



Team Pittsburgh

Newsletter of the Pittsburgh Space Command NAR #473



Volume 15, Issue 2

#107

Mar/Apr 2003

President's Address to the Nation — February 1, 2003

My fellow Americans, this day has brought terrible news and great sadness to our country. At 9:00 a.m. this morning, Mission Control in Houston lost contact with our Space Shuttle Columbia. A short time later, debris was seen falling from the skies above Texas. The Columbia is lost; there are no survivors.

On board was a crew of seven: Colonel Rick Husband; Lt. Colonel Michael Anderson; Commander Laurel Clark; Captain David Brown; Commander William McCool; Dr. Kalpana Chawla; and Ilan Ramon, a Colonel in the Israeli Air Force. These men and women assumed great risk in the service to all humanity.

In an age when space flight has come to seem almost routine, it is easy to overlook the dangers of travel by rocket, and the difficulties of navigating the fierce outer atmosphere of the Earth. These astronauts knew the dangers, and they faced them willingly, knowing they had a high and noble purpose in life. Because of their courage and daring and idealism, we will miss them all the more.

All Americans today are thinking, as well, of the families of these men and women who have been given this sudden shock and grief. You're not alone. Our entire nation grieves with you. And those you loved will always have the respect and gratitude of this country.

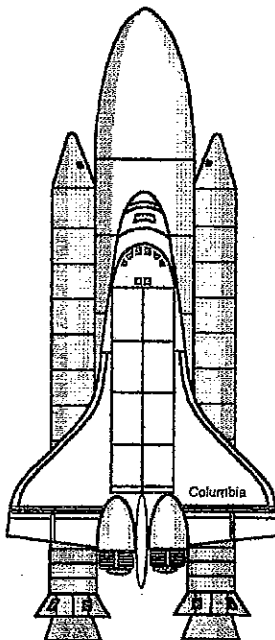
The cause in which they died will continue. Mankind is led into the darkness beyond our world by the inspiration of discovery and the longing to understand. Our journey into space will go on.

In the skies today we saw destruction and tragedy. Yet farther than we can see there is comfort and hope. In the words of the prophet Isaiah, "Lift your eyes and look to the heavens. Who created all these? He who brings out the starry hosts one by one and calls them each by name. Because of His great power and mighty strength, not one of them is missing."

The same Creator who names the stars also knows the names of the seven souls we mourn today. The crew of the shuttle Columbia did not return safely to Earth; yet we can pray that all are safely home.

May God bless the grieving families, and may God continue to bless America.

United States President George W. Bush



Columbia Memorial Article continues on Page 5

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Pittsburgh Space Command
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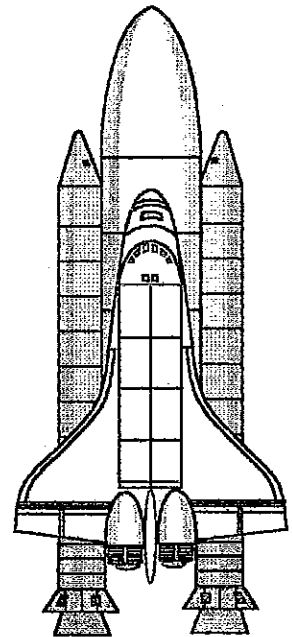
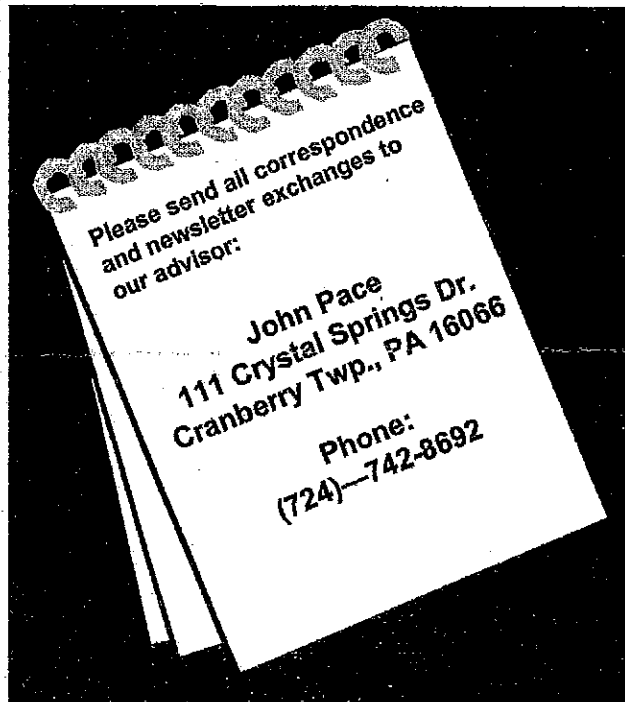
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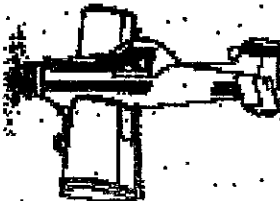
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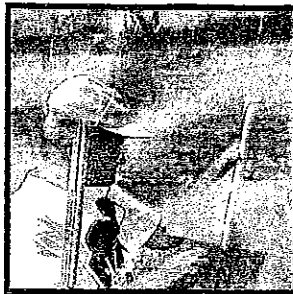


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This year in an attempt to add diversity, improve the content and

increase interest in "Team Pittsburgh", I plan to experiment and obtain co-columnists to share my column space with. It is my hope and belief that their diverse views and interests will enhance our newsletter. I foresee these columns alternating with mine. I will provide the column co-ordination.



To allow this to concept work, CONSIDER this an invitation to become a co-columnist. Send me your columns. These alternate columns will be published in some sort of rotational order. Not to worry, I plan to continue writing my column on the alternate months. I have many interesting subjects on my "to write" list.

PSC member FRANCIS GRAHAM is the first to agree to provide alternate columns. Thank you FRANCIS! To add to this great newsletter's diversity I hope to others will volunteer to contribute columns too.

FRANCIS GRAHAM is a prolific writer, free thinker, and long time rocketeer. FRANCIS is also one of the founding members of high powered rocketry, Tripoli. I believe his Tripoli membership number is real low like 003.

FRANCIS plans to title his columns, "ROCKETS BEYOND STRANGE". This issue's article is entitled. "THE STORY OF APLANOCOPTERS".

Next month I plan to publish my column in its usual format and cover the items promised in the January issue.

Here is to a great new year, to flying in 2003! As always, I look forward to flying with you at our next launch and throughout 2003. See you then!

Mort Binstock NAR 27182

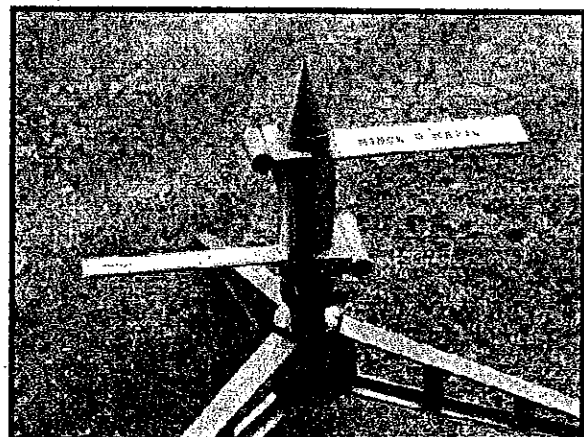
ROCKETS BEYOND STRANGE **THE STORY OF APLANOCOPTERS**

By Francis G. Graham

In this and a series of articles which follow, get ready to venture into concepts and ideas far different from the ordinary rocket. We will look at model rockets that fly in a manner much beyond the norm—in fact, way beyond. We will be going so far out of the box that the box will no longer be even visible. You may find the concepts and ideas presented here entertaining. You may be aghast and think them the work of madmen with too many model rocket motors. You may even be inspired with them, and resolve to investigate further and carry the research onward. You may be totally bored, or utterly perplexed. But whatever happens, be prepared for the journey that takes you from the depths of the inner mind to the high skies above. Welcome to *Rockets Beyond Strange*.

A warning. The rockets presented here are warranted only to fly at least on occasion. There is insufficient data to know how safe they are. They may not comply with too many rules, or even, any rules. You're advised to act carefully before trying to build any or fly any of them. Use extreme caution: They are experimental in the true sense of the word. Do not be surprised if it causes an RSO to go into spasms, or generates other massive negativity. Be patient and contact other experimenters. And always start with half-A's.

The Aplanocopter (Mince-o-Matic by J.Peklicz)



Our first beyond strange rocket is the aplanocopter. To begin to describe it, we imagine the "helicopter recovery" used on conventional model rockets. Now imagine the helicopter to fly upwards, rotor spinning, on rocket power thrusting sideways causing it to rotate. Even that is not an aplanocopter.

Imagine one blade of the helicopter down low and one blade up high. Each of the blades is spun around a cylindrical holder by model rocket engines at high speeds. Now you have an aplanocopter, called so because the helicopter blades are not in the same plane (hence "a-", not, "-plano-" plane, "-copter" referring to helicopter). The first aplanocopters were tested by Joseph A. Peklicz of Martin's Ferry, Ohio in 2000. The high centrifugal forces placed great demands on their structures and centrifugal separations often occurred in early test flights. Finally, in April, 2002, the first successful flight of an aplanocopter occurred in a tennis field in Martin's Ferry, done by Joseph A. Peklicz.

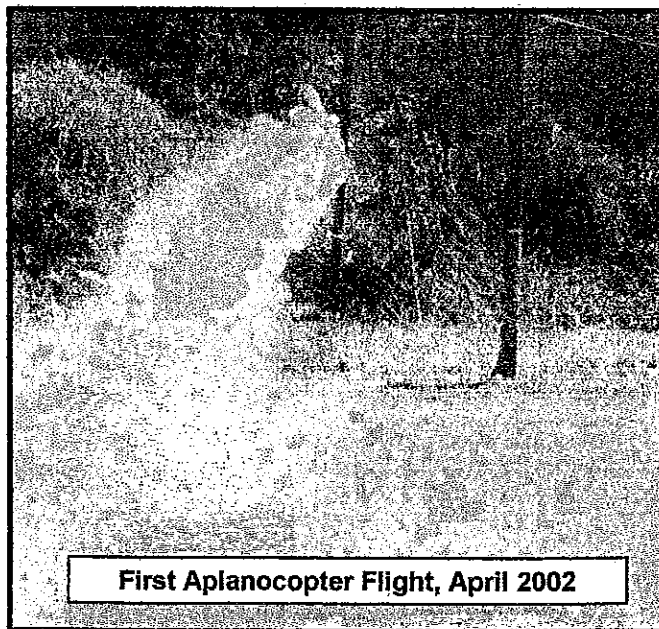
The machine spins around furiously at high speeds, and the blades lift the craft and its rotating cylindrical body. It doesn't go high—fifty feet or so. Parachute recovery is still has a few strange twists to solve since the craft must stop spinning before the parachute can be ejected or the parachute gets twisted. The use of long delays, which might otherwise help, are no help because the altitude is so low. As yet, this problem is not solved.

Because the aplanocopter derives its lift by spinning helicopter blades under rocket power at high speeds, it has an element of danger absent in normal model rockets, namely, the possibility of centrifugal separation. When a flying machine comes apart under extreme powered rotation the parts can be scattered over a wide area, and over persons if any are in those wide areas. We've discovered thrusting engines can even be ejected centrifugally from body tubes. So successful aplanocopters must be built extremely sturdy. We have even an example of steel cable retainers breaking from centrifugal forces in aplanocopters.

The advantage of having the blades in two separate planes is that one blade doesn't turn in the other blade's wash. Turbulent drag is reduced, which would be high for fast spinning rocket blades. The aplanocopter, in theory at least, should be more efficient than a rocket powered helicopter with blades in the same plane.

Aplanocopters promise to offer a plethora of experimental questions, besides the problem of parachute deployment (would spoilers popped up at ejection of one engine halt the spin quickly so the other engine could eject the chute?). Would safety of test flights of these and other highly centrifugal machines be enhanced if the launcher were surrounded by a 5 foot high, 10-foot diameter cylindrical mesh wire fence open at the top? Is there a way to "steer" aplanocopters in direction and distance? What could be done to improve the performance of aplanocopters in altitude? Think of the possibilities!

And what of high power aplanocopters? Could any machine be built to take spin-up on dual G or H motors? Keep in mind, in the case of H motors, the spin at blade-tips could be nearly *supersonic*, and the structure would have to stand centrifugal forces that would change the direction of that velocity vector maybe a dozen times *per second* over the space of a few inches. Clearly this last project

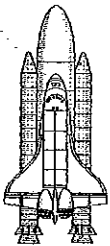


First Aplanocopter Flight, April 2002

Mort's Column (Continued)

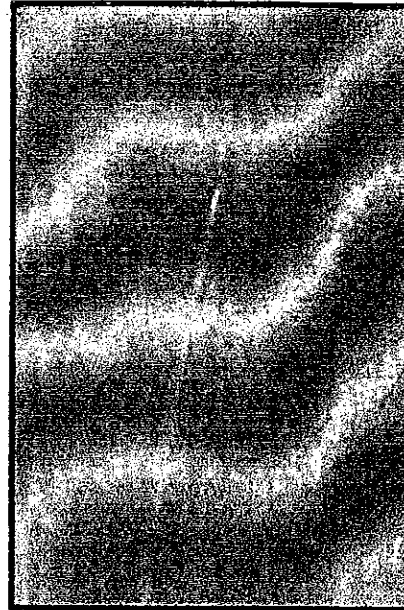
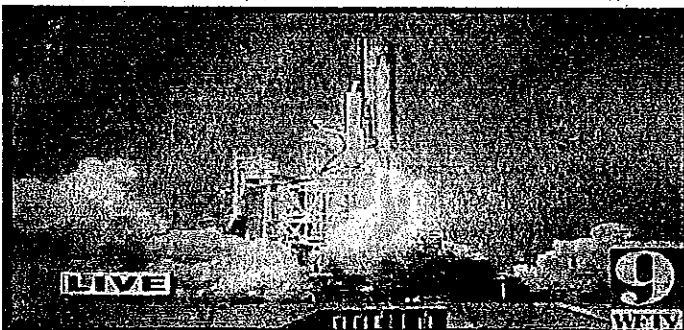
is only for the person who knows what they are doing, and who has done an enormous amount of preliminary work with smaller aplanopters!

Note: The author welcomes communications from people who experiment with unusual flying machine ideas especially that use rocket propulsion. Contact him at fgraham@eliv.kent.edu or Francis Graham, Kent State University, 400 East 4th Street, East Liverpool OH 43920.



Remembering Columbia Edited by Dick Freed

One of the neatest things about wintering in Florida (other than watching the northern weather forecasts) is the privilege of seeing space shuttle launches in person. Although it is most exciting to be viewing the launch from the Space Coast, you get a pretty good view of things here in Central Florida, some 80 miles from the Cape. So this was a special launch for us. We (My wife Lynda and I) followed all the pre-launch hype that the media provided and on launch day we set up viewing at Lake Clinch. The sky was clear, and the view was spectacular! We followed the pre-launch activities on WFTV-9, and then rushed outside to see Columbia take to the sky.



After seeing on TV that the launch was in progress, we rushed outside to see the fireball and the smoke trail heading into space.

Although this is the third launch of the shuttle I have witnessed, it still is the ultimate HPR experience.

As the mission progressed, we kept up with the activities of the crew and all of the scientific experiments they were conducting in space.

Friday evening's news discussed the landing at Cape Kennedy scheduled for late morning on Saturday, February 1.

We were shocked by what we saw on the TV screen — the fireball and eventual breakup of Space Shuttle Columbia.

Media coverage continued over the next few weeks, citing astronaut stories, and stories about the debris, the effects on NASA, the local people and the local economy. At the date of this writing, the local news coverage continues, even though the shuttle breakup took place over three weeks ago.

Article continues on Page 8

New Address or Phone Number?

Please inform Mort Binstock of any address or phone number change or let him know at one of our monthly launches. Mort will then update the PSC database that he maintains for mailing labels for the newsletter.

Mort's Address and Phone Number:

Mort Binstock
1150 Windermere Drive
Pittsburgh, PA 15218-1144

(412) 244-1332

Competition Corner

PSC Competition Meets For 2003

Reach For The Sky XV
Regional
May 3-4, 2003

1/4A Boost Glider Duration (MR)
A Helicopter Duration
B Parachute Duration
C Egg Lofting Duration
Random Duration
Open Spot Landing

Steel City Smoke Trail 3
Regional
Oct. 11-12, 2003

1/8A Streamer Duration*
1/4A Parachute Duration (MR)
1/2A Cluster Altitude
B Boost Glider Duration
E Super-Roc Duration
Random Duration

**Providing RCP 2003-01 passes; otherwise this event will be changed to 1/4A SD*



The first (of 3) launches is complete! The MADROC series has begun. The first leg of this series was flown in October in Pittsburgh. (SCST—II) Here are the locations, dates and events for the other two:

ECRM-30 (NARHAMS)

May 17-18, 2003
Middletown, MD

1/4A BG
A HD
Peanut SPSC
RDA
STA (150m)
OSL

MARS-29 (NOVAAR)

June 21-22, 2003
The Plains, VA

1/4A BG
1/4A PD (MR)
A AH
C ELA
D HD

Tidbits & Tips

By Steve Foster

Hey, two issues in a row with something for the tidbits column, just wait until I stop procrastinating with the competition models I need to build. We have made it past Groundhog Day, only 6 more weeks of slowly building, and then the panic will set in.

ANOTHER THANKS:

To Richard Freed for doing a fine job in putting this newsletter together. Even though he has picked one of the coldest winters to leave us up here in the cold, while he relaxes down in sunny Florida. Oh well, he has spent many winters in the snow beside lake Erie, I guess he has earned a few days in the sun.

HOW DO YOU BUILD A ROCKET WITH LESS WIND RESISTANCE?

The best thing you can do is to NOT use launch lugs. Use a launch tower instead. A polished, smooth finish makes a big difference too. If the design allows, use a boattail and make sure all transitions are smooth (from nose cones/payload sections, etc.). Fin shape is a minor effect if they are relatively thin, otherwise make sure the edges are at least rounded.

Here are some CD's (Coefficient of Drag) calculated by John DeMar

Standard finish, no transitions, with lug:	0.88
Standard finish, no lug:	0.68
Polished finish, no lug:	0.61
Standard finish, no lug, 2:1 boattail:	0.52

As you can see the biggest step down in drag come from eliminating the launch lug, this is why most competitors don't use launch lugs even in duration events, a few meters in altitude can make a significant difference in the amount of time a model will stay in the air.

For the High Power Models many of our fellow Tripoli members are using models with rail buttons, this not only reduces drag on the model but the models also lift off at a more predictable angle because the rails do not "whip" like the standard round rods.

WHERE CAN ONE ORDER COPIES OF NASA PHOTOS? PETER'S BOOK (Rockets of the World) SAYS NASA DOES NOT FILL ORDERS FOR THE GENERAL PUBLIC (Asked by Me)

Jennifer Ash-Poole answered:

IF you know the headquarter number (I.E. 66-H-000, or 66-HC-000) you can order it from them. Photo price guide is at: <http://nssdc.gsfc.nasa.gov/nssdc/photo.html>

FYI, H is a black and white, HC is a

Continued on page 8.

**Notes From the Prez
by Rod Schafer
President, PSC**

1. PSC Cancels February's Launch

Due to a huge Mid-Atlantic storm that dumped over a foot of snow in the Pittsburgh region and more in other parts of western PA. PSC cancelled their Feb. monthly launch. It is hoped that Mother Nature is a little more gentle for the March launch.

2. 2003 SciTech Festival

Please keep April 5-6, 2003 in mind. These two dates are when the 2003 Science & Technology Festival will take place at the Carnegie Science Center in Pittsburgh. The hours of the festival will be 10 AM - 5 PM both Saturday and Sunday. PSC will have an exhibit set up at this year's show. We will need folks to help man the booth and also provide models to put on display. More details to come in March!

Until Next Time...
Fly'em High,

Rod

Tidbits.. Continued

color photo. Photos take a couple of weeks. They don't have them stockpiled, they get made every time you order one. Actually, there is a discount for ordering more than one of the SAME image, so if you have a couple members of your club that want the same photo, go together in one order. (3 8x10 photos of the same image will cost \$22 (\$10 + 6+6) on one order versus \$10 for each individual order)

You can call them (8am -4pm EST), email them, or just send in a letter, if you email them, they can send you the fax number) Request Coordination Office,
request@nssdca.gsfc.nasa.gov, - (301)286-6695

Tell them that I sent you. (Jennifer) You won't get a discount, but they will know you are a rocket geek like me. If you are interested in cool space images, take a look at their CD-ROM catalog.

I HAVE TWO TIDBITS / TIPS OF INFORMATION ON GLUING:

(#1) My mother-in-law cut this out of a magazine.:

To repair plastic pour some CA (cyanoacrylate) into the area that needs repaired, then while it's still wet pour a small amount of baking soda on the CA. Be careful, the reaction creates a lot of heat.

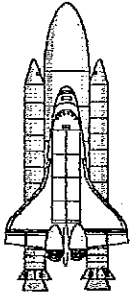
I tested this one on a plastic nose cone and it does work. To get rid of the seam line that splits a plastic nose cone that is created from the molding process. First I took my Dremel tool and cut a groove all along the seam (not all the way through, just about 1/32" deep) Then I poured the CA into the groove followed by sprinkling the baking soda on.

A couple tips here: The reaction is almost instantaneous so if you are trying to join two pieces of plastic they would need to be pressed together already. Also, I found that the thin CA worked better than thicker CA. And you had to look very close to make sure there were no voids left, I found it best to wipe away most of the extra baking soda, then add a little more CA on top. This left a very hard but sandable fill in the groove I had cut out, it did take a bit of sanding before I got a very smooth finish, but this was one of the better solutions I've found to get rid of the seam line.

(#2) I have not tried or even ordered the product but it looked interesting enough that someone may want to check it out. It's a new product that is kind of a combination of CA and Epoxy. Here is a website for the company; www.coolchem.com Someone had seen a demonstration on TV (not an infomercial) and posted it to the r.m.r newsgroup. The demonstration was very impressive, gluing a rubber hose back together and then stretched out. It is supposed to work on almost any surface, so if anyone tries it out let us know how it worked.

THE LATEST ISSUE OF SPORT ROCK- ETRY HAS AN ARTICLE ON THERMALS. IF YOU WANT TO KNOW MORE ABOUT THERMALS, CHECK OUT THIS WEBSITE:

http://www.apogeerockets.com/education/detecting_thermals.asp



Columbia.... continued

As time went on, I was amazed at the impact this tragedy has had on this part of the country. I'm sure other parts of the US were saddened as well, but the picture of literally thousands of people who felt it necessary to place flowers and other memorial items at the Astronaut memorial at Cape Kennedy Space Center brought tears to my eyes.

I remember the day the Apollo 1 astronauts lost their lives in the fire during launch pad tests. I remember the 7 astronauts who perished in the Challenger shuttle launch. May we all remember the crew of Columbia and pray for the families and friends they left behind.

Honoring the Columbia Astronauts

I had planned on ending my tidbits column this time with a quote that would honor the crew of Space Shuttle mission STS-107 but in my search for an appropriate quote, I found that there were too many quotes to inspire someone to dream of reaching out beyond our planet earth. By thinking of the exploration of the universe, and placing these thoughts amongst our dreams we honor the crew of the Columbia and all the astronauts and scientist that have preceded them and those that will follow them on their quest. **Steve Foster**

Here are a few quotes that have and will inspire others to continue their dreams:

The idea was to prove at every foot of the way up that you were one of the elected and anointed ones who had the right stuff and could move higher and higher and even—ultimately, God willing, one day—that you might be able to join that special few at the very top, that elite who had the capacity to bring tears to men's eyes, the very Brotherhood of the Right Stuff itself. *Tom Wolfe* author of *The Right Stuff*; Referring to pilots and astronauts training in the NASA space program

Mystery creates wonder and wonder is the basis of man's desire to understand. *Neil Armstrong*

The effort to understand the universe is one of the very few things that lifts human life a little above the level of farce, and gives it some of the grace of tragedy. *Steven Weinberg*

Perchance, coming generations will not abide the dissolution of the globe, but, availing themselves of future inventions in aerial locomotion, and the navigation of space, the entire race may migrate from the earth, to settle some vacant and more western planet. *Henry David Thoreau*

Anyone informed that the universe is expanding and contracting in pulsations of eighty billion years has a right to ask, "What's in it for me?" *Peter De Vries*

No matter how vast, how total, the failure of man here on earth, the work of man will be resumed elsewhere. War leaders talk of resuming operations on this front and that, but man's front embraces the whole universe. *Henry Miller*

Just opening up the door, having this ordinary person fly, says a lot for the future. You can always equate astronauts with explorers who were subsidized. Now you are getting someone going just to observe. And then you'll have the settlers. *Christa McAuliffe*, school teacher/astronaut that died with the crew of the Challenger in 1986.

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.
T.S. (Thomas Stearns) Eliot

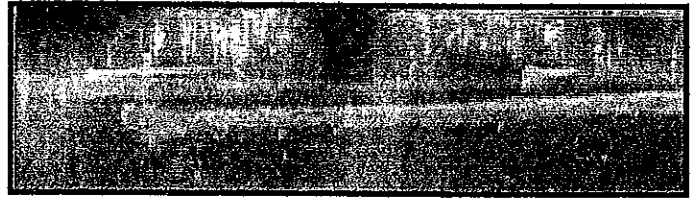
The universe is wider than our views of it. *Henry David Thoreau*

Space—the final frontier. These are the voyages of the starship Enterprise, its five-year mission: to explore strange new worlds, to seek out new life and new civilizations, to boldly go where no man has gone before. *Gene Roddenberry*

Through space the universe encompasses and swallows me up like an atom; through thought I comprehend the world. *Blaise Pascal*

I believe that the Good Lord gave us a finite number of heartbeats and I'm damned if I'm going to use up mine running up and down a street. *Neil Armstrong*

Special Note on this last quote: I am also a runner. We do not have to agree with a statement, but still understand the meaning and inspiration.



Breakup of Columbia from front page of Lakeland Ledger Newspaper, Lakeland FL 2-2-03

REACTIONS...

Steve Foster

Shock and Sadness - Channel surfing Saturday morning, I first saw a banner at the bottom of a news channel that read "NASA loses contact with Shuttle". About 10 minutes later I saw the short video that told the story, in an instant I knew the Columbia had broken apart and there was no chance of the astronauts surviving.

Setback - Knowing this is a risky business; this was a bad time for this tragedy to happen. With at least one war on the horizon, the economy down, the International Space Station needing all of NASA's support and re-start of the teacher in space program. I have confidence NASA will bounce back and will find a way to reduce the risk even more, and will be in countdown mode again.

Road Trip - I have never been present during a shuttle launch. One thing I would really like to do once they get back launching, is pick a launch sometime, load up a van or two of rocketeers and taking a chance on the launch being postponed, just head down on a road trip to see the ultimate rocket launch.

Dragon's Fire Launch Windows

2003 Dragon's Fire HP Schedule

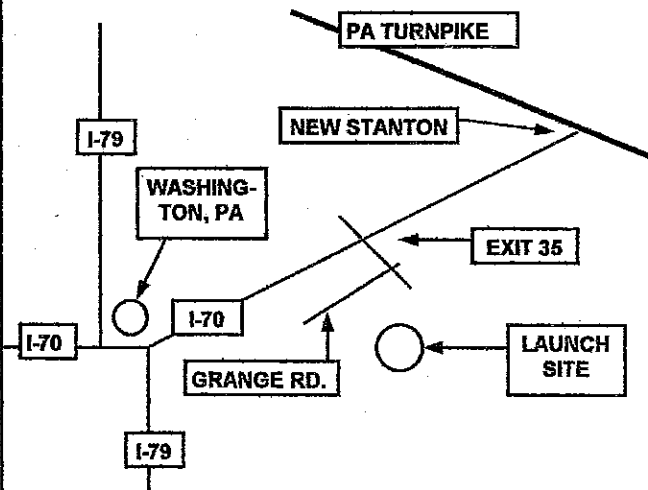
Apr. 26 — DF 29
May 31 — DF 30
Aug. 16 — DF 31
Sept. 20 — DF 32
Oct. 11-12 — DF 33

PSC Launch Windows 2003

Mar. 16
Apr. 27
May 3 & 4 Reach For The Sky XV
June 8
July 20
Aug. 24 Rockets & Relaxation 9
Sept. 21
Oct. 11-12 Steel City Smoke Trail 3
Nov. 16
Dec. 14

**ALL SPORT LAUNCHES AT LUTHERLYN
 BEGIN AT 12 NOON.**

Map to Dragon's Fire Launches At Jonestown Site

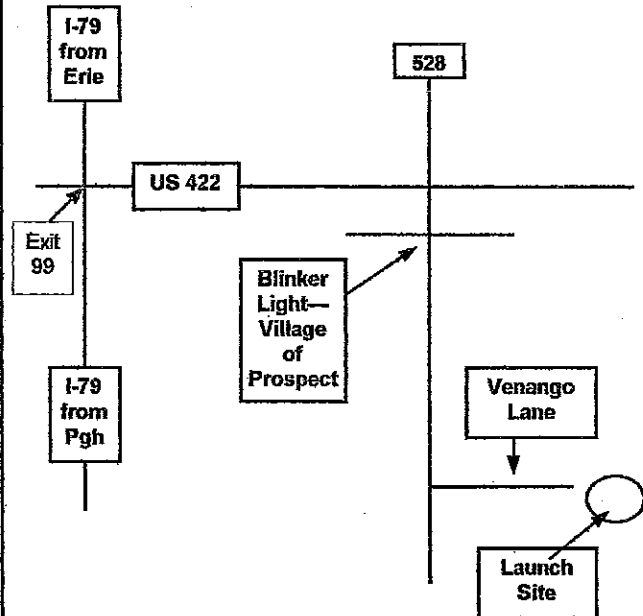


FROM I-79: Take I-79 south to Washington, PA. Take exit for I-70 East (Toward New Stanton). Continue for approximately 20 miles to exit 35 (old exit 13).

FROM PA TURNPIKE: Get off at Exit 8, New Stanton, and follow I-70 West for approximately 23 miles to Exit 35 (old exit 13).

AT EXIT 35: Follow route 481 for 0.2 miles to Grange Road. At this point, look for signs that will direct you to the launch area that will be used for the day.

Map to Camp Lutherlyn PSC Launch Site



FROM 422 —

Get off at Prospect exit (528) and head south. Continue to blinker light about 0.3 miles from exit. Go straight through this intersection. Continue south on 528 for approximately 3 miles — look for a sign on the east (left) side of the road which says "Lutherlyn Rustic Retreat Center". Turn left onto dirt road and continue approx 1/4 mi to the launch site.

NARAM-45 Announced!
Evansville, Indiana
Hosted by Launch Crüe
August 3-9, 2003

Impulse	Event	Description
1/4A	BG	(Boost Glider Duration)
A	ALT	(Altitude)
A	HD	(Helicopter Duration)
B	PD (MR)	(Parachute Duration - MultiRound)
C	SRA	(Super-Roc Altitude)
E	SD	(Streamer Duration)
F*	DELD	(Dual Egg-Loft Duration)
	OSL	(Open Spot Landing)
	PSpSc	(Peanut Sport Scale)
	PMC	(Plastic Model Conversion)

*F DELD may be changed to D DELD

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Richard Freed, Editor

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