

TOTAL IMPULSE



JACKSON MODEL ROCKET CLUB

TOTAL IMPULSE VOLUME 23, No. 4

JMRC
HUVARS

HURON VALLEY ROCKET SOCIETY

JULY - AUGUST 2023



NARAM 64

JULY & AUGUST SPORT LAUNCHES

TDU-12/B SKYDART SCALE DATA

CHRIS PALMER MEMORIAM



CLUB OFFICERS

President: Scott Miller
Vice President: Roger Sadowsky
Treasurer: Tony Haga
Secretary: Buzz Nau
Editor / NAR Advisor: Buzz Nau
Board of Director: Al de la Iglesia
Board of Director: Dale Hodgson
Board of Director: Herb Crites
Board of Director: Fred Ziegler
Board of Director: Mark Chrumka

MEMBERSHIP

To become a member of the Jackson Model Rocketry Club and Huron Valley Rocket Society means becoming a part of our family. We have monthly launches and participate in many educational events. We encourage our members to actively participate in our club projects, running for office in our annual elections, contributing to our monthly newsletter with articles or tips, and offering services to the club in their area of expertise. We have many members comprised of children, men, women, professionals, lay people, educators and people from many other walks of life.

You may fill out an application at a launch or request an application from one of our board members at scott@sfsindustries.com and mail it along with a check for the annual membership dues (\$30.00 individual or \$40.00 family) to our mailing address:

JMRC/HUVARS
 C/O Tony Haga
 711 Wilwood Rd
 Rochester Hills, MI 48309

Members enjoy participating in club projects, meeting an incredible group of positive people, and no launch fees!

COMM CHANNELS

There are several ways to keep in touch with the JMRC/HUVARS and it's members.

Website: <http://www.jmrconline.org>. Information includes directions to launch sites & schedule, range procedures, and instructions on how to join the club.

Groups.io: The JMRC groups.io site is a place to share files and also serves as our primary e-mail list serv. Follow this link to join, <https://groups.io/g/jmrc>

Facebook: If you have a FaceBook account search for "Jackson Model Rocket Club JMRC" and request to be added.

GroupMe: Our new chat channel for broadcasting notifications instantly using a free download client for IOS and Droid as well as by SMS text messaging. You can join the notification chat after creating a free account and following this link, https://groupme.com/join_group/28013422/zc51C1

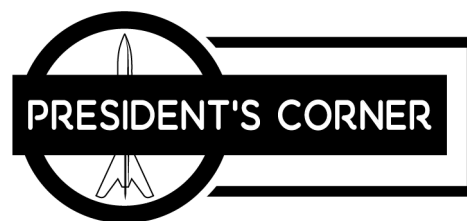
Fade To Black Rocket Works

Heavy Duty Launch Pads For Every Need

All pads are powder coated for lasting durability

<https://www.facebook.com/fziegler13/>

- Concept Mini \$119 Concept X-treme \$325
- Concept \$285 Ground Pounder \$345
- TARC Pad \$285 Ground Pounder Heavy \$425
- +Shipping



I've been told that when you retire things become more busy than before and so far I can confirm that as true. It's been a whirlwind couple of months that included a last minute trip to NARAM 64 and trying to keep up with a crazy summer of storm damage. At some point I'll get to build some rockets!

We are just coming off a successful August Sport and NRC launch. We enjoyed seeing a lot of families and kids join us. It was an encouraging sign that things are finally getting back to normal and we hope to see them in again at our future launches.

There has been a lot of recent activity with club members, some happy and some sad. Be sure to check out all the information on page 21.

We were once again awarded the LAC Rockwell trophy at NARAM 64 for best section newsletter. This was our fifth award in six years. I can't thank the membership enough for contributing content and making this publication a valuable asset for JMRC and HUVARS. We are always looking for new content! If you have an idea or article to submit I would love to hear it.

I would like to extend thanks to the members that contributed to this issue of *Total Impulse*, Chris Timm, Dale Hodgson, Andy Murrell, Tony Haga, and Mark & RoseMary Gryn.

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Launch/Event Calendar - 2023

- WSMC July 1 - 8 (Austin, TX)
- July 22 (Horning 1)
- LDRS 41 - July 6 - 9 (Kenosha, WI)
- NARAM 64 - July 29 - Aug 1 (Lordsburg, NM)
- August 26 (Horning1)
- September 23 (Horning 1) *Tentative*
- October 21 (Horning 1) *Tentative*
- NSL East November 10-12 (Pence, IN)

NOTE: Launch dates are subject to change without notice. Be sure to call the "launch hotline" at 517.262.0510 for the latest weather and field information or sign up for the JMRC Notification GroupMe chat.

Time is an interesting thing, it can have all sorts of units of measurements; we could measure our club history in years or we can measure them in memories. We can also measure them in family milestones. Roger and I started this club before either of us ventured into fatherhood and fast forward many years and Roger is now a Grandpa and my "little" ones are in High School and Middle School! Not sure where the time went but it also makes me think of all the faces that have come and gone over the years within our club. We can chalk that up to the circle of hobby life; the membership will always fluctuate as life intervenes with moving people away or too us, or other factors outside our control with work, time, and other things that impacts a trip to the rocket field.

One thing that has really piqued my interest this season is the larger uptick of families and kids at our launches. This is what we always aspire to have, the more student rocket enthusiasts that are eager to learn and participate in rocketry is amazing! This is encouraging to see the circle of JMRC life is still churning around with new blood and of course a lot of seasoned rocketry veterans if I were to throw out a euphemism. Watching new rocketeers see what is possible, getting that interest hook locked in and seeing what direction it takes them is fascinating. Rocketry can take you in so many directions, as long as we have interested parties to participate in a safe way then everyone is always welcome. Especially kids and families; we are a 501(c)3 non-profit organization built on education and we will continue in that direction as long as there is interest!

About Total Impulse

Total Impulse is the official newsletter of the Jackson Model Rocket Club (JMRC), Tripoli Prefecture 96, NAR Section 620. Published Bi-Monthly, *Total Impulse* is a space-modeling newsletter devoted to representing the diversity of interests in today's hobby of model rocketry. This newsletter is in the public domain except where otherwise marked. Unmarked articles, photographs, and drawings may be re-printed elsewhere, but credit to the author and this newsletter is expected. Material marked as copyrighted may not be re-printed without the consent of the author.

The editor of *Total Impulse* accepts material for inclusion from anyone.

Send correspondence to:
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 Buzz Nau, Editor
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On the Cover:

This issue is dedicated to long time member and member of the nefarious Debauchery Brothers, Chris Palmer. Chris passed away on June 20th after a long battle with medical issues. Gone, but never forgotten.



JULY SPORT LAUNCH

22 July 2023 - Horning 1 Field

Scott Miller, Photos by Andy Murrell

The crowd was sparse, and the weather was questionable... the forecast kept giving us mixed messages the week before; but we pressed on. When we arrived on the field it even started to sprinkle on us which probably didn't help anyone that was on the fence of venturing out in the morning. Alas, the clouds broke and the sun came out. A few flights did manage to take to the skies as 11 flyers decided to load rockets up and send them away from the earth's surface.

Murphy's law kicked in on the hybrid attempts; I stress the "attempt" piece because nothing actually flew with N2O due to many random twists that one wouldn't expect like a 3/16" brass ferrule failing; in all of my years flying hybrids I've never had a brass sleeve fail. There were some ignition tests that burned a little too quickly and didn't burn through the fill hose so that will be chalked up to safe experimentation. If Rocketry was easy and guaranteed, then would we do it?



Alexander and Anne Bertzen with Anne's Pink Rocket



Herb Crites' Mach Schnell SLK 75m on a Loki I316 Spitfire



John Potts watches his HUVARS Patriot lift-off

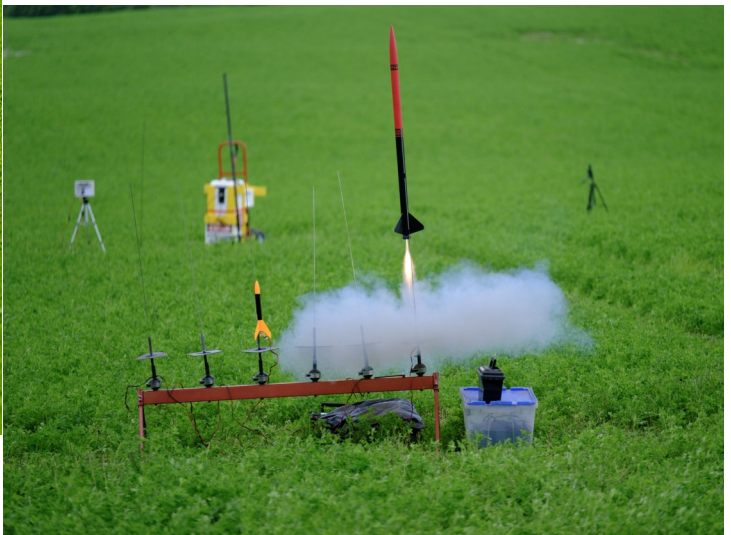


Jay Calvert's Recycle Me! On a H268 Red

Luckily the 11 flyers that were able to put rockets into the air gave us 26 flights. This made for a pleasant day and of course well worth the trip. Flying rockets is always a bonus, the chance to hang out and talk with everyone is the real prize and I think we were successful on that front. We ended up wrapping up the day around 4pm as the planned flight log seemed to have been exhausted. All in all, I would consider it another successful launch and as always look forward to the next one!



Henry Murrell's Red Max descends



Michael O'Neal's Star Orbiter on an E16-7



Ryan Smith and Scott Miller with Ryan's Payloader DX3



John O'Neal's Big Daddy

VIEW FROM THE FLIGHT LINE

The Finishing Touches.....Again

DALE HODGSON

It was some time back I had purchased 2 of the Estes Doorknobs that I upgraded of course (ply fins, rings, and a Kevlar shock cord) with the thought of building one as close to stock as I could do and the other what Estes calls their "Sport" edition. The builds themselves were very straight forward; both kits turned out identical as they should. It was the finishing that kind of threw me a little. But since I decided I would do this I pressed on. I did manage to get both kits finished; the initial pic is included. Overall, I was pretty happy with the stock version minus a few details that the scale guys would have insisted upon, but I built these to fly, not display. The sport version was a little trickier, but I had thought I had that all ironed out by using Stickershock decals to help. I have used them before on other projects; they are exceptionally well made and exact in their measurements. But one MUST follow the instructions when applying these things. The fin pattern on the sport edition is a blue checkered pattern; they kind of reminded me of those old stunt biplanes which I thought was cool. Stickershock had supplied the fin pattern and airframe wrap-around that matched exactly. But nothing for the nose cone so I painted it, and it turned out great. The blue I used didn't match the decals but that's exactly the way it looked in the example so I thought I could live with it. Somewhere in there I decided it would be better to actually paint the section of airframe blue rather than try and roll on a decal, so I did that. Like the cone it turned out beautifully.

Back to the fins... What the directions told me to do and what I did is where the issues occurred. The directions specifically say that the decals must be applied to *smooth* sur-



faces; meaning the fins should be sealed, sanded, primed, sanded and finish painted. A difference in philosophies occurred here. I wanted the fins to be a little more authentic. I remember looking at some old sounding rockets at Wright-Patterson way back and those fins were anything but smooth and sleek. They were rough and had a couple of wrinkles and ridges in them. So, who was I to argue with authenticity? I didn't smooth my fins; I just primed and painted them gloss white. At first, they looked cool, and I was happy. The rub occurred when I applied the decals. They.....wouldn't.....stick.....no matter what I did. I even tried a little adhesive but even that wouldn't hold the decals. Again, this is not a complaint about Stickershock decals; they are a very fine product and work great as long as the directions are followed. Another silly thing I did was to apply a clear coat on top of the decals to both protect them and maybe help them stay on the rocket. A few light coats seemed to do the trick; all seemed well. After I thought I had the fins decals stuck enough I set the rocket off to the side to allow everything to cure out. After about a week I went back to my build bench and checked. Wow, what a disaster. Almost all the decals peeled right off the fins. The few that were stuck tight (more by luck than anything else) were really stuck; the adhesive must have set properly. But

having a partially finished fin set simply would not do. I went about the process of removing them; ALL of them. It took quite a long time to do because I had to remove all the decals from the fin surface. Remember me mentioning earlier that I was OK with the fins not matching the airframe and cone? I really wasn't cool with it; the more I looked at it the less I liked it which really justified my decision to scrap the fin pattern since it wouldn't have matched anyway. I also noticed that the clear coat had a slight tinge of yellow to it. I could see the difference between the fins and the white section of the airframe; they did not match up.

How was I going to fix this mess? After I thought about it (mostly while I was tearing off the stickers) I decided to do the fins in a pattern of my own choosing. No stickers on those roughish fins (since I had decided to leave them that way) so I masked off sections of each fin and painted them with the same blue I used for the airframe and cone. Once all of that was cured I did even more masking and repainted the fin can to restore the bright gloss white that matched the airframe.

It was a decision I was glad I made; the whole project turned out much better than I hoped. I wasn't too disappointed since a "sport" version is just that... a variation of the stock or scale version. I ended up with my own sport version.

There were some valuable lessons learned here but wow, building projects to match up someone else's idea is kind of



difficult for me. I also learned that when applying decals, or stickers...is to follow their directions to the letter. It would have made life much, much easier. Would I do this all over again? Maybe but I definitely have some learning to do. The scale guys have some real talent for this that I do not possess; maybe I will try and do a project with more detail at some point. I'm glad the sport version turned out OK; definitely not what's on the box but cool enough for me regardless. For now, though I have two more decent looking rockets to fly which I am looking forward to very much. Besides, Tony cheered me up by telling me that they "will look great when they are on the pad". But of course, they will be a distance away so no one will see all those little bumps and bruises anyway.



LAUNCH REPORT

NARAM 64

28 July - 1 August 2023 - Lordsburg, New Mexico

Buzz Nau

When the site for NARAM 64 was announced a year ago to take place in Lordsburg, New Mexico, my teammates, Al de la Iglesia, Mark Chrumka, and I immediately said we were not going. The drive to Pueblo, Colorado a few years ago was bad enough. It was at least a 27-hour drive to Lordsburg. Fast forward nearly a year and less than two weeks to NARAM, I received an email from Al stating he was able to go and asked if I had models for some of the events. I actually did have quite a few for the effort and even then, I wasn't thinking of accompanying Al. After a couple of days of back-and-forth comms, I started getting the nagging feeling that I really did want to go, so I decided to broach the topic with my wife. With her blessing it was just a matter of building a couple of models and packing, never mind the bad storm the day before we left that knocked out our power and filled the yard with broken branches.

We left Thursday morning and arrived in Lordsburg on Friday at 11 am. The drive wasn't as bad as we thought it would be, except between 2 and 5 am. That was a rough stretch. Friday night was the competitor's meeting and Classic Model drop-off. The range opened at 7:30 am Saturday, but since we were used to Eastern time it was easy getting up early enough to eat, pack, and make the 20 min drive to the field. The launch site was incredible. One, if not the largest rocket field I've flown from. It was a flat desert plain complete with sandstorms and dust devils. A few dust devils played havoc on the range during the event.



Nike Hercules at the White Sands Missile Range

Saturday

This was hands down, the most brutal day of NARAM 64. Winds were steady and over 10mph and it was HOT. It was also the day Al and I did the most walking in the field. The events of the day were A Streamer Duration, 1/4A Parachute Duration, and A Altitude. The first A Altitude flight stripped a fin off right off the piston and the flight was DQ'd.



The second flight on a sturdy backup model was the reason for all our walking that day. We made two long trips out to look for it and failed to return it. The next event we flew, A Streamer was a shootout. There were a lot of flights in excess of three minutes. Our first flight was over three minutes and the second flight was almost six minutes and we still only took 4th! That's just insane. In Parachute Duration the first flight seemed to have some sort of piston malfunction and was DQ'd for unsafe. The second flight was much better and we took 3rd on that single flight alone. Even though we did well in PD, we were feeling a bit dejected for not qualifying in A Alt and losing an altimeter. There were no night events on Saturday.



Al preps our first Precision Fragile Payload model for launch



Our B Egg Loft Duration model off the piston

Sunday

Though the temps weren't as bad on Sunday, the winds were a lot worse. At times gusting over 20 mph, the flights were suspended several times to wait for the gusts to decrease. One of the events, 1/2A Flex-Wing Glider, was postponed, but we did fly A Payload Altitude and Precision Fragile Payload. The latter event is new and similar to TARC, in fact, many were calling it NARTARC. There were several approaches to the event, but most entries were either lighter models using D12's or heavier models flying on E's. Our first flight was a lighter model and ended up earning us the Ric Gaff, "Best Midwest Qualified Flight" award for the event. Everything was going well until it hit not any tripod holding a Kestrel weather station, but OUR tripod holding a Kestrel weather station. Everything went flying and the egg capsule cracked open releasing the egg. We loaded up a heavier, backup model flying on an E30, but this time the chute fouled. Even though the capsule was more protective, it wasn't enough for as hard as it hit and we cracked another egg. We flew our A Payloader early in the day and got an awesome piston boost and straight flight to 180 meters. We kept an eye on the scoreboard but didn't need to fly again as our score held up for 1st place.



Our A Boost Glider in a lazy circle

That night was the BBQ social followed by the Cannon Auction. There weren't many auction items mainly due to this being a small NARAM, but there were several high value items like an Estes Maxi Brute Honest John, Skylab Saturn V, and a Falcon 9. I was happy to see AI win the Falcon 9 which is a beautiful kit.

Monday

The weather was finally calming down on Monday with little to no wind when we arrived on the range. Winds stayed pretty low for the whole day. The events were A Boost Glider and B Egg Loft Duration. Our first egg flight was early in the day when there was no wind and we got a decent 63 second flight. Our second flight was a bit unsafe and DQ'd, but we qualified for the event and missed 3rd place by one second. I brought a lot of gliders for A Boost Glider just to cover all the bases. We discussed it a bit and it made sense to fly the scissor-flop wing models I had built for S4A competition. Smaller models seemed to disappear down-range quickly. This strategy paid off. Both flights were within a second of each other at 96 and 97 seconds for first place. There were no evening events except classic model pickup.



Buzz and our A Boost Glider



Our Star Blazer on the pad

Tuesday

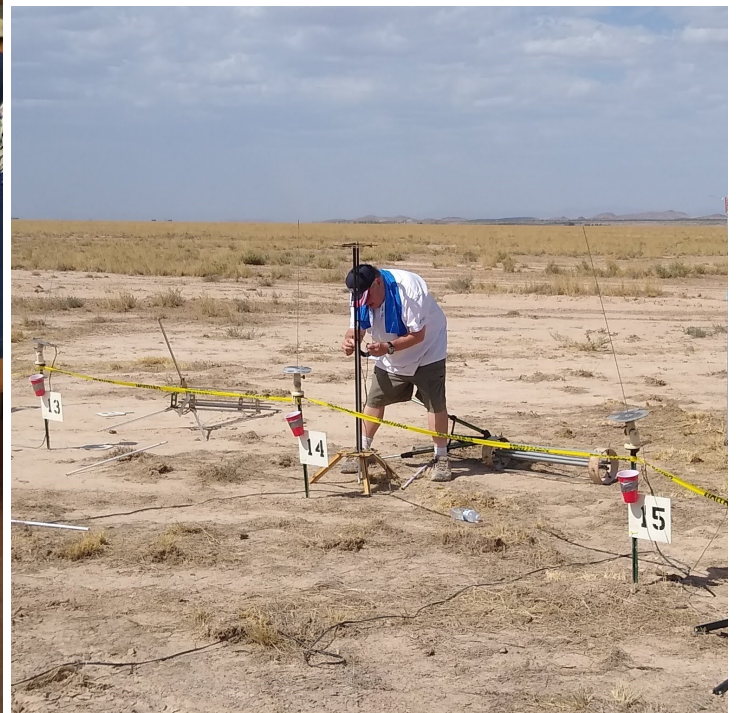
The weather on Tuesday was a repeat of Monday with light and variable winds. The events were Classic Model and 1/2A Flexie. Since this trip was a last-minute decision, I grabbed what I thought might be a unique entry for Classic Model, an Estes Astron Star Blazer. However, when we dropped it off on Friday night for judging, the first model I saw in the room was another Astron Star Blazer. In hindsight, I should have brought my upscale Centuri Vector V, but it is what it is. I'd flown this model a lot and tested the shock line before flight, but it still decided to give way at ejection. Luckily it was ruled a qualified flight and we re-

turned both parts with no damage and 5th place. Our first Flex-wing flight shredded a fin on boost and was declared a DQ. This was disappointing since I'd been looking forward to this event. What follows is why being on a team is a great way to compete. We were walking to the pad to load our second flight when we saw a model very similar to ours go unstable off the piston. We loaded ours on the pad when Al asked a great question, "What's going to prevent our model from doing the same thing?". After a short discussion, we pulled out of the queue and went back to our pop-up. We decided to make a new booster with a full-length BT-5 and use a larger Flexie I had built for B Flex-wing. Chris Kidwell loaned us his CA glue and we built a new booster that completely enclosed the glider. It worked and we got a flight duration of just over 3 minutes. We were sitting in 3rd place until the last flight of NARAM, Dan Wolf of the Huh, What? Team put up a nice flight of 227 seconds which knocked us out of third.

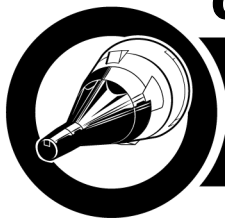
The Award Banquet was later that night. Al was announced as the new Competition Chairman, taking over for Dan Wolf. Congratulations to Al as he has some great ideas to improve competition that we discussed during all the driving we did. Overall, for the event, we took two 1st places, one 3rd, two 4^{ths}, and a 5th. We were also awarded the Reserve Meet Champion in the teams division as well as our sections won the Rockwell Trophy again for best newsletter. I can't thank all of the members enough who have contributed articles over the years as you make it easier with each one you write. Sidenote: we stopped at the Museum of Space History in Alamogordo on the home. It's a nice museum with several missiles and sounding rockets on display as well as a Little Joe II. Well worth the low price of admission if you find yourself in the area.



Buzz and Al at the awards banquet



Steve Kristal prepping his A Altitude model for launch. Unfortunately Steve was only able to attend on Saturday and left Sunday. We missed you Steve!

CURTISS-WRIGHT TDU-12/B SKYDART**ROCKET SCALE DATA**

Chris Timm & Buzz Nau

The Skydart was an unguided air-launched target drone for infrared missile practice developed and produced by the Curtiss-Wright Corporation for the U.S. Air Force. It was 72.7 inches long or just over 6 feet and had a diameter of 6.2 inches. It mounted four cruciform fins aft and two canards on the nose cone. A battery-powered autopilot and roll-controlled gyro were mounted in the nose compartment. The payload section could house beacon transponders and other telemetry devices. Two aft fins were fitted with control surfaces that set the roll profile while the canards controlled pitch.

Skydart's powerplant was a single-chamber, two-stage rocket motor supplied by Grand Central Rocket Company

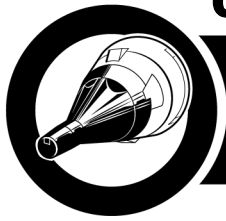
and Hercules Powder Company. The propellant grain of ammonium nitrate bonded by a synthetic rubber was separated into two stages. The first stage had a large burning surface that produced 620 pounds of thrust for 2 seconds. The second stage section had a radially burning surface, producing 75 pounds for thrust for 44 seconds.

The TDU-12/B was air-launched by F-100 Super Sabre or F-104 Starfighter aircraft from standard AIM-9 Sidewinder launch rails at speeds between 0.8 to 2.0 Mach. The Skydart was equipped with tail-mounted IR flares to increase the heat signature for AIM-4 Falcon or AIM-9 Sidewinder IR-guided missiles.



TDU-12/B Skydart - Curtiss-Wright photo

CURTISS-WRIGHT TDU-12/B SKYDART



ROCKET SCALE DATA

Chris Timm & Buzz Nau

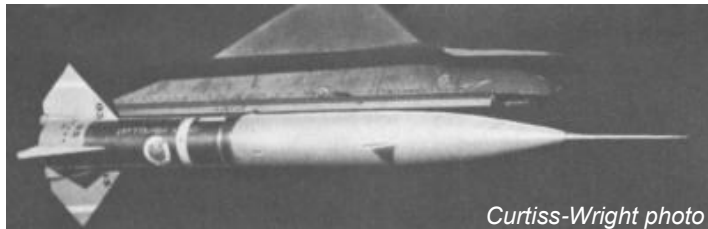
Curtiss-Wright produced the Skydart through the first half of the 1960s and the drone was out of service before the end of the decade. Proposals for a ground launched and enhanced version were not developed.

References:

Wind Tunnel Tests on an Aerial Target Model at Transonic and Supersonic Speeds, AEDC-TN-59-84, W.L. Chew and W. E. Carleton, Arnold Engineering Development Center Air Research Command, July 1959
International Missile and Spacecraft Guide, F.I. Ordway and R.C. Wakeford, New York, McGraw-Hill, 1960, Pg 20



AIM-4 Falcon IR guided missiles loaded on a F-106 Delta Dart - USAF photo



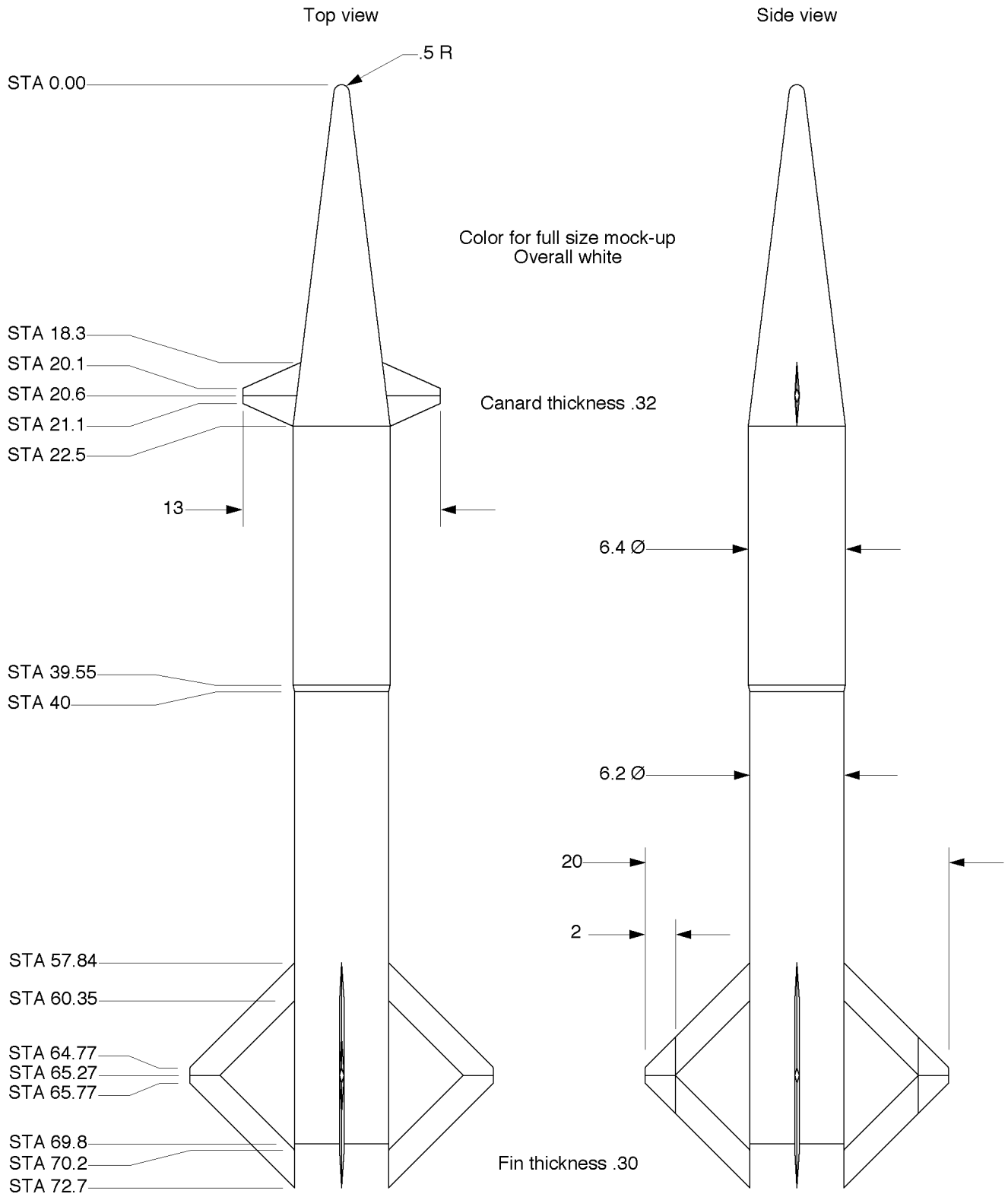
Curtiss-Wright photo



TDU-12/B Skydart loaded on a F-100 Super Sabre - USAF photo

Skydart
 Aerial Target Model
 1/10 scale
 Dimensions in inches
 © 2022 Chris Timm

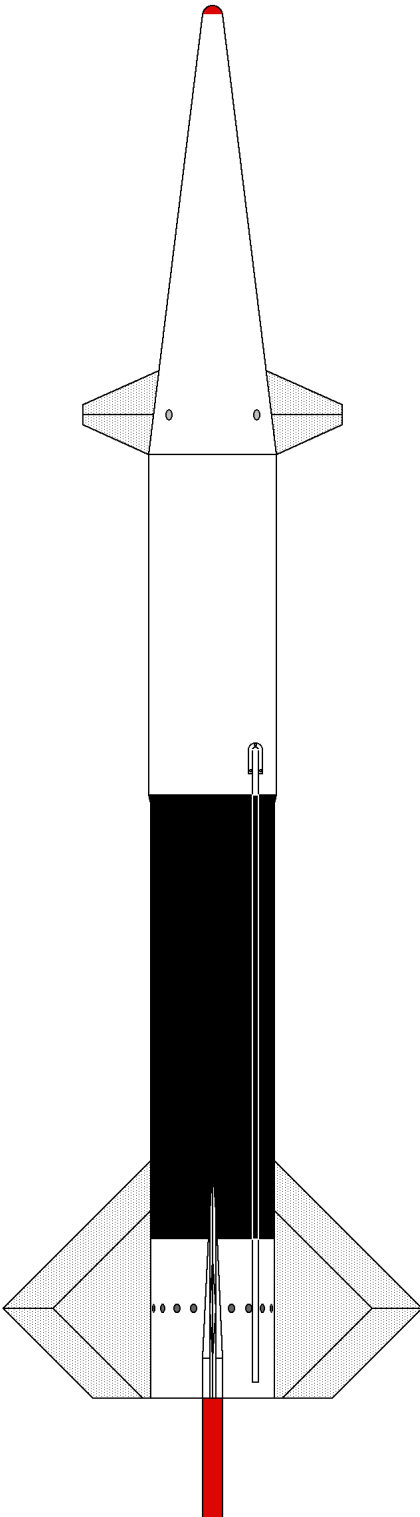
Sources:
Wind Tunnel Tests on an Aerial Target Model at Transonic and Supersonic Speeds, by W.L. Chew and W.E. Carleton, July 1959.
 Curtiss-Wright photos.



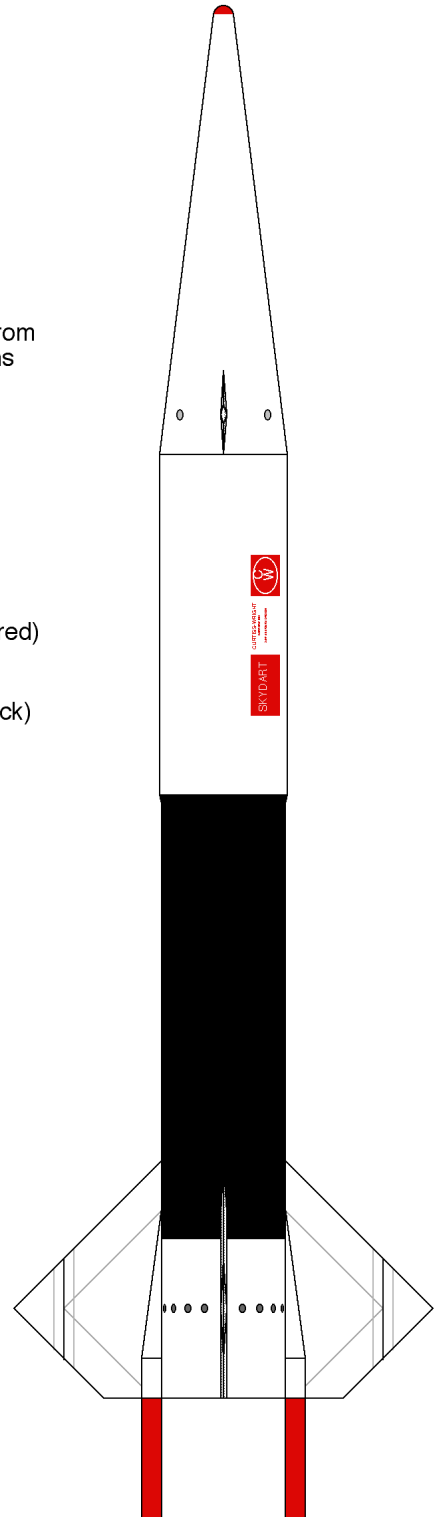
Skydart TDU-12B
Color Pattern
1/10 scale
Dimensions in inches
© 2022 Chris Timm

Sources:
Wind Tunnel Tests on an Aerial Target Model at Transonic and Supersonic Speeds, by W.L. Chew and W.E. Carleton, July 1959.
Curtiss-Wright photos.

Top view



Side view



Color scheme interpreted from
black & white photographs

-  White
-  Bare metal (silver)
-  Medium color (possibly red)
-  Dark color (probably black)



AUGUST SPORT & NRC LAUNCH

26 August 2023 - Horning 1 Field

Buzz Nau

Our August Sport & NRC launch fell on the 26th and included great weather as well as a great turnout. The field started off a little soft from recent rain, but firmed up nicely as the day wore on. There were 23 individual flyers who put up 77 flights! Another welcome sight was all the families and kids that also showed up to fly. In all nine of the flyers were in the youth group and accounted for 20 launches. This was the best turnout for kids in years and we hope the trend continues.

Sport Launch

One of our new flyers was Liam Bhajan with his mom Dawn. Liam and his dad had just built his first rocket and had reached out to Roger Sadowsky. Several members pitched in to help Liam successfully put up three flights. We hope Liam and the other kids that flew, James and Julianna Jenison, Malik, Jayden, and Nathan O'Neal, Joshua and Lauren Gryn, and Henry Murrell, continue to attend future launches.

We had one high power certification flight for the day. Andy Murrell successfully flew his Zephyr on a H283-8 for his level 1 certification. Congratulations Andy!

Joshua and Lauren Gryn had 6 and 4 flights respectively. Joshua's flights included a Red Max on a C6-5, Phoenix on a D12-3 and Pike on a E28-6 which was also lost in the soybeans. Lauren flew her One In A Meion on a H90-7 and Rock Candy on an E9-6. Their dad, Mark had 9 flights including his Spitfire on a G69-7, Canada Smoke on a F40-7, and S'more Delight on a G250 Vmax. Mom Rose Mary also got in a flight with her Baby Bertha.

Herb Crites got in 4 flights, 2 with is Mach Schnell SLK 54m on a I175 and H100 and 2 with the 75m on a H550 and I1299. That I1299 really pops!

Also with 9 flights was Chris Timm with several unique designs, classic clones, and scale models. Included were his Shrox X-3 Stiletto on an E9-4, V-2 on a C5-3, and Enerjet 2650 on three E9-6's. Michael O'Neal put in 5 sport flight in addition to flying in the



Tony launches Chris's FOTL - Andy Murrell photo

Big Bertha contest as well as helping his kids Nathan, Malik, and Jayden fly their Alpha III's. Michael's sport flights included his Blue Sapphire on a B4-4, Star Orbiter on a D12-3, and Tazz on a C6-5.



The kids came out in force - Andy Murrell photo



Dawn and Liam Bhajan after a successful first launch!

Buzz Nau and Dale Hodgson each flew a new 3D model design by Scott Miller. Buzz's flew on a Loki G80-10 for a nice flight, but the model was damaged on landing due mainly to the small chute (but it stayed just outside of the bean field). Dale's flew on a F36-6 and though the up part looked great, the 6 second delay was too long. Dale also put up his 4" diameter Big Bertha for a Chris Palmer Memorial flight. Tony Haga also flew his upscale Big Bertha on a H399 for a nice flight.

Fred Zeigler tried putting up a hybrid flight but problems with ground support and failed ignition put the kibosh on those plans. He did fly his 220 Swift upscale for a nice flight on a H165. Eldred Picket made it to the launch and in addition to putting up 2 flights, he also assisted with LCO duties. Eldred's two flights were Meteorite White and Satellite Silver Crayon rocs. Peter Alway also made it out for his first launch of the year and put up two flights.

NRC

Al put up two NRC flights for the Escape Velocity team. His B Streamer Duration stayed up for 71 seconds and he was able to retrieve it from the soybean field. His 1/2A Helicopter flight flew off to Lenawee County. Timers lost sight of it after three and a half minutes easily maxing the event on one flight!

Big Bertha Contest

You read that right! We finally held the Big Bertha fun contest. We have been trying to hold this event for years and it's finally done. There were six members who participated, Al de la Iglesia, Tony Haga, Dale Hodgson, Buzz Nau, Michael O'Neal, and Andy Tomasch. Al, Dale, Buzz, and Michael flew conventional Big Berthas from kits or plans. Tony and Andy built models of the same body tube size and number of fins but tried different fin designs. They may have helped, but the real advantage was from using pistons.



Andy Murrell's Level 1 launch - Mark Gryn photo

In C Altitude Al got a great boost from his piston for an altitude of 230 meters! Andy also used a piston and hit 201 meters for second place.

The B impulse flight included two events, B Streamer Duration and Open Spot Landing. Tony and Andy tied for first place with 21 seconds. Tony also took second place in Spot Landing with a distance of 23 meters from the flag. Al took another first place with his Big Bertha landing 17 meters from the spot.

Finally, in A Parachute Duration, Al was holding first for most of the day with 45 seconds but got knocked to second place by Andy who floated his away for 64 seconds on the last flight of the event.

Overall, Al took first place with 87 points, followed by Tony (74 points), Andy (71 points), Buzz (62 points), Michael (58 points), and Dale (30 points).

Thanks to everyone who participated and there will be prizes awarded at the next launch.

I've talked to the Horning's since the launch and we will have access to the Horning 1 field for 2024 and 2025 before the crops rotate. They weren't sure about the Horning 2 yet, but they have other fields that we may need to locate to and create a Horning 3 field. I can't thank them enough for their support over the years.



Chris Timm's V-2 - Andy Murrell photo



Andy, Mark, and Herb - Rose Mary Gryn photo



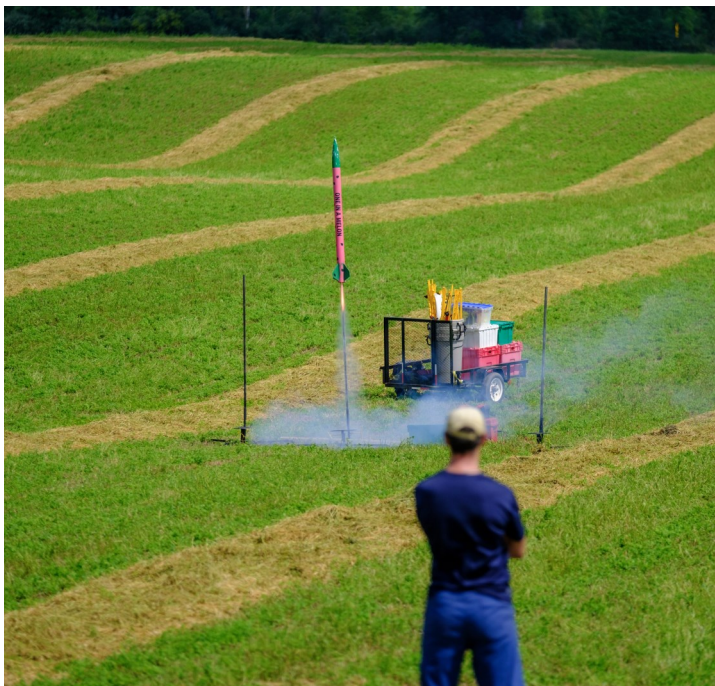
Tony and his upscale Big Bertha



Michael O'Neal's Sapphire launch - Andy Murrell photo



Liam Bhajan's first flight



Lauren Gryn's "One in a Meion" - Andy Murrell photo



Eldred manning the LCO station



Fred and his 220 Swift upscale



Several of the Big Bertha Contest entries



Dale's upscale Big Bertha



Andy after his successful Level 1 flight





CURRENT EVENTS IN SPACE EXPLORATION

Nearly all the recent news has been about SpaceX. As they continue to make progress towards a second flight of Starship Heavy, they also sent up 17 flights in the past two months, bringing their total for the year to over 60. They expect to soon be on a pace for averaging two launches a week! A list of recent Starlink flights are on the table below.

The new water deluge system appears to have largely survived two static fire events for Booster 9. The second static fire went well enough that the restraining bolts have been removed and all that remains is the pairing with Ship 25 and approval from the FAA.

launched from Space Launch Complex 40 (SLC-40) at Cape Canaveral Space Force Station and the booster landed on the drone ship *A Shortfall of Gravitas*.

EchoStar 24, a massive communications satellite for Hughes Network Systems was launched aboard a Falcon Heavy from LC-39A at Kennedy Space Center on 28 July. It was the first flight for the core booster and third and fourth respectively for the side boosters. The core booster was expended, but the side boosters landed back at KSC on Landing Zones 1 & 2.



The first non-Starlink flight for SpaceX this period occurred on 1 July with a Falcon 9 launching the Euclid Space Telescope for the European Space Agency (ESA). It was the booster's second flight sending the telescope to Lagrange Point 2. Euclid will investigate dark energy and dark matter in the universe. The mission



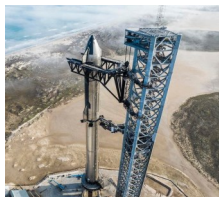
Mission	Date	# of Satellites	Launch Site	Booster Flt#	Landing Site	Fairings Recovered?
Starlink 5-12	23-Jun-23	56	SLC-40 CCSFS	8	<i>Just Read the Instructions</i>	Yes
Starlink 5-13	7-Jul-23	48	Vandenberg AFB	12	<i>Of Course I Still Love You</i>	Yes
Starlink 6-5	9-Jul-23	22**	SLC-40 CCSFS	16	<i>Just Read the Instructions</i>	Yes
Starlink 5-15	15-Jul-23	54	SLC-40 CCSFS	16	<i>A Shortfall of Gravitas</i>	Yes
Starlink 6-15	19-Jul-23	15**	Vandenberg AFB	10	<i>Of Course I Still Love You</i>	Yes
Starlink 6-6	23-Jul-23	22**	SLC-40 CCSFS	6	<i>Just Read the Instructions</i>	Yes
Starlink 6-7	27-Jul-23	22**	SLC-40 CCSFS	15	<i>A Shortfall of Gravitas</i>	Yes
Starlink 6-8	6-Aug-23	22**	SLC-40 CCSFS	4	<i>A Shortfall of Gravitas</i>	Yes
Starlink 6-20	8-Aug-23	15**	Vandenberg AFB	5	<i>Of Course I Still Love You</i>	Yes
Starlink 6-9	11-Aug-23	22**	SLC-40 CCSFS	9	<i>Just Read the Instructions</i>	Yes
Starlink 6-10	17-Aug-23	22**	SLC-40 CCSFS	13	<i>A Shortfall of Gravitas</i>	Yes
Starlink 7-1	22-Aug-23	21**	Vandenberg AFB	15	<i>Of Course I Still Love You</i>	Yes
Starlink 6-11	26-Aug-23	22**	SLC-40 CCSFS	3	<i>Just Read the Instructions</i>	Yes

*Included rideshare

**v2.0 Starlinks

KSC = Kennedy Space Center

CCFCS = Cape Canaveral Space Force Station



CURRENT EVENTS IN SPACE EXPLORATION

On 3 August, SpaceX launched another telecommunications satellite, Galaxy 37, for Intelsat. The Falcon 9 lifted off from SLC-40 at Cape Canaveral Space Force Station and after sending the satellite on a geo stationary transfer orbit, landed for the sixth time aboard the drone ship, *Just Read The Instructions*. Galaxy 37 is a replacement satellite providing television service to North America.



SpaceX photo



SpaceX photo

The Crew-7 mission lifted off for the International Space Station (ISS) on 26 August. While this was the seventh SpaceX mission to support crew rotation, it is the eleventh overall crewed mission utilizing the Crew Dragon capsule. It was the booster's first flight which landed back at the Cape on Landing Zone 1.

The crew for mission 7 consisted of Commander NASA Astronaut Jasmin Moghbeli, Pilot ESA Astronaut Andreas Mogensen, Mission Specialist ROSCOSMOS Cosmonaut Kostantin Sergeyevich Borisov, and Mission Specialist JAXA Astronaut Satoshi Furukawa. Crew 7 will remain aboard the ISS for six months.



The sixth Rocket Lab mission of 2023, *Baby Come Back*, lifted off on 18 July from Launch Complex-1B, Māhia Peninsula, New Zealand. The Electron launch vehicle carried seven satellites for the ride-share mission to a sun-synchronous orbit. Four CubeSats were for NASA's Starling program, Space Flight Laboratory included a demonstration satellite, and two weather tracking satellites for Spire Global. The booster was recovered after a soft ocean landing.



Rocket Lab photo



CURRENT EVENTS IN SPACE EXPLORATION

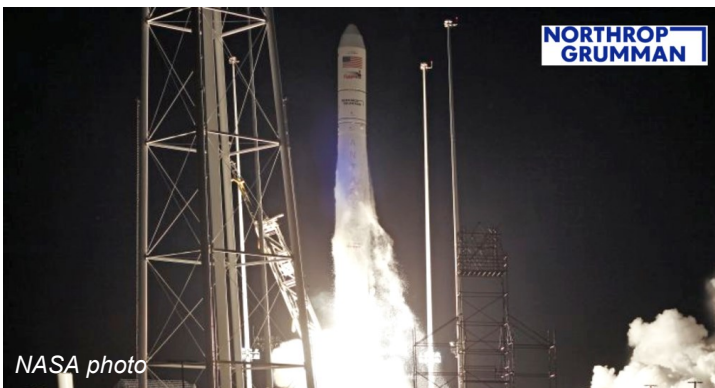
Rocket Lab's next mission, *We Love The Night Life*, launched on 24 August, again from Launch Complex-1B, Māhia Peninsula, New Zealand. The payload for the Electron launch vehicle was an earth observation satellite utilizing a synthetic aperture radar (SAR) for Capella Space. This mission included the first reflight of a Rutherford engine from a recovered booster. The booster performed a soft water landing and was recovered.



Rocket Lab photo

NORTHROP GRUMMAN

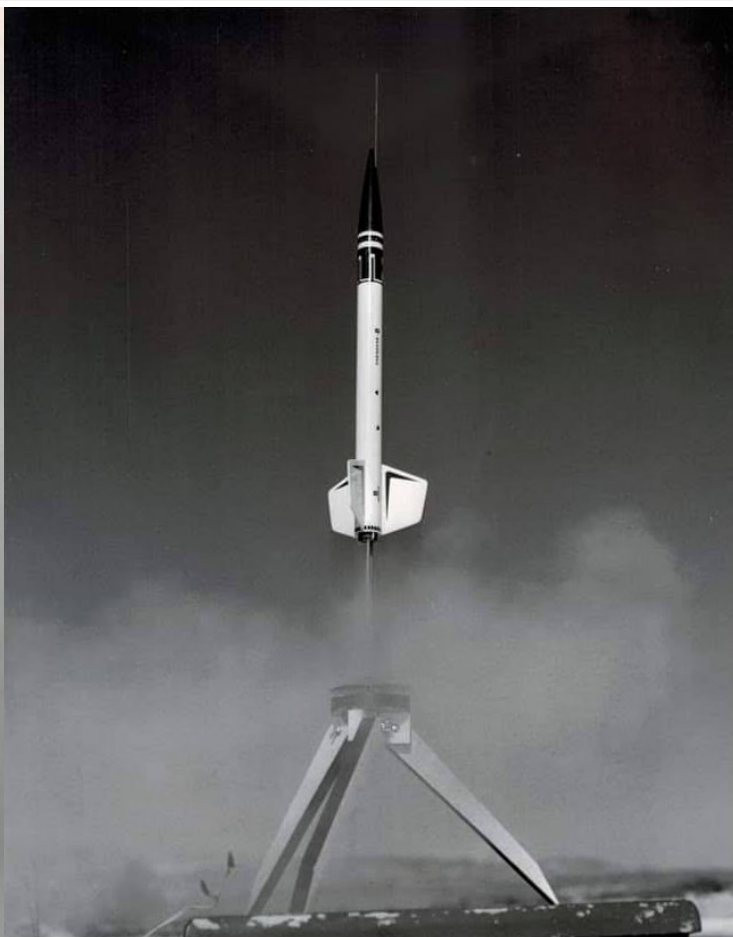
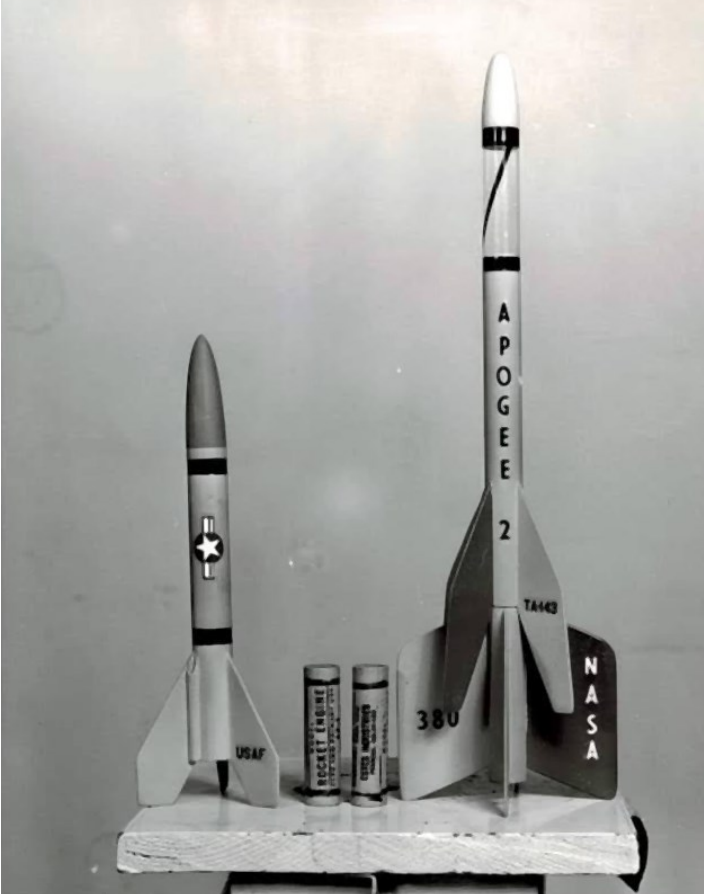
On 1 August, Northrop Grumman launched an Antares 230 carrying the Cygnus spacecraft *S.S. Laurel Clark* in support of NASA's Commercial Resupply Service from Wallops Flight Facility. The spacecraft delivered over 4 tons of supplies and experiments to the ISS. This was the final flight of the 200-series Antares.



NASA photo



Estes photos from Jonathan Dunbar's collection





JMRC
HUVERS

Club News

Steve and Emma Kristal World Champions!

The World Spacemodeling Championship was held at Austin Texas this year and club members Steve and Emma Kristal were on the Gold Medal winning US team in the FAI S1B Altitude event. Congratulations to Steve and Emma!



nounced to the club email list.

Just like the past Ironman contests. Build a single model to be flown in three events. Cost will be \$10 which will get you motors needed to fly the events. The motors for Iron-man III will be 18mm 1/2A6-0's and 1/2A6-4's. The models need to accommodate 18mm motors and be two-stage. Prizes will be awarded to the top three overall performers

Events

- **Double Spot Landing** (booster and sustainer!)
- **Streamer Duration**
- **Altitude** (with an altimeter)

Free Alpha III Kit for Kids

During our last board meeting, several members discussed the need to reach out to more fliers, to increase club activity and the need to attract more youth to our launches.

Al de la Iglesia would like to offer a free rocket kit (Estes Alpha III) to any flier who is 18 years old or younger at our next club launch. The flier (or parent/guardian) must be a club member or join at the launch. Limit one free rocket kit per youth.

Please send an email to Al at aiglesia@gmail.com to let him know that you are interested and how many youth are attending so that he can bring enough rocket kits.

RIP Chris Palmer

When I think of odd rocs a couple of club member names come to mind, but the top of the list has to be Chris Palmer. He has a rich history of flying some of the most unique and infamous rockets I've ever seen. Most of them actually flew really well, but when they didn't, even those flights were memorable! Chris passed away on June 20th. Chris's health had been suffering for several years, but still managed to make it out to visit us a few times. As one of the Debauchery Brothers, he will be sorely missed on the field and in our memories. Fair winds Chris.

Launch Field Update

Buzz recently spoke with the Horning's regarding the future status of the fields we fly at. The good news is Horning 1 will remain an alfalfa crop for the next two years. Horning 2 may switch crops from corn at time, but the plans for that field are not sold yet. The Hornings own several other large fields so other opportunities should be available at that time. If you see any of the Hornings at a future launch be sure to thank them for their generosity and support over the years.

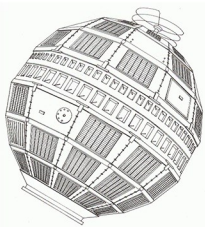
Fun Contest Lineup for 2023

Precision Altitude - The target for this years precision altitude contest is **1,898 feet**. The goal is to fly the closest to the target altitude without going over. The contest will run all season long until our last launch in 2023. The entry fee will be \$5 per attempt and you can try as often as you like. The winner will receive 50% of the pot, second place will earn 25%, and the remaining 25% will go to the club. We have only had a handful of entries and the competition is wide open. Take your shot at an upcoming launch before the end of the year!

Iron-man III - launch date TBD

We originally scheduled this event for the September launch, but for unforeseen reasons we're postponing it for now. A new date will be an-





50 YEARS AGO: TELSTAR 1

Telstar was launched by NASA on July 10, 1962, from Cape Canaveral, Fla., and was the first privately sponsored space-faring mission. Two days later, it relayed the world's first transatlantic television signal, from Andover Earth Station, Maine, to the Pleumeur-Bodou Telecom Center, Brittany, France.

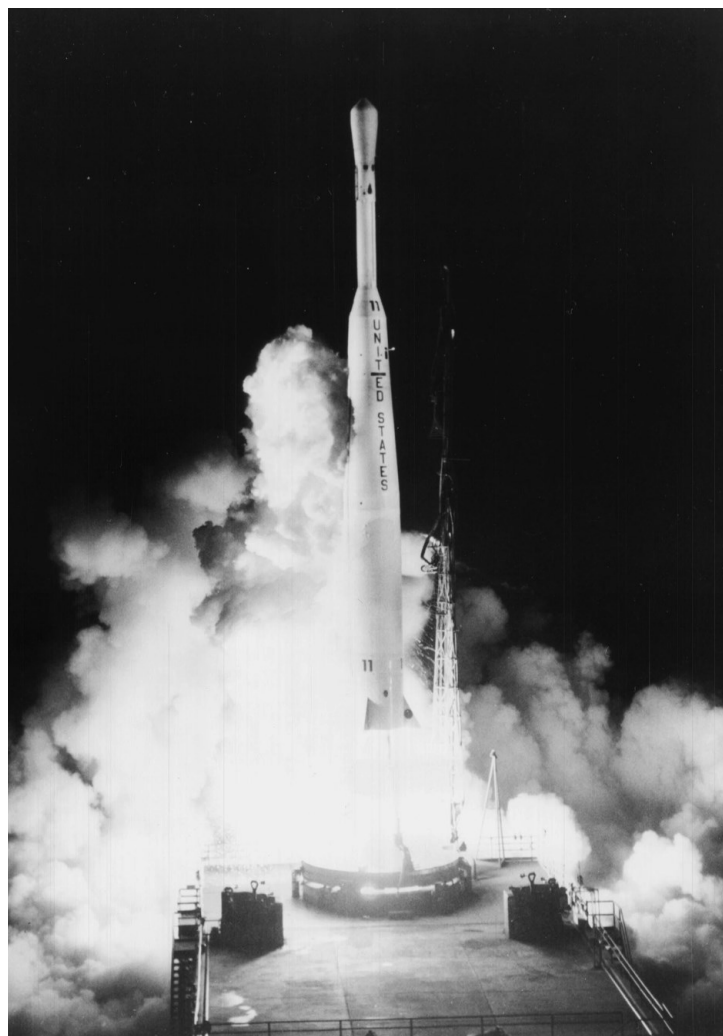
Developed by Bell Telephone Laboratories for AT&T, Telstar was the world's first active communications satellite and the world's first commercial payload in space. It demonstrated the feasibility of transmitting information via satellite, gained experience in satellite tracking and studied the effect of Van Allen radiation belts on satellite design. The satellite was spin-stabilized to maintain its desired orientation in space. Power to its onboard equipment was provided by a solar array, in conjunction with a battery back-up system.

Although operational for only a few months and relaying television signals of a brief duration, Telstar immediately captured the imagination of the world. The first images, those of President John F. Kennedy and of singer Yves Montand from France, along with clips of sporting events, images of the American flag waving in the breeze and a still image of Mount Rushmore, were precursors of the global communications that today are mostly taken for granted.

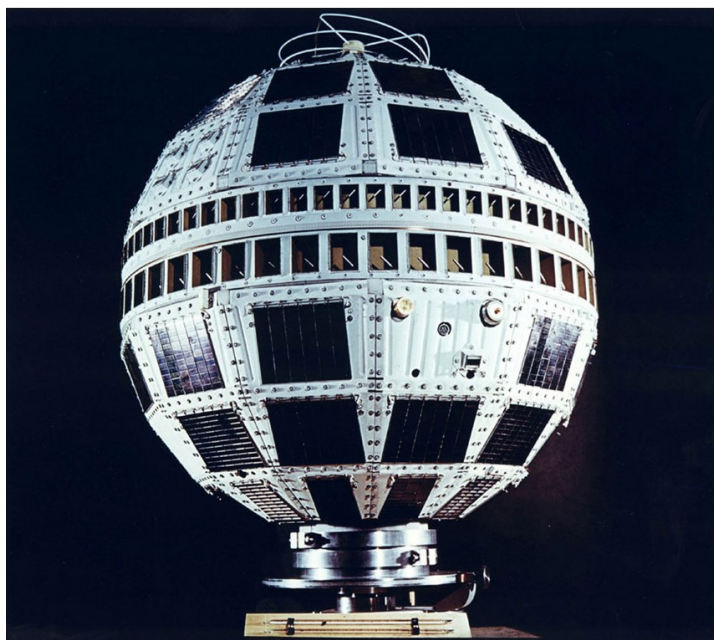
Telstar operated in a low-Earth orbit and was tracked by the ground stations in Maine and France. Each ground station had a large microwave antenna mounted on bearings, to permit tracking the satellite during the approximately half-hour period of each orbit when it was overhead. The signals from Telstar were received and amplified by a low-noise "maser" (Microwave Amplification by Stimulated Emission of Radiation), the predecessor of the modern laser. After demonstrating the feasibility of the concept, subsequent communications satellites adopted a much high-

er orbit, at 22,300 miles above the Earth, at which the satellite's speed matched the Earth's rotation and thus appeared fixed in the sky. During the course of its operational lifespan, Telstar 1 facilitated over 400 telephone, telegraph, facsimile and television transmissions. It operated until November 1962, when its on-board electronics failed due to the effects of radiation.

NASA Content Administrator, 30 January 2018

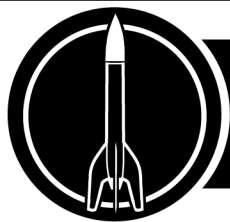


A Thor/Delta 316 launches with the Telstar 1 satellite from Cape Canaveral Air Force Station's Space Launch Complex 17B, July 10, 1962 - NASA photo



Telstar 1 - Bell Labs photo

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CHRIS PALMER MEMORIAM

Dale Hodgson & Fred Ziegler



de·bauch

[də' bôCH]

VERB

destroy or debase the moral purity of; corrupt:

"he has debauched the morals of the people and endeavored to corrupt parliament"

Every once in a while, you meet a person that just belongs. They fit in. They get you. That was Chris Palmer.

I can't quite remember when I first met him, but I knew when I did that he was a kindred spirit. It was easy to be in his company. Chris had an infectious smile, a quick wit, and, like most of us, the humor and mentality of a fifteen-year-old boy.

In our group, there were a few of us who "stood out" amongst the other crazies. We were known for our antics and for stepping a little "out of bounds" as it were. While it wasn't a big divergence from business as usual, there were... moments... that set us apart. For our silliness, we were branded "the Debauchery Brothers". We were a trio of slightly demented, some would say foolhardy, brothers in rocketry that kept the rest of the group on their toes. You might find us hiding under a table or standing WAAAAAY back waiting for the countdown to end. While we never did anything really dangerous, lending the illusion of danger was all part of the fun.

Chris Palmer was one of the three amigos that made up the Debauchery Brothers. We lost Chris last June to health issues. The sad part is, we never knew he was in such dire straits. We found out about his passing over a month after he died.

Chris' passing leaves a large hole in our group. While he had been having some difficulties attending launches due to his health, he was still always welcomed with hugs and smiles when he showed up. The Debauchery Brothers are not complete without him. We miss him dearly.

Love you Brother,

Fred

The BOD received some very sad news recently. We lost one of our own, Chris Palmer. All that is known at this point is that Chris had been in declining health, and he passed on June 20. I'm sure as other details are learned and verified word will get around the rocket community as it usually does.

Chris was a great guy to hang out with. When he showed up driving his Umbrella Corporation van (a reference to the Resident Evil movie series which he apparently loved) you just knew something was going to happen and most of the time it did. Chris was a guy who didn't bother stretching the envelope; he just threw it into a shredder. I would call him a master of the odd-roc and I think he could make just about anything fly. When he wasn't doing that, he always had a model of some sort built to fly on an absolutely ridiculous motor. Every once in a while, one would come back but a few times they just seemed to disintegrate in mid-flight. More than once I remember a doll's head tumbling down after a separation from the rest of the project. There were too many to mention but let's just say a vast majority of Chris' flights were all heads-up. As I recall I would say that his crowning achievement was that he flew one of his rocs that was featured on *MythBusters* sometime back when there was a segment shown about high-power rocketry and "Snitch Girl"; aka Emily Palmer (no relation to Chris) who as a kid would take an Estes Snitch and do things with it we would call legendary. After that whole deal Chris had developed a crush on Kari Byron, one of the *MythBusters* who if memory serves referred to Chris' creation as looking like eyeballs. But we knew better; that rocket was a homage to let's say a well-endowed woman. But that was Chris...he wasn't being disrespectful just having some fun as only he could.

Chris also flew more traditional rockets as well. He had created some awesome projects over the years that looked and flew beautifully. Definitely, a talented individual.

Chris was always an over-the-top kind of person. Some years back some of us got together to spend some time shooting at a range. Chris showed up with an absolute arsenal and he let us all try out some of the stuff. Big, brash, and expensive ammo but that too is how Chris rolled.

Years ago, Fred Ziegler and I were known to do some fairly crazy stuff as well which revolved around identical kit drag racing. So, we started calling ourselves The Debauchery Brothers. When Chris learned of those shenanigans, he wanted in....and we let him. No background checks, no vetting, no interviews. Reputation and history alone were enough. Not too long ago Chris had some shirts made for us to you know; identify who we were....like we really needed to be pointed out. Suffice it to say folks knew we were coming and when we were talking and laughing, they just knew something was up...and of course, they were right.

Chris will be missed by all who knew him. A great guy, talented rocketeer, and generous almost to a fault. "Hey, watch this" will just not have the meaning it once did. Godspeed, Chris.....

Dale

Tribute to Chris Palmer





LAUNCH WINDOWS

Launch dates from SpaceFlight.com

September 6/7, 2023

H-2A - XRISM & SLIM

Launch Site: Tanegashima Space Center

A Japanese H-2A rocket, designated H-2A F47, will launch the X-Ray Imaging and Spectroscopy Mission, or XRISM, a joint project between the Japan Aerospace Exploration Agency and NASA. XRISM is a replacement for the Hitomi X-ray astrophysics observatory, which failed about one month after launch in 2016. XRISM will perform high-resolution X-ray spectroscopic observations of the hot gas plasma wind that blows through the galaxies in the universe. These observations will enable us to determine flows of mass and energy, revealing the composition and evolution of celestial objects. JAXA's Smart Lander for Investigating Moon, or SLIM, mission will fly as a rideshare on this launch, heading to the moon to test precision landing technology. The H-2A rocket will fly in the 202 configuration with two strap-on solid rocket boosters.

TBD, 2023

Atlas 5 - NROL-107

Launch Site: SLC-41, Cape Canaveral Space Force Station

A United Launch Alliance Atlas 5 rocket will launch the NROL-107 mission for the National Reconnaissance Office. The NROL-107 mission will launch a classified payload known as Silentbarker. The mission is a partnership between the NRO and the U.S. Space Force, which have disclosed little information about the payload other than it will focus on satellite threat intelligence and space situational awareness.

September 15, 2023

Soyuz - Soyuz MS-24

Launch Site: Baikonur Cosmodrome

A Russian government Soyuz rocket will launch the crewed Soyuz MS-24 spacecraft to the International Space Station. The mission will carry Russian commander Oleg Kononenko, Russian flight engineer Nikolai Chub, and NASA astronaut Loral O'Hara into orbit for a long-duration flight on the space station. The rocket will fly in the Soyuz-2.1a configuration.

September 26, 2024

Atlas 5 - Project Kuiper

Launch Site: SLC-41, Cape Canaveral Space Force Station, Florida

The first two demonstration satellites for Amazon's Project Kuiper broadband constellation will launch on an Atlas 501 rocket. These satellites were originally scheduled to fly on the first Vulcan rocket.

September 29, 2023

Falcon 9 - USSF-124

Launch Site: SLC-40, Cape Canaveral Space Force Station

A SpaceX Falcon 9 will launch a mission for the U.S. Space Force and Missile Defense Agency.

TBD, 2023

Falcon 9 - WorldView Legion 1 & 2

Launch Site: SLC-4E, Vandenberg Space Force Base

A SpaceX Falcon 9 rocket will launch the first pair of WorldView Legion Earth observation satellites for Maxar Technologies. Maxar plans to deploy six commercial WorldView Legion high-resolution remote sensing satellites into a mix of sun-synchronous and mid-inclination orbits on three SpaceX Falcon 9 rockets.

October 4/5, 2023

Vega - THEOS-2 & FORMOSAT-7R/TRITON

Launch Site: ZLV, Kourou

Arianespace will launch a Vega rocket, designated VV23, sending a collection of 12 satellites into a sun-synchronous orbit. The main payload is the Thailand Earth Observation System-2 (THEOS-2), which is an Earth-observing satellite built by Airbus Defense and Space on behalf of the Kingdom of Thailand. It's designed to complement THEOS-1, which launched in 2008. The secondary payload is FORMOSAT-7R/TRITON, which was developed by the Taiwanese Space Agency (TASA). It's Global Navigation Satellite System-Reflectometry (GNSS-R) tool will help meteorologists gather wind data over oceans to help with forecasting the trajectory and intensity of typhoons.

October 5, 2023

Falcon Heavy - Psyche

Launch Site: LC-39A, Kennedy Space Center

A SpaceX Falcon Heavy rocket will launch NASA's Psyche asteroid mission. The Maxar-built spacecraft will travel to the metallic asteroid Psyche, where it will enter orbit in 2029. This is the first spacecraft to explore a metal-rich asteroid, which may be the leftover core of a protoplanet that began forming in the early solar system more than 4 billion years ago. The Falcon Heavy's two side boosters will return to Landing Zones 1 and 2 at Cape Canaveral Space Force Station for recovery. The center core will be expended. Delayed from 2022 due to payload software issues. Moved forward from Oct. 10, 2023.

October 2023

Falcon 9 - O3b mPOWER 5 & 6

Launch Site: SLC-40, Cape Canaveral Space Force Station

A SpaceX Falcon 9 rocket will launch the third pair of O3b mPOWER broadband internet satellites into Medium Earth Orbit for SES of Luxembourg. The satellites, built by Boeing, will provide internet services over most of the populated world, building on SES's O3b network.

November 1, 2023

Falcon 9 - SpaceX CRS 29

Launch Site: LC-39A, Kennedy Space Center

A SpaceX Falcon 9 rocket will launch a Dragon 2 spacecraft on a cargo resupply mission to the International Space Station. The Falcon 9's first stage booster will land on a drone ship in the Atlantic Ocean. The flight is the 29th mission by SpaceX conducted under a Commercial Resupply Services contract with NASA.

November 15, 2023

Falcon 9 - IM-1

Launch Site: LC-39A, Kennedy Space Center

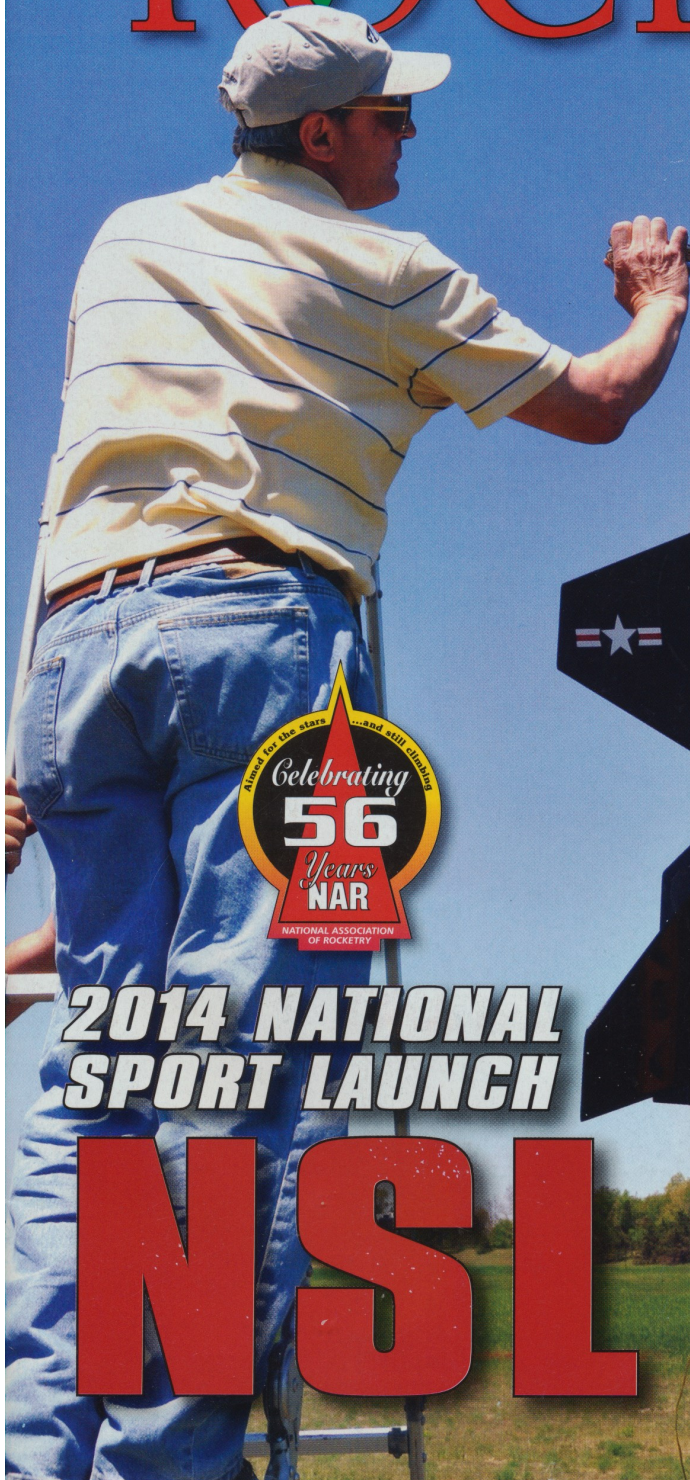
A SpaceX Falcon 9 rocket will launch the IM-1 mission with the Nova-C lander built and owned by Intuitive Machines. The IM-1 mission will attempt to deliver a suite of science payloads to the surface of the moon for NASA's Commercial Lunar Payload Services program.



SPORT ROCKETRY

OFFICIAL JOURNAL OF THE NATIONAL ASSOCIATION OF ROCKETRY

SEPTEMBER/OCTOBER 2014



2014 NATIONAL SPORT LAUNCH

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