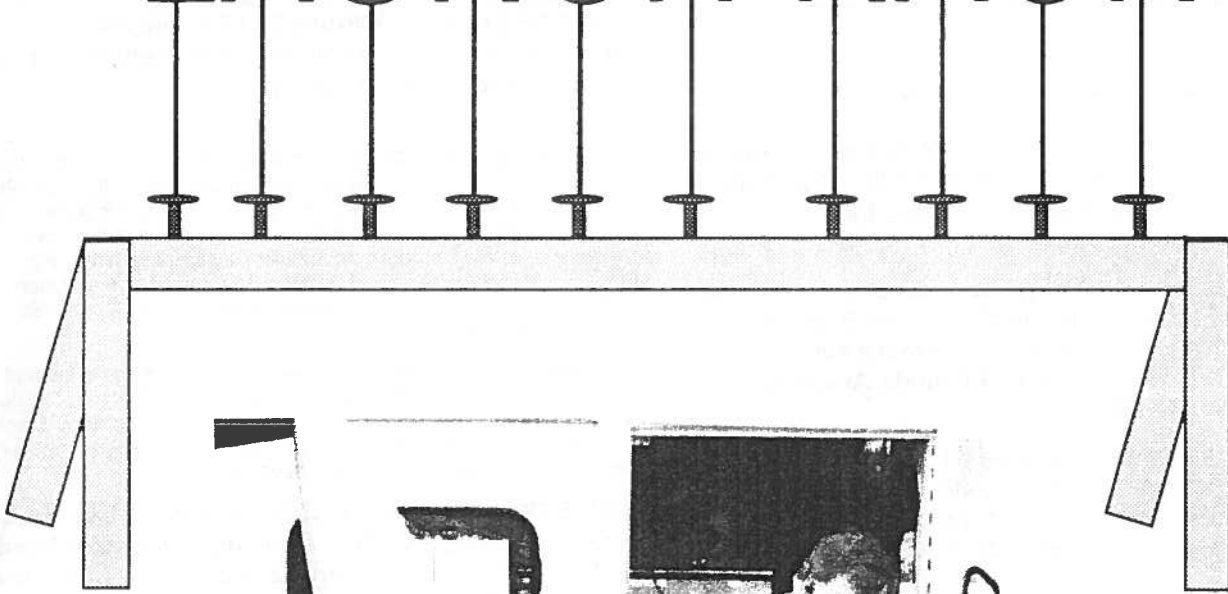


LAUNCH RACK



Tell Us About The Gerbil, Arnie

The Launch Rack

The Official Publication of The

Garden State Spacemodeling Society

March - April 2003

The Launch Rack is the official publication of the Garden State Spacemodeling Society (Section 439 of the National Association of Rocketry) and is published for the enlightenment and entertainment of its membership.

Others interested in receiving this publication may do so for the annual subscription rate of \$7.50 for 6 issues. Overseas subscriptions are \$17.50. Please send this money in USD to **Arnold Klein, 2 Oneida Avenue, Rockaway, NJ 07866.**

The Editors invite and encourage all to submit articles, photos, plans letters to the editor, etc., for future publication. In addition to articles, etc., the Editors welcome and encourage feedback on each and every issue. Please send material to:

Stephen and Theresa Flynn

1 Ridgeway Ave.

Blairstown, NJ 07825

e-mail: teristeve@earthlink.net

Visit the GSSS web site at www.robnee.com/gsss/

As an added note, we especially welcome e-mail attachments in ASCII (.txt), MS Works, or Adobe format as well as digital graphics and digital photos. Photos that work well when converted to black and white would be the best.

Non-copyrighted material published in The Launch Rack may be used by other publications provided proper credit is given to the original author and this newsletter.

Your Club Officers

President Jack Sarhage

Vice President Bob Gill

Vice President Steve Pantuck

Treasurer/Secretary Arnold Klein

Section Advisor Bob Zabriskie

LAUNCH SCHEDULE

Anyone wishing to attend any GSSS activity should call the GSSS Hotline 908-658-9417 the morning of the event to verify if the event is still on. If the event is canceled, the recording will be updated at 9:00 am.

A NOTE ON NORTH BRANCH PARK. Please keep in mind that the park and weather conditions dictate what we allow to fly. Just because a rocket is under the one pound limit, do not assume it is an automatic launch. If the RSO does not feel the model can be safely flown or recovered within the park's boundaries, it will not be flown regardless of the weight or impulse. If some other activity shows up and starts using adjoining fields, the RSO may reduce impulse for all flights. So bring some small stuff just in case.

REMEMBER, WE SHARE THE PARK. We do not pay a fee and most of us are not a resident of that county. Rocket flying fields in New Jersey are in short supply, and we are protective of the fields we have. If you're unhappy with this limitation, then we invite you to help us in gaining legal access of privately owned, large, open fields.

UNLESS NOTED ALL LAUNCHES WILL BE HELD AT NORTH BRANCH PARK from 10:00 AM to at least 3:00 PM. All launches are on Saturdays and are at least Sport Launches.

April 26, 2003 Launch FunTest Open 2003

May 31, 2003 Launch – Possible Contest –
Any volunteers for Contest Director?

June 28, 2003 Launch

July 26, 2003 Launch

August 30, 2003 Launch

September 27, 2003 Launch

October 25, 2003 Launch

November 29, 2003 Launch

December 27, 2003 Launch

IN THIS ISSUE:

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ON THE COVER: Arnie Klein and Dennis Luoni
Photo by Steve Pantuck

The Launch Rack

Editorials:

HPR vs. MR

"What have you done for the NAR lately? As far as I'm concerned, you can go fry ice!"

- G. Harry Stine

(at a 1970's NARAM meeting)

It is always interesting to have divergent opinions in one place. In the interest of having a kind of "Point - Counter Point" dialog, I was inspired to counter the Prez's Mess in the prior issue. - Steve

It was professed in the last issue of The Launch Rack that, in essence, High Power Rocketry was a bane to Model Rocketry. It was said that HPR would be the end of Model Rocketry. Of course, I disagree. I would say that, more likely, HPR has been a savior to Model Rocketry.

Let's start this off with an observation on what we do in rocketry. Some people start off in the hobby with great curiosity. They buy a rocketry starter set or some kind of beginner rocket and give it a try. It is this curiosity, the drive to explore, to try something new that is the crux of what leads from one launch to another, one design to an even bigger or more advanced design. Sooner or later people may become satiated with the hobby. They have explored the Model Rocket hobby from 1/4A Engine through G, from contest flying through rocket design and experimentation. This is where High Power Rocketry comes in. HPR has provided that new frontier for those who have satisfied their MR curiosities. It provides an open-ended means for people to developed further in their hobby.

That said, all one had to do was visit a local Metra TRA launch to find out that HPR launches have a better turn-out than GSSS launches. It appears that this pursuit of new frontiers may be evident in those numbers. The NAR's involvement in HPR can only bring us the membership needed to keep a national organization going.

Given the great opportunity for its members and the advantages of expanding membership by promoting HPR, it can only be worth the risk for a small organization like the NAR for its own preservation.

Hiatus

As a human living under the legal restrictions of the Federal Government I am now pressed very hard to cease some activities in rocketry due to the BATF rules on the purchase of rocket motors. Specifically, I am stopping my involvement with officiating contests and with flying engines with over 62.5 grams of propellant as of May 23 until the rules are changed on HPR motors. A harmless practice that I have been performing for 30 years may now partially "go up in smoke" at the hands of a few ignorant bureaucrats thinking that they are the almighty power declaring anything they find threatening an "explosive". Rocket motors are not built to explode. Using their logic

for controlling explosives, they should also be assigning the same sort of rules to gasoline and propane use. I do not intend to sign myself up like some kind of registered criminal to be able to practice the HPR component of my hobby. This is what the BATF will have all HPR rocketry hobbyists do come May 24 should the U.S. Congress fail to pass a technical adjustment to the Homeland Security Act. After May 24 all people who purchase ANY rocket motors with over 62.5 grams of propellant would have to have a federal license.

Because of the possibility of BATF harassment of innocent rocketry enthusiasts and because few people in GSSS appear to want to work with me by competing in our NAR contests, I plan on temporarily stopping my involvement as a contest director with the last meet under my jurisdiction being the April 26 Funtest Open (see Contest Update). Should the technical adjustment get passed (see also last issue of The Launch Rack) I would certainly like to come back to the role but I am not betting on it in the next few months. I still would like more feedback on my meets. Even if the one-on-one competition is good in our meets, it gets tiring trying to stir up a larger turn out in our club.

Please always remember that, although rocketry may appear militaristic at times, there has always been the matter of the Space Age and its spin-offs that has always provided groundwork for the advancement of our civilization. Young rocketry hobbyists have actually gone on to become astronauts. Others take part in other facets of the space program as well as those who were "spun-off" into other technical professions where their abilities with applying science, technology, and crafts could be put to good use in civilian applications in engineering, computer science and graphic arts, to name only a few of the pursuits.

Now more than ever it is up to YOU to rise to the occasion. If YOU like rocketry. If YOU believe that it should be the same self-regulated hobby that is always has been (except in California) then YOU should fax YOUR U.S. Senator and ask him for support of the technical adjustment to the Homeland Security bill. The hobbyists who wish to stay active in HPR are being forced to register themselves with licensing requiring, leaving themselves open to BATF investigation and invasion of privacy. This is not a healthy situation! Please help our cause.

Thank YOU,

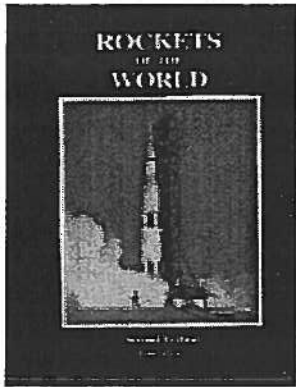
Stephen E. Flynn

Correction: In the last edition, the streamer duration stated, "Next make spool the shock cord and pack it above the streamer or actually tuck some of the cord into the shock cord. It should have been- Next pack the shock cord above the streamer or actually tuck the cord into the streamer. Also, on the cover, Sojars was misspelled as Sojaars.

The Launch Rack

Advertisement

The Sport Scale data in this issue was brought to you courtesy of Peter Alway and the Saturn Press.



Rockets of the World

Includes: 200 versions of 139 rockets from 14 countries with Historical Backgrounds.

Detail drawings are given for the rockets with dimensions as well as drawings showing color scheme.

180 Black and White photos.

Contest Update 2003:

Upcoming Regionals Meets:

Reach for the Sky XV May 3-4 near Pittsburgh

ECRM-30 May 17-18 in Maryland by NARHAMS

NOVAAR regional June 21-22 in Virginia

It would be nice if at least one GSSS member could attend two of these meets so as to max out our contest year with 12 Contest Factors in preparation for the Nationals.

GSSS Contests:

Funtest Open 2003 - A new approach

Given a possible short supply of engines due to the stoppage in engine shipments, we may have to go with an alternative approach to rocket meets. Instead of having a meet where the engines are designated, perhaps we should fly the next meet with events that allow any contest certified engine. Therefore, your CD is Scheduling an Open meet with events in the categories such as Sport Scale, Spot Landing and Precision Duration where contestants can use any motor. So ...

April 26 – FunTest Open 2003

NAR Open Meet and FunTest

Events:	WF
Peanut Sport Scale (like NARAM)	20
Sport Scale	20
Predicted Duration	8
Streamer Spot Landing	4
Parachute Spot Landing	4

Entry feed \$1.00 to go toward a trophy for the top funtest scorer flyer.

Proposal - May ? – How Low Can You Go 2003

This proposed contest is a resurrection of a GSSS contest of old. Perhaps you could have funtest prizes and/or trophies? Since your CD may not be running this meet, a volunteer would be needed to sanction and run the meet.

Proposed Events

Proposed Events	WF
1/4A Boost Glider	18 (Preparation for NARAM?)
C Eggloft Duration	16 (B Eggloft is just too low)
1/4A Super Roc Duration	13
1/2A Streamer Duration	8 (In case we run out of 1/4A's)
Spot Landing	4
(The spot should be relatively close to the launcher to go with the theme)	
Total	59

Spring Challenge 3 Results

The GSSS/Sojars Spring Challenge 3 meet was held on March 16 at the Sojars sod farm field in Swedesboro, NJ. Both a NAR contest and a Funtest, it provided an opportunity for all to "Shoot the moon" model rocket style on a large flying field. Trophies were available for top Funtest A, B and top C Division with ribbons for second place in each division. The events were:

B Rocket Glider	21
C Super Roc Duration	15
B Streamer Duration	9
Random Duration	10

The launch as a whole was relatively busy since this was also the Team America Rocket Challenge trials and just a great field for launching D through G motor flights. Contest flying saw many kits flown in the events. Rockets from Estes, QCR and Apogee were entered. A reliable, logical yet inefficient choice for Super Roc was the Estes Mean Machine on a C11 motor. The top flyer used a rocket composed of what looked like Estes BT-20 tubing. An efficient, yet risky, rocket made from BT-20 and 13 mm and 17 mm carbon composite tubing broke at the bottom of the 7 mm joint. B Rocket Glider saw an Apogee kit vs. a QCR kit.

An awesome March day of warm temperatures, moderate winds and soft sand ended the rocketry season at the farm as the farmer started plowing the field. Perhaps when the growing season ends, the rocket season will once again arrive with the harvest.

Note that the results are based on what was recorded on the flight cards. If the timers didn't record the times, the flight did not count in the contest. It is advisable that everyone in these contests check the results to make sure that their times were recorded – both the timer and the contestant. Also, since Sojars were having people compete in the upcoming regional meets, they elected to all fly as independents so they would not go over their limits in NAR contest factors, 12 is the maximum CF.

Spring Challenge 3

NAR Results

Contestant	Section	B Streamer Duration			B Rocket Glider			C Super Roc Duration			Random Duration 65 Sec.
		Flight 1	Flight 2	Total	Flight 1	Flight 2	Total	Flight 1	Flight 2	Total	Percent
Steven A. Bastow	Ind	-	-	-	-	-	-	1212	1616	2828	89.2
Barry M Berman	Ind	-	-	-	-	-	-	3030	-	3030	24.6
Edward F Blair	Ind	26	DQ Sep	26	6	13	19	4750	8000	12750	35.4
Daniel Flynn	GSSS	DQ Uns	-	0	-	-	-	-	-	-	32.3
Dan McGinnis	Ind	-	-	-	-	-	-	-	-	-	20.0
Robert Ross	Ind	-	-	-	-	-	-	-	-	-	12.3
Ethan Thomas	Ind	-	-	-	-	-	-	DQ Sep	-	0	-
Art Treiman	Ind	54	-	54	-	-	-	1608	-	1608	40.0
Hyperspace Team	GSSS	DQ Sep	59	59	30	-	30	DQ Sep	-	0	DQ

Notes:

- All times in Minutes:Seconds. Times are rounded for final score.
- Random Duration time score is based on one flight. B R/G, B SD and C SRD scores are based on sum of two flights.
- Specific DQ Abbreviations
 - DQ Eject - Engine Ejected (DQ stands for Disqualification)
 - DQ Shred - A part of a glider broke off, i.e., a piece of the wing.
 - DQ Sep - Part of the Rocket separated from the rest of the rocket, i.e., a nose cone.
 - DQ No Dep - Recovery System did not deploy.
 - DQ Uns - Unsafe.
- Section names - Ind = Independent, not representing any section in the contest.
 - GSSS = Garden State Spacemodeling Society

NAR Standings

Contestant	Section	B Streamer Duration		B Rocket Glider		C Super Roc Duration		Random Duration		Total
		Place	Points	Place	Points	Place	Points	Place	Points	Points
Edward F Blair	Ind	3rd	72	2nd	240	1st	300	FP	20	632
Hyperspace Team	GSSS	1st	180	1st	420	DQ	0	DQ	0	600
Barry M Berman	Ind					2nd	180	3rd	80	260
Robert Ross	Ind							1st	200	200
Art Treiman	Ind	2nd	108			4th	60	FP	20	188
Steve A. Bastow	Ind					3rd	120	FP	20	140
Dan McGinnis	Ind							2nd	120	120
Daniel Flynn	GSSS	DQ	0					4th	40	40
Ethan Thomas	Ind					DQ	0			0

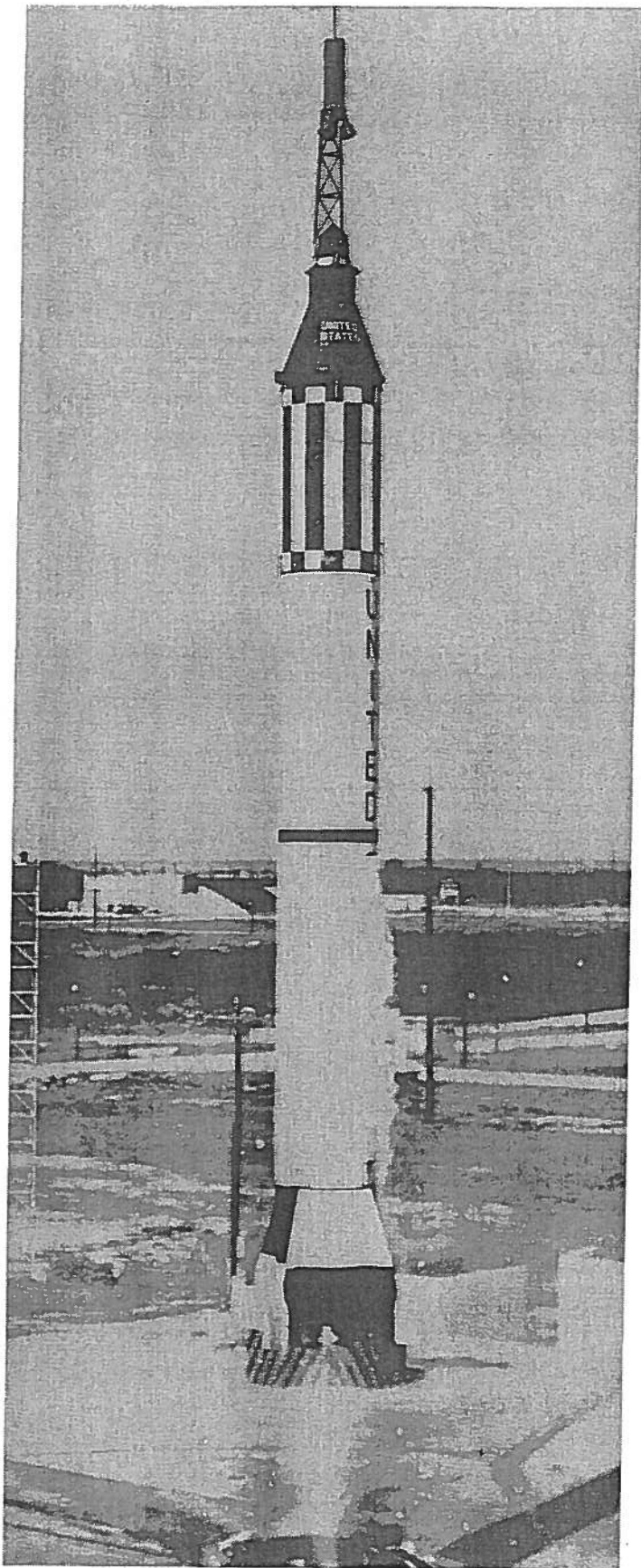
Funtest Results

Contestant	Section	Place
A Division		
Katie Berman	Ind	1st
Daniel Flynn	GSSS	2nd
B Division		
Trifecto Squad	Ind	1st
C Division		
Ed Blair	Ind	1st
Barry Beman	GSSS	2nd
Team Division		
Hyperspace Team	GSSS	1st

NAR Section Totals

Independents	1540
GSSS	640

Mercury-Redstone



When NASA was created in 1958, it was charged with the launch of the first American in space. By early 1959, the project had taken the name "Mercury" and four rockets had been selected to launch the conical Mercury capsule. The Little Joe would fly unmanned tests of the craft, the Jupiter missile would perform a single re-entry test (which, in the end, was never carried out), and the Atlas would propel US astronauts into orbit. But the first American astronauts would fly into space on sub-orbital trajectories atop a Redstone missile.

The Redstone was selected for its ability to launch the 2-ton Mercury capsule on a 100-mile (160 km) high path including 5 minutes of weightlessness. With 50 successful flights to its record, the Redstone was in an advanced state of development, ripe for adaptation into a "man-rated" booster (a rocket qualified to carry human passengers). The Mercury-Redstone required the extended tanks of the Jupiter-C version to meet the performance requirements of the new mission, but the original alcohol fuel of the missile was used, rather than the noxious Hydryne of the Jupiter C. The Redstone's stabilized platform guidance system was replaced with a simpler, more reliable autopilot, located in a cylindrical section permanently attached to the top of the tank section. Engineers added 687 pounds (312 kg) of ballast to the front of this cylindrical section to improve stability. An abort-sensing system was also added to the missile. The Mercury-Redstone differed from the Redstone missile in some 600 details, major and minor.

The first unmanned Mercury-Redstone, mission MR-1, left its pad at Cape Canaveral on November 21, 1960. After reaching an apogee of a couple inches, the Redstone engine shut down. The engine shutoff signaled the Mercury spacecraft to proceed with the complete post-burnout procedure that was meant to be performed in space. Immediately, the escape tower was jettisoned, and the capsule recovery sequence followed, all on the ground in full view of the launch crew. It seems that two plug at the base of the rocket had disconnected in the wrong order. Whether this was due to minor last minute fixes or the slow liftoff of the extra-heavy Mercury-Redstone, the cure was a heavy duty ground connection strap with a foot of slack.

The booster was replaced, and on December 19, 1960, MR-1A flew a successful suborbital trajectory. MR-2 followed on January 31, 1961, carrying a chimpanzee safely on a suborbital flight. After a final unmanned flight, MR-BD, on March 24, 1961, the Mercury-Redstone booster was declared man-rated.

Mercury-Redstone 3 would be the first US manned space flight, taking to the skies less than a month after Yuri Gagarin's historic orbit of the Earth. At 9:34 AM, on May 5, 1961, booster MR-7 lifted off from Cape Canaveral, Florida

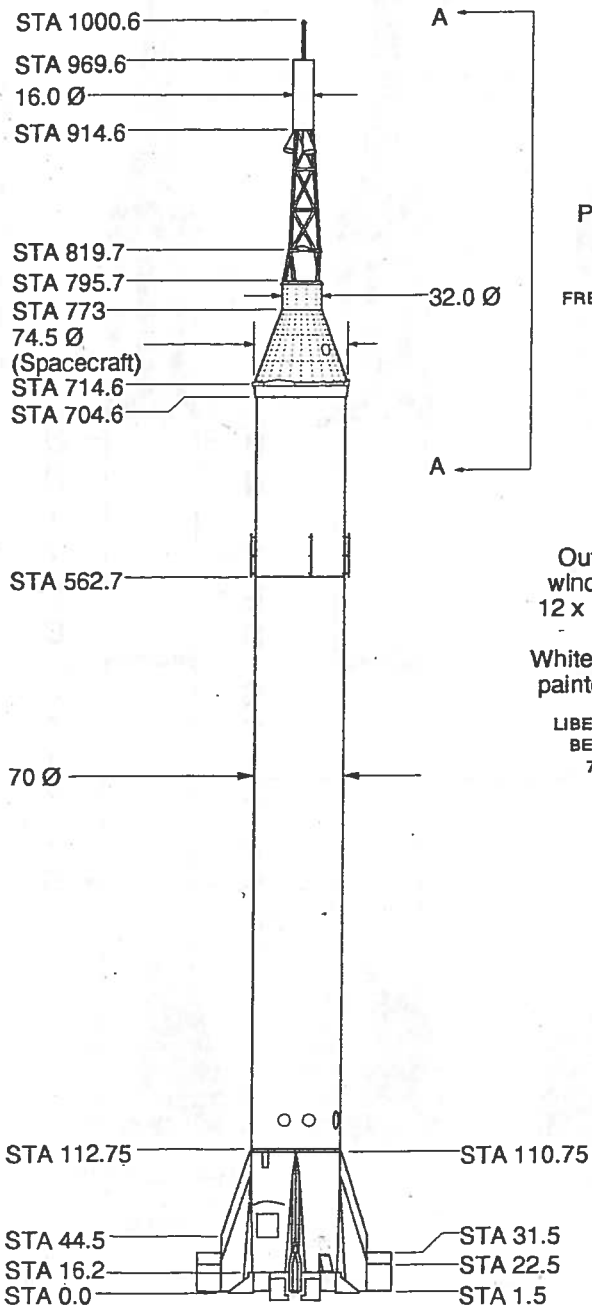
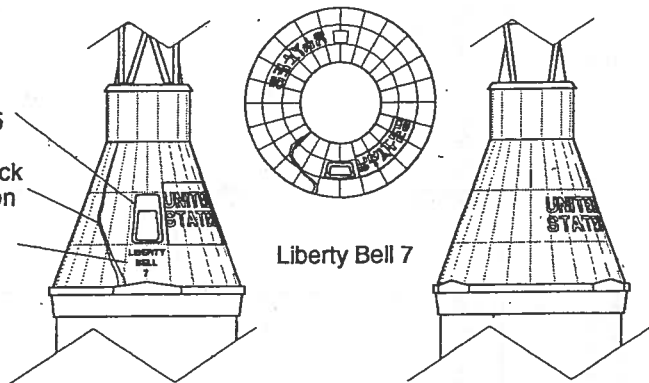
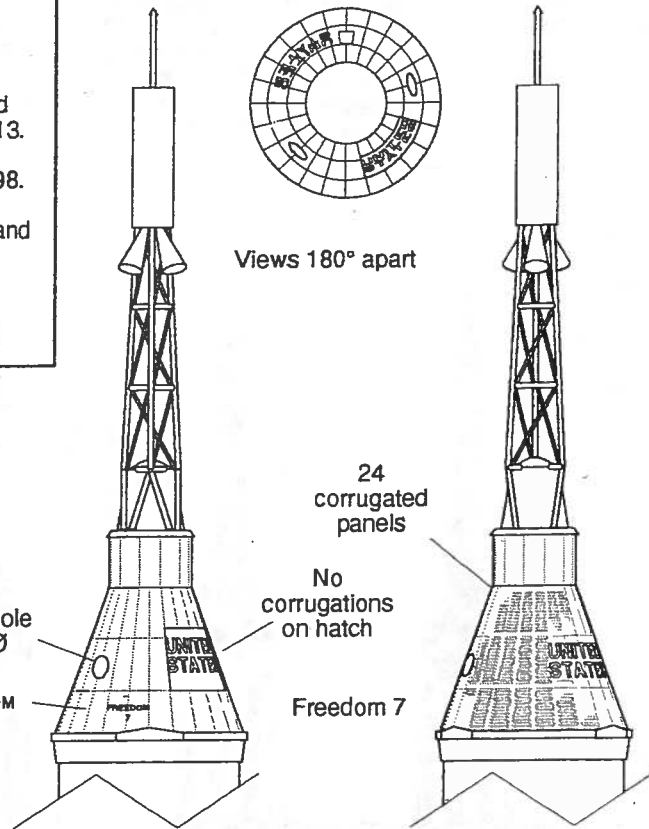
Mercury-Redstone no. 7 launches Alan Shepard on the Mercury-Redstone 3 mission. (NASA photo 61-MR3-72B)

Mercury-Redstone

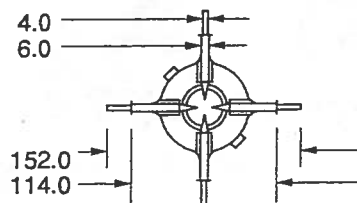
1/150 scale
 Dimensions in inches
 © 1999 Peter Alway

Sources:
 "Juno 1 Payload and Tail Details," George Gassaway and John Pursley, *American Spacemodeling*, January 1988, p. 13.
 1/96 scale NASA model drawing.
Aviation Week & Space Technology, July 22, 1963, p. 198.
History of Rocket Technology, Eugene M. Emme, p. 112.
 Measurements from Freedom 7 spacecraft, National Air and Space Museum, Washington, DC.
 Measurements from Redstone missile, Michigan Space Center, Jackson, Michigan.
 Various NASA photos.

View A-A
 1/75 scale







Rear View

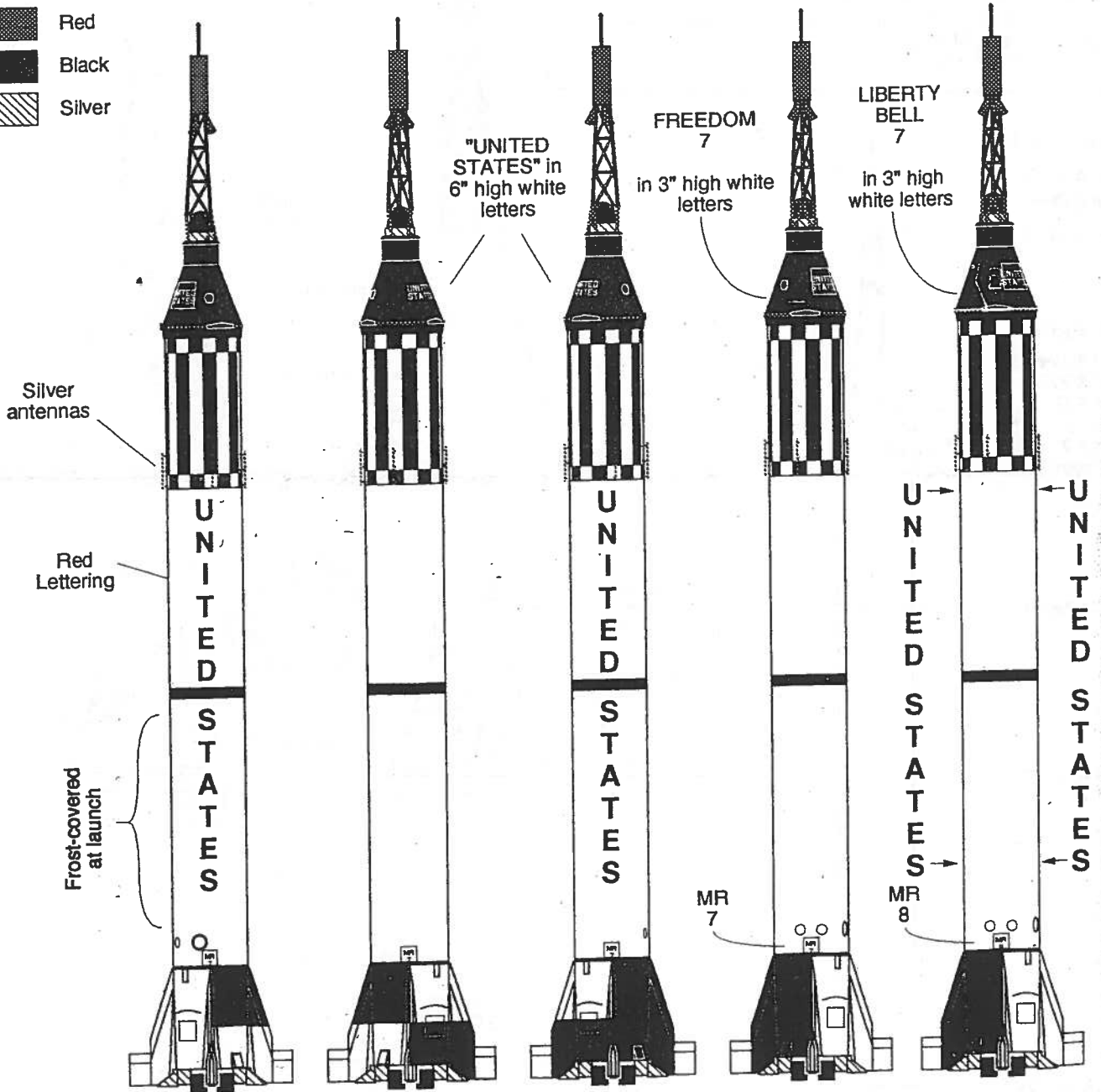


Mercury-Redstone

Color Patterns
1/150 scale
© 1999 Peter Alway

Sources:
"Juno 1 Payload and Tail Details," George Gassaway and John Pursley, *American Spacemodeling*, January 1988, p. 13.
1/96 scale NASA model drawing.
Aviation Week & Space Technology, July 22, 1963, p. 198.
History of Rocket Technology, Eugene M. Emme, p. 112.
Measurements from Freedom 7 spacecraft, National Air and Space Museum, Washington, DC.
Measurements from Redstone missile, Michigan Space Center, Jackson, Michigan.
Various NASA photos.

-  White
-  Red
-  Black
-  Silver



MR-3, Freedom 7, May 5, 1961, Alan Shepard
4 views 90° apart

MR-4, Liberty Bell 7,
July 21, 1961, Gus Grissom

with Alan Shepard riding Mercury spacecraft no. 7, nicknamed "Freedom 7" (later Mercury craft picket up the number seven, signifying the seven original US astronauts). Fifteen seconds after launch, MR-3 tilted to the east, flying over the Atlantic Ocean. The Mercury-Redstone gave a rough ride as it passed through the speed of sound, in spite of a lead-plastic vibration-damping compound added to the cylindrical guidance section. As the Redstone exhausted its fuel, its acceleration increased. By the time the engine cut off, 142 seconds after launch, Shepard was subjected to 6.2 g's. At the moment of burnout, the launch escape tower, no longer needed to extract the Mercury spacecraft from a possible booster disaster, shot away from the spacecraft.

For ten seconds the capsule remained attached to the booster, insurance against residual Redstone thrust causing a collision after separation. Then Freedom 7 separated from the Redstone, and automatically oriented itself for re-entry. With just a few minutes of flight ahead, both Shepard and Freedom 7's automatic control systems put the spacecraft through its paces, altering attitude and testing Mercury's retro rocket pack. The spacecraft coasted to a peak altitude of 116 miles (186 km). During descent through the atmosphere, accelerations reached a peak of 11 g's. At an altitude of 4 miles (6.4 km), just 9 minutes, 38 seconds after launch, Freedom 7 deployed its drogue parachute, and at an altitude of 2 miles (3 km), the main parachute deployed. Shepard spent a third of his 15 minute flight gently floating to the surface of the ocean. At 9:49, Freedom 7 splashed into the Atlantic Ocean, 487 miles (780 km) from the Cape, spacecraft and occupant in fine condition.

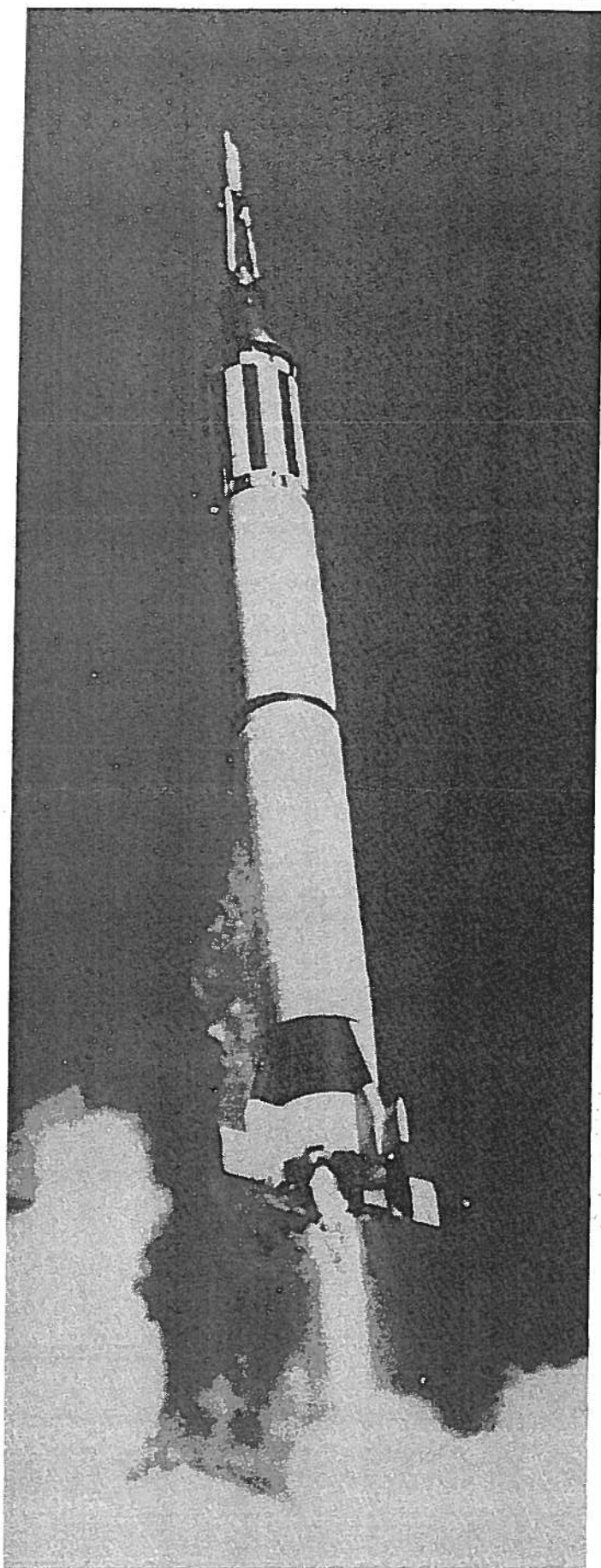
The second manned Mercury-Redstone, MR-4, lifted off from Cape Canaveral on July 21, 1961, carrying astronaut Virgil (Gus) Grissom aboard the Liberty Bell 7. Additional vibration damping made the ride smoother, and a top window on the spacecraft gave Grissom a better view than Shepard, who observed the outside world through portholes and a periscope. Another modification was a side hatch with an explosive bolt release mechanism. This proved to be a disadvantage on recovery. The hatch blew in the water through human or mechanical error. Grissom was rescued, but the capsule sank to the bottom of the Atlantic, where it rests to this day.

MR-4 concluded the Mercury-Redstone program. These manned sounding rockets cleared the way for future Mercury spacecraft and astronauts to ride Atlas missiles into orbit.

Mercury-Redstone Specifications

Loaded weight	66,000 lb (30,000 kg)
Payload weight	2800 lb (1,300 kg)
Thrust	78,000 lb (347,000 N)
Duration	142 sec
Impulse	11,000,000 lb-sec (49,000,000 N-s)
NAR designation	Z 350,000

Alan Shepard's Mercury-Redstone flight. (NASA photo 61-MR3-125)



**DIRECTIONS TO NORTH BRANCH
PARK LAUNCH SITE**

North Branch Park is very near the traffic circle
junction of NJ Routes 22, 28, 202, and 206, near
Somerville. Follow 202 South from the circle for
2 miles, past Ortho Pharmaceutical and Harris Corp,
turn onto Milltown Road. Make first left after
firehouse and 4H Center on right; follow
path to open field. Monthly launches from 10-4.

FROM NORTH
NJ Turnpike South to Exit 10, 287 North to Exit 13,
202/206 South to Circle

FROM SOUTH
202 North to Milltown Rd.; or 206 North to Circle

FROM EAST
287 North to Exit 13, 202/206 South to Circle

FROM WEST
Rt. 78 or Rt. 80 East to 287 South to Exit 13,
202/206 South to Circle

GSSS MEMBERSHIP APPLICATION

Name _____

Address _____

City _____ State _____

Zip _____ Birthdate _____

Phone Number _____

NAR number _____ GSSS number _____

Membership Category (Check One)

- Junior (Under 16)\$5.00
- Leader (16 through 20)\$7.00
- Senior (21 or over)\$10.00
- Family Plan (Deduct \$2.00 for each additional
family member, only one Launch Rack will be
sent.)

I pledge to abide by the NAR/HIA Safety Code and
GSSS Constitution and Bylaws in all my
non-professional rocketry activities.

Signed _____ Date _____

Send this application along with check for dues payable
to: Arnold Klein,
2 Oneida ave Rockaway N.J. 07866

**GARDEN STATE SPACEMODELING
SOCIETY -- NAR SECTION #439**

Robert Zabriskie
3 Peachtree Road
Basking Ridge, NJ 07920



TO:

Robert Nee
222 Willow Avenue - #2A
Hoboken NJ 07030

THE LAUNCH RACK
NEWSLETTER OF NEW JERSEY'S SPACEMODELING SOCIETY