The MARS™ Pathfinder

Official Publication of MARS™, the Monroe Astronautical Rocketry Society, Section 136 of the NAR®

January, 1999 | Rochester, NY | Volume 12, Number 1

First Flights, 1999

MARS members carry on a tradition, and test the adage, "A Bad Day Flying Rockets Beats a Good Day Watching Football Games on TV." Left to right: Ray Lewis, Rich Savory, Andy Schecter, Brian Dussinger. More from the Polar Bears Club, err, MARS, on Page 6. Photo by Tom Dussinger. ➢

Inside this Issue:

Op / Ed

Rhymes of the Range

This issue, I yield my space (or most of it, anyway) to the Gentleman From Wayne County (our illustrious President, Rich Savory), not because I necessarily agree with what he has to say (I *do* feel he does have a point), but because his column was a little longer than usual . . .

Have fun, & fly 'em high!

John

President's Corner

What's in it for me?

Am I the only one bothered by the over use of that statement?

It does not matter if it is actually stated that way, or if it is implied, but there seems to be a lot of *"what's in it for me?"* going around.

At a recent MARS meeting we had a rather long, sometimes heated discussion on how to get more range volunteers. The predominant theme of the whole discussion seemed to be *"What's in it for me?"* I find it discouraging that simply helping out others is not reason enough to do something.

At another meeting, we discussed a request that we assist with the NARAM sport range. The very first thing that was asked was *"What's in it for us?"* I am embarrassed. I thought that the fun of flying with others, and participating in a national event was *"what's in it for us."* And that brings me to my next observation:

MARS is a club. A group of people who share an interest in a particular hobby, but one that has many special interests. There are some who are only interested in high power rockets. Others fly the little ones. Some folks like to fly contests, and others are only interested in sport flying. Some like to make scale rockets of actual vehicles, others are more interested in their motors and don't care WHAT their rockets look like. NONE of those people are wrong. Do what floats your boat. But please keep this in mind: there are rocketeers in this club who like different things than you do. The club exists for ALL the members. Just because you only fly "big rockets" does not mean you should only support that which advances your cause. If you are a contest junkie, you should still support the sport launches.

When the idea of holding a NARAM here at home was mentioned, the room seemed to split in two. I was annoyed and dismayed by the response. The high power crowd immediately tried to change the subject into "Let's hold an NSL." Well, shoot. Just because YOU don't like one aspect of rocketry, you don't want to support those who do? There are now over 70 members in this club. It seems to me that with that many members, we can and should support the many different interests within this hobby we all share.

And please stop asking me *"What's in it for me?"* .

I want to know what YOU think . . . please let me know. Call me at home, write to me, or send me an e-mail.

Rich ➢

MARS Pathfinder is published by MARS™, Section 136 of the National Association of Rocketry, as a service to its members and rocket enthusiasts in Western, Central, and Upstate New York. Domestic subscriptions are currently $6 per year. Please write for information on subscriptions outside the United States.

Submissions from all people are welcome. We prefer electronic form; please contact us for details. We accept photographic slides, prints, and Photo CD.

Editors of other newsletters and journals are welcome to reprint material which appears in *MARS Pathfinder*, provided they extend to us a reciprocal privilege and they cite the author and this journal, unless the article, plan, or what-have-you indicates something to the contrary. Please contact the author if that's the case.

The *Pathfinder* actively supports the NAR Newsletter Exchange Program. Please participate in this important program by swapping with us and other sections! Contact the editor for more information.

MARS™ Homepage:

`http://web.syr.edu/~rmpitzer/mars/`

MARS™ *Pathfinder*

Founded in 1988 by Daniel W. Wolf as the Upstate Rocketeer

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Secretary: John Viggiano
Immediate Past President: Andy Schecter
President Emeritus: Dan Wolf
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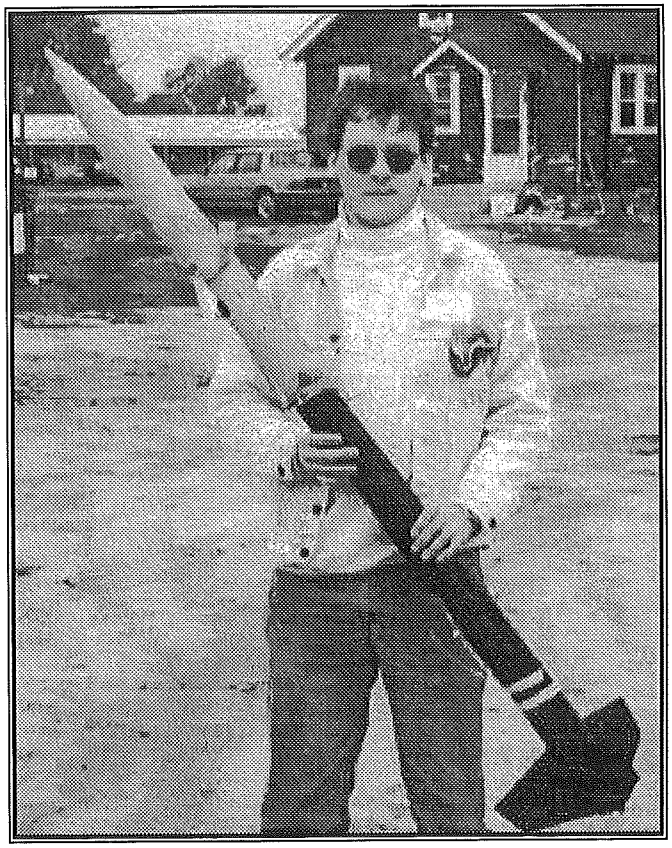
The A.Y.U.C.R.



(say that, "ah-YOU-ker")
A compact, low-cost Camera Rocket, by Robert Nee

A.Y.U.C.R. is designed around an Olympus Hi*Lite Autofocus 35mm camera. It weighs about 8oz with film and batteries and is small enough to fit inside a LOC 3" tube coupler with a little room to spare. It costs $50. In its flight configuration it is housed in payload bay made up of a LOC 3" tube coupler and three LOC 3" centering rings. The payload bay holds all of the arming and triggering electronics as well. The payload bay slides into a specially made payload section made up of LOC 3" tubing with all of the cutouts required to access the arming plugs and allow the camera lens a window to the outside.

The A.Y.U.C.R. booster is also made of LOC 3" tubing fiberglassed with 2 ounce per square yard cloth. It has a 29mm engine mount and through-the-wall-to-the-motor mount trapezoidal fins. The ejection gases are baffled to help protect the parachutes and reduce the need for wadding. The upper portion of the booster screws to the fin can to allow it to be replaced and to allow easier access to the screw-eye shock cord mount on the forward centering ring.

The booster and payload are connected by an altimeter can/tube coupler which contains an altimeter to control deployment. The whole thing is topped off by a LOC 3" nose cone.

In its flight configuration without motor it weighs just over 53 ounces. The camera shutter is wired to a homemade 555 timer circuit which trips the shutter every three seconds. The circuit is powered on by an Adept ASA3T acceleration switch at liftoff. At apogee an Adept ALTS2 fires an charge to separate the booster from the payload section and each comes down under its own chute. The payload section is rigged so that the chute holds it horizontally with the camera facing down. If all goes right the camera will take two or three pictures on the way up and the rest of the roll on the way down.

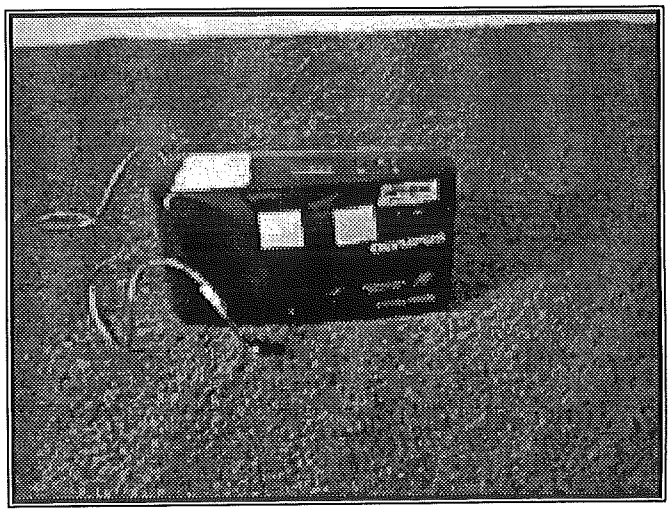
The Camera

The Olympus Hi*Lite is a relatively small and light-weight camera. When I was searching for a camera for this project I had several criteria:

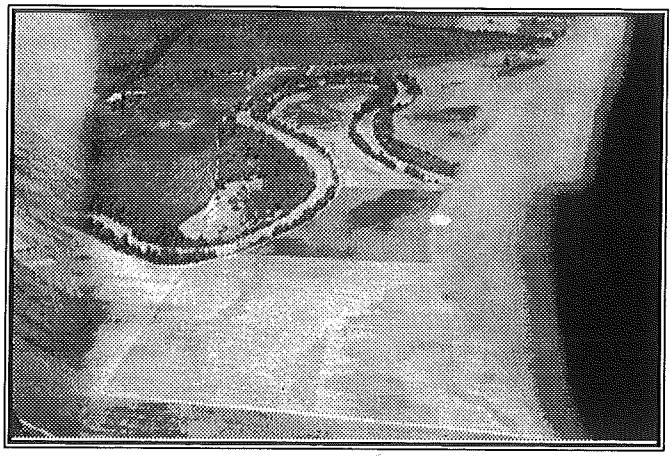
- Light weight - I wanted it to weight less than 8oz fully loaded.
- Small size - I wanted the camera to fit into a 3" tube coupler.
- Electronic Shutter - I had to be able to activate the shutter electronically.
- Low Cost - I wasn't sure I was going to be able to successfully modify the camera. I didn't want to destroy an expensive camera.

After discussing what I was looking for with a very confused and unhelpful sales-droid who wasn't sure why I cared so much about the electronic shutter I settled on the Hi*Lite. It fit my criteria and only cost $50. After reading about the camera several others had used in their camera projects I was prepared to pay more. The only thing I got that I didn't want was auto focus. I wasn't sure if the auto focus mechanism would have problems in flight or interfere with the picture but I was willing to give it a try.

The first step in the whole project besides some rudimentary design work that existed mostly in my head was to see if I could modify the camera for external shutter activation. This would require opening the camera and soldering wires across the shutter contacts. I was sure this was going to be difficult

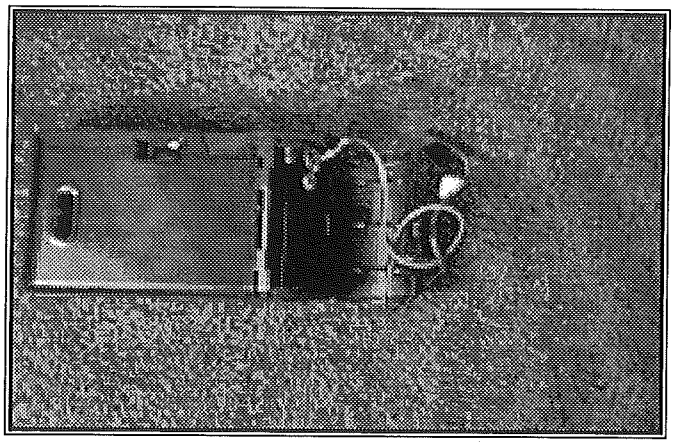


The Olympus Hi-Lite camera, wired for remote electronic shutter control. All photos by Robert Nee. ➢



The left edge of this picture is looking past the mirror, out into the great beyond. The rest of the picture is pointing aft, reflected in the mirror. Photo from AYUCR at NYSPACE '98, by Robert Nee. ➢

and there was the distinct possibility that I would break something rendering the camera useless. I proceed cautiously and jotted down some notes on where things like screws went as I took it apart so I would be able to get it back together later. After I had gotten the housing off I identified the shutter contacts on the top side of the camera. They were exposed traces on a circuit board interlaced very close together. This would pose a minor problem as they were too close together to solder to easily. Further investigation also revealed there were three of them, one common trace, one focus lock trace and one shutter trace. The focus lock was designed to be activated when the shutter was pressed halfway. I found that if I connected the focus lock and shutter traces together I could trip the shutter by shorting them to the common trace. This problem solved I moved on to soldering leads to these contacts. I ended up scraping the coating off the circuit board in another location to get at the common trace. I also scraped away some of the interleaved traces at the shutter contact point to give me room to solder one wire to the focus lock and shutter traces without accidentally soldering to the common as well. This all managed to work. After a little testing I put the camera back together. This would have been easier if I had five hands but somehow I managed. The one thing I didn't try was actually taking some pictures. I guess I was feeling a little cheap and didn't want to waste film. This would come back to haunt me. On the day of the first flight, at the field, I discovered the camera would not accept film. When the film door is closed the film is supposed to automatically advance. This was a real bummer because it delayed the maiden flight. Back home I discovered that a little film sensing lever had jammed when I reassembled the camera. Without this level the camera never thinks it has film in it. Moral: test everything before getting to the flying field. Incidentally while I had the camera open I also found the flash capacitor. Actually it found me and after I had stopped drooling and got over the shock of getting shocked I decided to put some electrical tape over its leads to protect me from further surprises. If you attempt a camera modification such as this I recommend you do the same. I'm not sure if this kind of shock can be lethal but why take



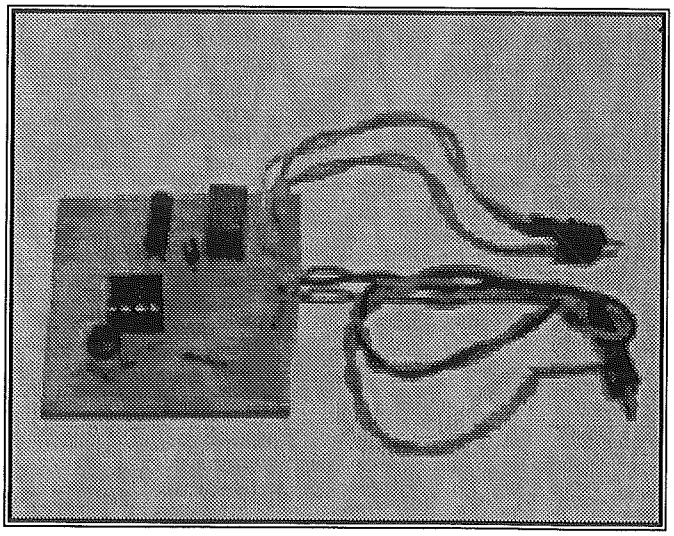
Battery Compartment with holes for Shutter Leads. ➢

chance?

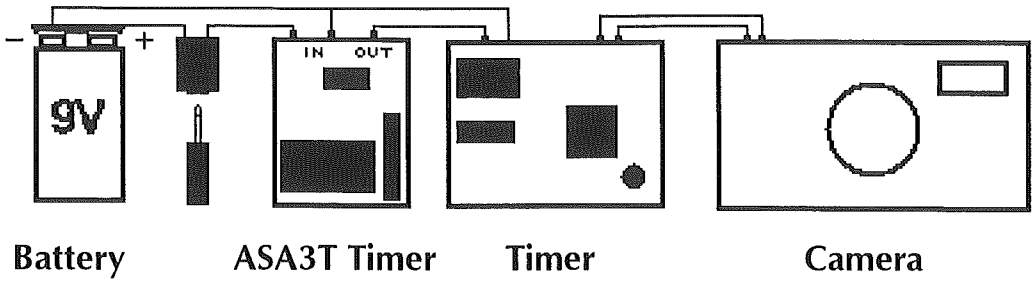
AYUCR Electronics

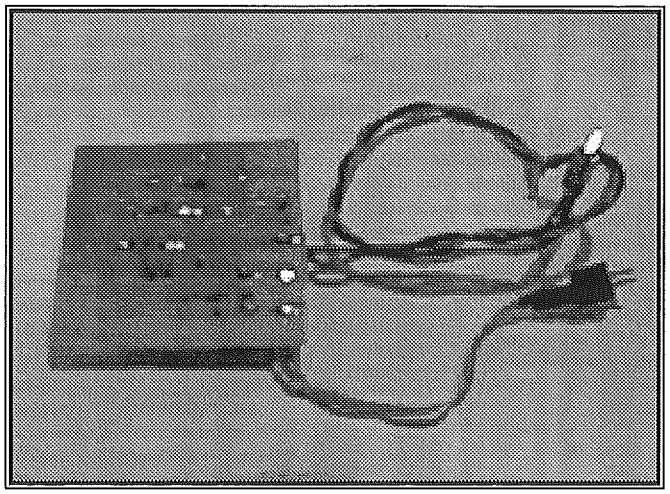
Having wired the camera with external shutter leads I now needed a way to trip them. They needed to be tripped (i.e. connected together via a relay) at a regular interval, perhaps 2 seconds, starting at launch. I had read that a 555 timer chip configured as a multivibrator can work. I purchased Engineer's Mini-Notebook, 555 Timer Circuits (Radio Shack Cat. No. 62-5010) and found the basis for the circuit I would need. For launch detection I chose an acceleration switch from Adept Rocketry. The acceleration switch and timer were both powered by a single 9V battery.

I built and tested the circuit using a breadboard and then implemented it using a Radio Shack PC board kit (Cat. No. 276-1576). This allowed me to etch my own PC board. If you decide the make your own board for the circuit you will need a 3/64" drill bit. These can be a little tough to find but larger drill bits will make holes that are too large and make soldering very difficult. I discovered this the hard way. I also recommend a socket for the 555 IC as heat from soldering can damage ICs. The ASA3T acceleration switch is smart enough to differentiate a bump or jar from liftoff but I chose to add an

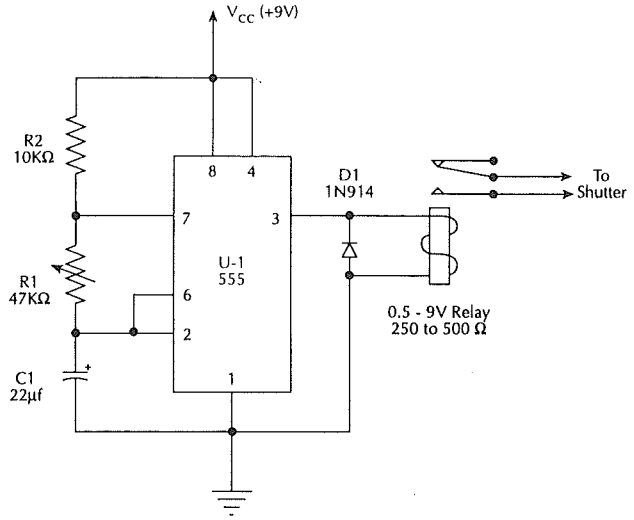


Circuit Board — Component Side. ➢





Timer Circuit Board — Trace Side. ➢

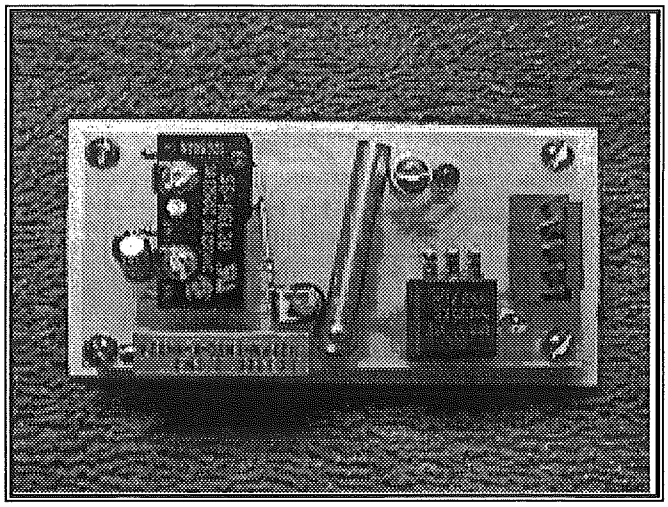


Timer Circuit Diagram. ➢

arming plug (1/8" phone plug) just to be safe. Once the camera is prepped and loaded, if the timer starts accidentally there is no way to stop it before it wastes a whole roll of film. While not strictly necessary it is therefore recommended.

Part	Radio Shack Cat. No.
555 Timer IC	276-1723
8-Pin Low Profile Socket	276-1995
22 µF Capacitor	Various
10,000 Ω Resistor (R1)	271-1335
47k Ω Potentiometer	271-283
5VDC SPDT Relay	275-240
1N914 Switching Diode	276-1112
9V Battery Snap Connector	270-324
Optional	
1/8" Phone Jack (closed circuit type)	274-248
1/8" Phone Plug (2 Conductor)	274-278

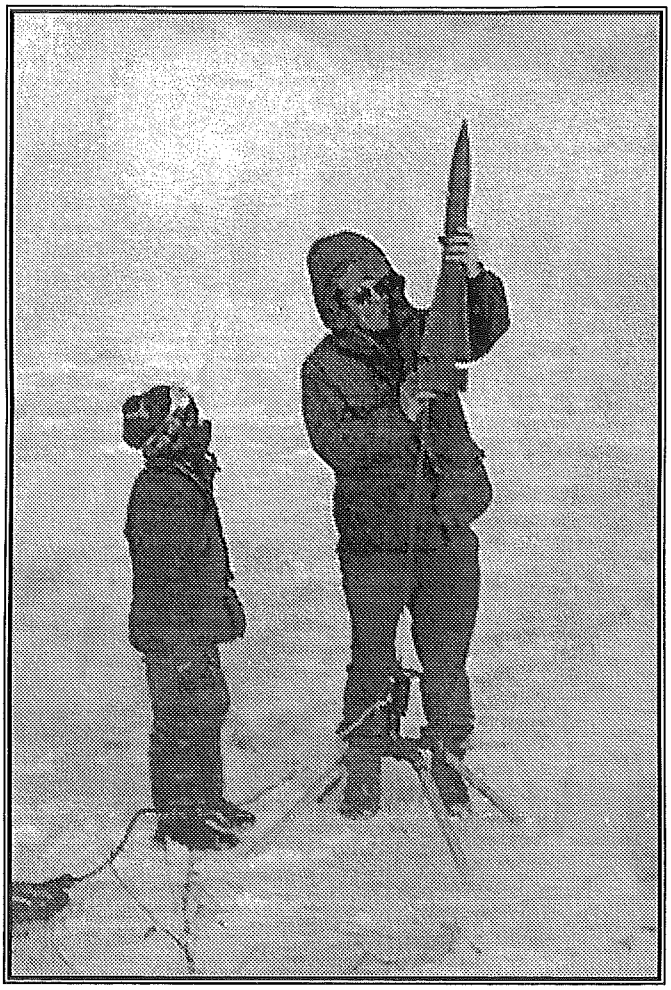
The wires connected to the relay contacts terminate in a Dean's connector and connect to the Camera's shutter wires. The Vcc and Ground *[Robert uses Red and Black wires, respectively — Ed.]* connect to the output of an Adept ASA3T Acceleration Switch. This device (shown below oriented horizontally) senses liftoff and powers the timer circuit using via the same 9V battery powering the ASA3T. There is a potentiometer on the ASA3T that allows it to be configured to power up the timer anywhere from 1/2 to 15 seconds after liftoff. When used in AYUCR the time delay is set to the minimum.



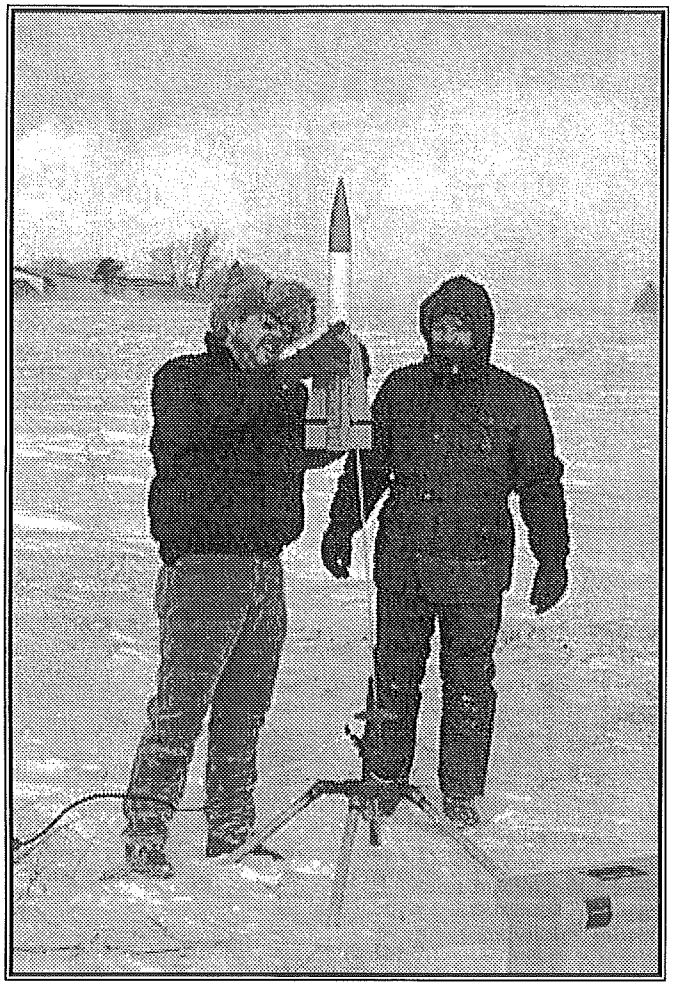
Adept ASA3T Acceleration Switch. ➢

Coming next issue: Building the Payload Bay and the Booster.

The Polar Bears Club



Ray Lewis and son Daniel ready their Estes Phoenix for a frosty flight. Photo by Tom Dussinger. ➢



Rick Lombardo prepares his Estes Phoenix for its simultaneous baptism by fire and ice, while Ray Halm stands ready to assist. Photo by Tom Dussinger. ➢

Launch Report by Jennifer Van Remmen

The traditional January 1st launch was a success in that no one got frostbite and no one was lost in the tundra-like wasteland of Colby's farm. 12 intrepid souls braved the 10 degree temperature and 20 mile per hour winds (which made a windchill of XX) to hold three successful launches. Rick Lombardo and Ray Lewis each flew a Phoenix on a F24. Although they both landed a fair distance away, the assistance of Rick and his Jeep ensured that all rockets and humans were safely retrieved. Brian Dussinger's Thug proved to be an interesting, although ultimately successful, flight. The rocket was slightly unstable and underpowered, and combined with the winds, these factors caused an unusual flight pattern. After chasing its tail in a loop a few times about 50 feet up, it landed, mostly intact, on its side, approximately 50 feet from the launch pad, which made recovery very convenient.

Club News

MARS Meeting — 10 November 1998

The meeting (preceded by an Executive Board meeting) was called to order at 7:04 PM. Attendance: Members John Viggiano, Rich Savory, Lloyd Wood, Josh Wenock, Christopher Cassaccia, Garry Fink, Jim Sekol, Bill Simons, Jennifer Van Remmen, Bill Van Remmen, Tom Dussinger, Brian Dussinger, Ray Lewis, Jeff Fischer, Michael Bernard, Pat Finan, Andy Schecter, Bill Guy, Ferenc Roka, Rick Lombardo; Guest: George Ball.

'Rich explained why there was no agenda to pass out; his computer had major disk problems.

Financial — Lloyd Wood: We have approximately $1100 on hand. Lloyd asked people to cash club checks promptly after they are written, so the account is easier to reconcile.

Membership — Tom Dussinger: Three new members were welcomed by the club. We are now up to 71 members.

Contest — John Viggiano: FLFC-8 results were described.

Newsletter — John Viggiano: Submissions were solicited for kit reviews, plans, launch reviews, and book reviews.

ATF: Rich reported on the regulatory problems. The BATF has decided to consider even G engines to require a LEUP. On top of this, the permit fees are going up, as advertised in advance. Further, notification of local authorities (fire, ambulance, police, etc.) is going to be required. A club magazine was discussed; whether or not this would satisfy storage requirements was not known.

NARAM Bid: As directed, the Executive Board discussed this issue, and decided to recommend to the membership that we do so. The members were in support of this if a volunteer could be located. John Viggiano jumped in front of the bullet. Rich called for the question, and the motion passed.

It was further discussed whether we should hold NYPOWER if we hosted a NARAM. It was agreed that we would hold both, but they would work largely independently of each other.

NYPOWER '98 — The Van Remmens volunteered to be NYPOWER chairs. Because we were behind schedule, we agreed to decide this next month.

Range Equipment: Equipment Clean-up at Lloyd's this Saturday, 14 November, at 1:00 PM.

New Business

We had received a request from the new National Events Chair, MARS life member Dan Wolf, to consider taking charge of the sport range at NARAM-41 to be held the second week of August in the Pittsburgh area. Several members expressed interest in doing this for the weekend; three members (Jeff Fischer, Patrick Finan, and Bill Guy) stated that they would consider staying the entire week if suitable arrangements could be made. Rich Savory, John Viggiano, and Ray Lewis said they were planning to go the entire week for doing the contest, and could help out.

The minutes were read and accepted.

Program: Ray Lewis, Building the Universal Motor Retention System, as described in the July/August 1998 issue of *Sport Rocketry*, and written by Dan Qualls. He also passed around some show and tell stuff.

Respectfully submitted,

John Viggiano

MARS Meeting, 8 December 1998

Meeting called to order at 7:14 by Rich Savory. Attendance: Members present were Rich Savory, John Viggiano, Patrick Finan, Bill Simons, Rick Lombardo, Rich Pitzeruse Bill Guy, Bill Van Remmen, Jennifer Van Remmen, Zachary Lunger, Gary Lunger, Jon Dussinger, Tom Dussinger, Ray Lewis, Gary Fink, Lloyd Wood, Andy Schecter, and Jay King.

Committee Reports

Financial — Lloyd Wood: We currently have about $1200 on hand. Dues are coming due, so that should help our

Membership — Tom Dussinger: Membership Badges will be produced early in 1999

NARAM — John Viggiano: We will be conducting most of the committee business via e-mail.

Newsletter — John Viggiano: Deadline for next issue will be January. Please direct your plans, photos with captions, kit reviews, etc. to Jennifer Van Remmen.

1999 Schedule: Lloyd has made the following request to Austin for the use of the Geneseo field:

3 - 4 April	7 - 8 August
1 -2 May	4 - 5 September
5 - 6 June	2 - 3 October

3 - 5 July (NYPOWER, Saturday through Monday)

The HAG Airshow is scheduled for 10 - 11 July, the weekend after NYPOWER.

The launches to be held at Livonia are TBD; we will work around the dates we get from Austin for Geneseo.

Next Launch: 1 January 1999 "First Flights", scheduled for Colby Farm in Spencerport, noon through 3. "A Bad Day Flying Rockets Is Better Than A Good Day Watching Football On TV." Andy has contacted Robert Colby.

Section Charter Renewal — The packet had been sent to Andy, by mistake. Motion by Viggiano, seconded by Savory, to obtain NAR Site Owner's Insurance for the same three fields as the last several years: W. Austin Wadsworth (Geneseo), Brian Benson (Livonia), Robert Colby (Spencerport). Passed, 16 - 0.

NYPOWER: Lloyd Wood volunteered as MARS NYPOWER chair. Rich asked for other candidates, or objections to Lloyd's appointment; there were none. The first meeting will be after the New Year's Day launch.

Old Business

Rich and Lloyd gave an update on the trailer registration. Lloyd has been speaking to his niece's supervisor at DMV, who has asked to see our Charter Certificate, in order to get some idea about our legal status.

New Business

Launch Starting Times: Bill Simons has asked about the possibility of starting launches earlier (like 9:00 AM).

Lloyd showed an FRS radio. He is proposing that we standardize on this type of radio. His was a Motorola, with 14 channels and special squelch tones. This radio cost about $130, though cheaper models are also available.

Elections

Nominations were opened for President. Bill Van Remmen nominated Rich Savory, seconded by Lloyd Wood. No more nominations were made, so the nominations were closed. 16 - 0 in favor.

Nominations were opened for Vice President. Although nominated, Patrick Finan declined. Bill Van Remmen was nominated by John Viggiano, seconded by Savory. No more nominations, so the nominations were closed. 16 - 0 for Bill.

Nominations were opened for Secretary. Andy Schecter nominated John Viggiano, seconded by Lloyd Wood. No more nominations, so nominations were closed. 16-0 for John.

Nominations were opened for Treasurer. Andy Schecter nominated Lloyd Wood, seconded by Savory. Nominations were closed. 16 - 0 in favor of Lloyd.

Motion by Viggiano, seconded by Wood, to designate Patrick Finan as Vice President Emeritus for the coming year. Passed, 17 - 0.

For The Good of the Section

The current situation with the ATF was discussed, press releases from Aerotech were distributed.

Motion by Jay King, seconded by Wood, to make dues $12 for adults, $6 for those under 18 years of age, pro-rated for new members on a monthly basis, with a $5 penalty for renewing members who pay after the February meeting. Passed, 16 - 0.

Andy had asked people to contact him about programs for after the business portion of the meeting. Please contact Andy if you would like to put on a program.

The minutes were read and approved as read.

Program: Bill Van Remmen spoke about Amateur Radio.

Respectfully submitted,

John Viggiano ➢

(Tentative) MARS™ Calendar

Jan	12	Mktplace Inn	Regular Club Meeting
Feb	9	Mktplace Inn	Regular Club Meeting
Mar	9	Mktplace Inn	Regular Club Meeting,
	TBA	Livonia	Sport Launch
Apr	3 - 4	Geneseo	Sport Launch or Contest
	13	Mktplace Inn	Regular Club Meeting
	TBA	Livonia	Sport Launch
May	3 - 4	Johnstown, NY: NYSPACE State Championships (Contest)	
	3 - 4	Geneseo	Sport Launch
	11	Mktplace Inn	Regular Club Meeting
	TBA	Livonia	Sport Launch

Aug 7-13 Allegheny Township, PA: NARAM-41
Events: 1/2A Flexi, A Helicopter (MR), B Rocket Glider, A Streamer (MR), 1/2A Superroc, C Payload, B Eggloft Duration, Open Spot Landing, Sport Scale, Research and Development. Contact Rod Schafer, (724)845-7439, rschafer@apollotrust.com, or see:
`http://www.nb.net/~rockets/naram41.html`

MARS Launch Line: (716) 442-5056

DIRECTIONS

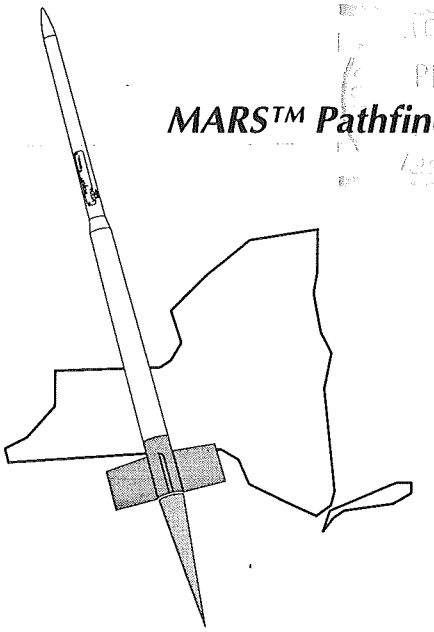
Colby Farm: From I-90 or Rochester, take I-490 to Spencerport Expressway (NY 531) west. Take Union Street (Rt 259) exit, go south to first light. Turn right onto Colby St. Go about one mile. Just past Vroom St. you'll see the flying field off to the left. Take a left on the dirt driveway (about 50 yards before the Colby's house at 261 Colby St.) and drive back to the field.

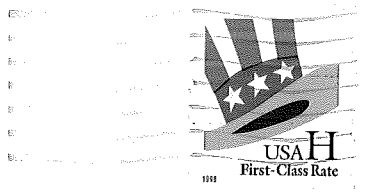
Livonia: Take I-390 south to Exit 10, follow US-20 east to the crossroads (center of Lima). Take a right on NY 15A at the light. Stay on NY 15A until you come to the junction with US 20A, take a LEFT onto Richmond Mills Road. Take first right onto Clay Street. Field is behind first house on left (follow signs).

MARS Meetings begin at 7:00 PM and are held at the Marketplace Inn, Jefferson Road (just east of Marketplace Mall). Take I-390 to Exit 14 (East Henrietta Road/Jefferson Road). Take East Henrietta Road north to the next traffic light (Jefferson Road). Take a left onto Jefferson Road, then right just before the next light to to the inn. ➢

MARS™ Pathfinder

35 Mickens Bend
West Henrietta, NY 14586





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