	2.50	NAR
*	A3-4T	Estes	13 x 45	3.3	2.50	NAR
*	A6-3,5	FSI	18 x 70	3.0	2.40	NAR
*	A6-4	Quest	18 x 70	3.5	2.50	NAR
*	A8-3,5	Centuri75	18 x 70	3.3	2.50	NAR
*	A8-3	Estes	18 x 70	3.3	2.50	NAR
*D	A8-5	Estes	18 x 70	3.3	2.50	NAR
*	A8-3	MRC	18 x 70	3.0	2.50	NAR
*	A10-0T,3T	Estes	13 x 45	3.8	2.50	NAR
*	B2-0,3,5,7,9	Apogee	10.5 x 89	6.0	5.00	NAR
*	B4-2,4,6	Centuri75	18 x 70	6.0	5.00	NAR
*	B4-2,4	Estes	18 x 70	6.0	5.00	NAR
*D	B4-6	Estes	18 x 70	6.0	5.00	NAR
E98	B4-2	MRC	18 x 70	6.0	5.00	NAR
*	B4-4	MRC	18 x 70	6.0	5.00	NAR
*	B6-0,4,6	Centuri75	18 x 70	5.6	5.00	NAR
*	B6-0,2,4,6	Estes	18 x 70	5.6	5.00	NAR
*	B6-0,3,5	FSI	18 x 70	6.0	4.90	NAR
*	B6-4	MRC	18 x 70	6.0	4.00	NAR
*	B6-0,2,4,6	Quest	18 x 70	6.5	5.00	NAR
*	B7-4,6,8,10	Apogee	13 x 45	2.8	5.00	NAR
*	B8-5	Centuri	18 x 70			NAR
*D	B8-5	Estes	18 x 70	5.5	5.00	NAR
*	C4-3,5,7	Apogee	18 x 50	4.5	9.5	NAR
*	C5-3	Centuri	18 x 70			NAR
*	C5-3S	Centuri75	18 x 70	11.3	9.5	NAR
R	C5-3	Estes	18 x 70	11.3	9.5	NAR
*	C6-3,7	Aerotech	18 x 70	4.9	10.0	NAR
*	C6-0,3,5,7	Centuri75	18 x 70	10.8	9.0	NAR
*	C6-0,3,5,7	Estes	18 x 70	10.8	9.0	NAR
*	C6-0,3,5	FSI	18 x 70	12.0	9.5	NAR
*	C6-3,5	MRC	18 x 70	12.0	8.6	NAR
*	C6-0	Quest	18 x 70	11.0	8.8	NAR
*	C6-3,5	Quest	18 x 70	11.0	8.5	NAR
*	C6-7	Quest	18 x 70	11.0	8.1	NAR
*	C10-4,7,10	Apogee	18 x 50	4.9	10.0	NAR
R	C12-2,5,7	Aerotech	18 x 70	4.4	10.0	NAR
*	D3-3,5,7	Apogee	18 x 77	9.8	19.5	NAR
*R	D7-RC	Aerotech	24 x 70	10.5	20.0	NAR
*	D11-P	Estes	24 x 70	24.5	18.0	NAR
*	D12-0,3,5,7	Centuri75	24 x 70	21.1	17.0	NAR
*	D12-0,3,5,7	Estes	24 x 70	21.1	17.0	NAR
*R	D13-4,7,10	Aerotech	18 x 70	9.8	20.0	NAR
*R	D15-4,6,8	Aerotech	24 x 70	8.9	20.0	NAR
*	D18-0,4,6	FSI	21 x 95	16.1	14.6	NAR
*	D20-0,3,5,7	FSI	21 x 95	20.0	17.0	NAR
*D	D21-4,7	Aerotech	18 x 70	9.6	20.0	NAR
E00	D21-10	Aerotech	18 x 70	9.6	20.0	NAR
*	D24	Aerotech	18 x 70	8.7	19.6	TRA
*	E5-0,4,6	FSI	21 x 95	21.0	21.5	NAR
*	E6-2	AT/Apogee	24 x 70	21.5	40.0	NAR
*R	E6-4,6,8,P	AT/Apogee	24 x 70	21.5	40.0	NAR
*R	E6-RC	Aerotech	24 x 70	21.5	40.0	NAR
*R	E7-RC	Aerotech	24 x 70	17.1	30.0	NAR
*R	E11-4	Aerotech	24 x 70	25.0	35.0	NAR
*R	E12J-RC	Aerotech	24 x 70	30.3	36.0	NAR
E98	E15-4,7,PW	Aerotech	24 x 70	17.8	40.0	NAR
*	E15-10	Aerotech	24 x 70	17.8	40.0	NAR
*R	E15-4,6,8,P	Estes	24 x 89	35.0	32.0	NAR
*R	E16-4,7,10	Aerotech	29 x 124	19.0	40.0	NAR
*R	E18-4,8,10	Aerotech	24 x 70	20.7	39.0	NAR
E98	E25-4,7	Aerotech	18 x 70	11.0	22.0	NAR
E98	E25-10	Aerotech	18 x 70	11.0	22.0	NAR
R	E27-3	Aerotech	18 x 70	10.1	23.0	NAR
*R	E28-2,5,8	Aerotech	24 x 70	18.4	40.0	NAR
*	E30-4,7	Aerotech	24 x 70	19.2	40.0	NAR
E98	E30-10	Aerotech	24 x 70	19.2	40.0	NAR
E00	E30	Propulsion	29 x 73	19.4	39.2	TRA
E00	E43	Synerjet			34.0	TRA
*	E45-4,8,12	Aerotech	18 x 107	19.2	40.0	NAR
*	E60-0,4,6,8	FSI	27 x 114	40.4	29.0	NAR
*	F7-4,6	FSI	27 x 152	58.0	50.0	NAR
*	F10-2	AT/Apogee	29 x 85	40.7	80.0	NAR
*	F10-4,6,8	AT/Apogee	29 x 85	40.7	80.0	NAR
*R	F12-2	Aerotech	24 x 70	30.0	45.0	NAR
*R	F13-RC	Aerotech	32 x 107	32.3	63.0	NAR
*	F14-4,6,P	Aerotech	29 x 98	50.0	65.0	NAR
E98	F14-9	Aerotech	29 x 98	50.0	65.0	NAR
*R	F16-RC	Aerotech	32 x 107	62.5	80.0	NAR

COUNTDOWN

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