# CAMP HAPPINESS GAZETTE

## TRAJECTORIES – GOVERNMENT SHUTDOWN EDITION

A (SLIGHTLY) HIJACKED PUBLICATION

James and Keri Draper celebrate at The National Space Club Awards Banquet in Cocoa Beach, FL – 10/24/25

## DRAPER RECOGNIZED!

## COCOA BEACH FLORIDA, OCTOBER 24, 2025 –

Cape Canaveral Space Force Museum **Director *James W. Draper*** was awarded the "Harry Kolcum Memorial News and Communications Award for his work with our foundation, The Sands Space History Center, the museum at Launch Complex 26, and Hangar C – some contributions from Rupert as well!

"The National Space Club Florida Committee each year recognizes area representatives of the news media and communications professionals for excellence in telling the space story along Florida's Space Coast and throughout the world. The award is named in honor of Harry Kolcum, the former managing editor of Aviation Week & Space Technology, who was Cape bureau chief from 1980 to 1993, prior to his death in 1994. Kolcum was a founding member of the National Space Club Florida Committee"

***A Note from the Editor(s)*** – With the ongoing shutdown of the United States Government, a small group of individuals have briefly taken over the Editor's suite of your regularly scheduled "Trajectories" newsletter.

In Lieu of the hard-hitting reporting related to the goings on in our museum and at The Cape, we hope to offer some interesting content related to various personal study and research projects, as well as some general interest that may spark curiosity. We have amassed contributions from across the community, and while we hope to return you to your regular scheduled programming shortly, we remain committed to gathering more pieces for future publication. Our organization continues the work of preserving the history of America's Space Program at Cape Canaveral – and soon will be swapping stories in Hangar C again! I leave you with one of my most favorite quotes from our organization:

*"You are the best representation of the Space Force here on the Space Coast of Florida."* – Cecil Walker

# Camp Happiness….

Camp Happiness was the unofficial, but very popular name given to the missile support facilities operated by Detachment 2, 4504th Support Squadron, 4504th Missile Training Wing, 9th Air Force, TAC, at Cape Canaveral. The headquarters section included billets and mess facilities used to support launch training for the TM-61C Matador tactical missile, and later the TM-76B (CGM-13B) Mace missiles – R. McCormick

# DEEP DIVING INTO THE LOST HISTORY OF THE CAPE

## How did the First American in Space get to the launch pad?

Randal Coppola

This tale begins with Docent John Oster bringing up the 65th Anniversary of LCDR Alan Shepard's flight to become the First American in Space. As it is in a few months, I had always wondered if an overgrown entrance to Complex 5/6 was how the NASA van and convoy had arrived there. It was recently cleared, giving me an idea… Wouldn't it be a fun time to retrace the NASA Van route on the anniversary? Well, this uncorked much work, speculation and research that has officially reached the shoulder shrug level. We will probably never know for sure the exact route.

And here's why:

Well First of all it was a long time ago and we all only live so long. While yes, in our effort we did contact Lt. Dee O'Hara with Director Draper's help, our deep dive effort left no eyewitness accounts of the route. NASA, Langley, Patrick SFB and many others were reached but had nothing. And for historical record, no pictures or video until they arrive at the Complex!

That's where the deep dive yielded some results.

We all know the Redstone is diminutive in the stature of rockets. In the Press Planning I uncovered in the Archives, every effort was made by NASA to control the optics. This was unraveled information from a TELEX that gave the huge Press presence direction throughout the launch. It was clear the effort was to make it seem larger than it actually was. On launch day a small pool of reporters were assigned to take pictures of Shepard getting in the NASA Van at Hangar S. Then those SAME Press drove their OWN CARS to 5/6 for the scheduled arrival of the van. SO……..

Docent Zamorski suggested and I agree that the NASA van went down Central Control Rd, took a right at Lighthouse Rd, followed the shore to enter at the Guard Shack behind Complex 26 -5/6. This road could be secured from civilian traffic, goes through a control point and matches the Newsreel footage direction of the NASA Van as it arrives.

The other illustration shows how the Press probably went after Hangar S. The recently cleared road ends right at parking for them, easier to control and manage to the filming ahead.


Proposed NASA Press Route to Cape Canaveral Space Launch Complex 5/6. May 5, 1961


Proposed NASA Astronaut Route to Cape Canaveral Space Launch Complex 5/6. May 5, 1961

NASA Astro Van enters Space Launch Complex 5/6 from direction of Spin Test Facility - May 5, 1961

# THINGS TO THINK ABOUT PRESENTING

## Breakfast Anyone?

Geoff Gonzalez, Docent CCSFM

In the 1950's, the Redstone missile was developed by the Army Ballistic Missile Agency led by Dr. Wernher von Braun. Derived directly from the V-2 ballistic missile used in late WWII, the vehicle's A-7 rocket engine used a propellant mix of Alcohol/Water fuel and Liquid Oxygen (LOX) oxidizer.

To achieve spaceflight with the existing Redstone airframe (stretched into the Jupiter-C/Juno I length for space launches), Von Braun estimated that the A-7 engine needed a performance boost of about 8% to avoid a lengthy (and costly) redesign or worse; a replacement engine that could take months or years to develop. This necessitated the innovation of a new propellant that could deliver reliably higher energy in approximately the same volume and weight.

A contract to develop the new fuel was awarded to Rocketdyne, a division of North American Aviation that had developed and produced the Redstone. NAA assigned the responsibility of the propellant development to Mary Sherman Morgan, one of the few female engineers in the world and the only female engineer out of 900 at the Rocketdyne plant in Canoga Park, CA. Despite lacking a college degree and facing intense discrimination, she had excelled in her field and was widely regarded as one of the foremost chemical engineers of her day. As a Theoretical Performance Specialist, her task was to mathematically calculate every aspect of the new propellant blends, based on the very limited test data of rocket fuels up to that point in time. No small feat in the years and decades before electronic calculators.

Morgan's team soon produced a replacement fuel composed of a blend of 60% unsymmetrical dimethylhydrazine (UDMH) and 40% diethylenetriamine (DETA). Though considerably more toxic compared to the original ethyl alcohol fuel, the new fuel produced a 12% performance boost in the A-7 engine, exceeding Von Braun's requirements. Following the development, Morgan found the strictly technical "UDMH/DETA" acronym to be wordy and ungraceful, and so proposed to name the combination "Bagel". The reason? The fuel was to be paired with the Redstone's existing liquid oxygen oxidizer, commonly shortened to "LOX". The combination, therefore, would be "Bagel" and "LOX", referencing the popular breakfast dish. The US Army, however, was "unamused" according to a contemporary report, and the new fuel was named "Hydyne" instead.

The fuel was tested in a Redstone R&D flight in 1956 before transferring to the Jupiter-C and Juno I space launchers. In all, two Jupiter-C launches and six Juno I launches used the Hydyne fuel, including the launch of America's first satellite, Explorer I, in 1958. In the derivative Jupiter IRBM and Juno II vehicles, the fuel was abandoned in favor of more advanced propellants.

However, thanks to Mary Sherman Morgan, it could be said that America took its first steps into space with Bagels and LOX. Something to consider next time you order your breakfast.


NAA X-10 in Flight, The Cape's First X Plane – and precursor to the NAA NAVAHO

The North American X-10 (originally designated RTV-A-5) is an unmanned technology demonstrator developed by North American Aviation. It was a subscale reusable design that included many of the design features of the SM-64 Navaho missile. The X-10 was similar to the development of the Bell X-9 Shrike project, which was based on features of the GAM-63 RASCAL. In 1955 the program moved to Cape Canaveral, Florida, to complete the test program. Here a new set of six X-10 vehicles completed the testing of the N-6 inertial navigation system at supersonic speeds, reach 49,000 feet (15,000 m) altitude, a total flight distance of 627 mi (1,009 km) and a peak speed of Mach 2.05.

# STORIES FOR THE WATER COOLER

## Defense Support Program

*By: Jim Behling*

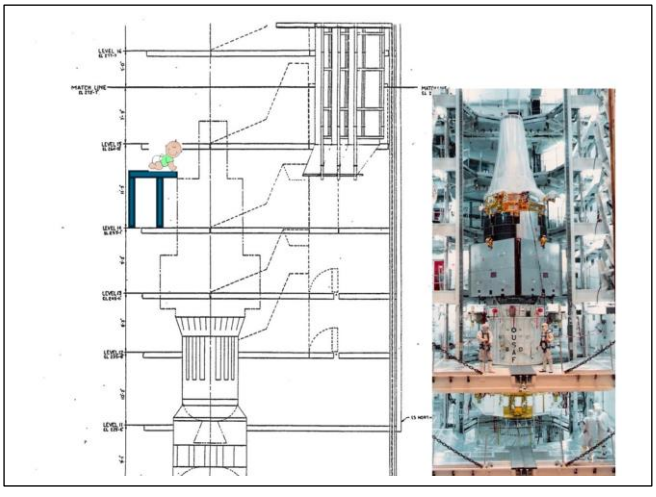
*Background:*

DSP was a missile warning spacecraft. One DSP flew on the shuttle, the last flew on the Delta-IV Heavy in early 2007 and the remainder flew on Titans. My story concerns the DSP-14 on a Titan-IV. Some background, notice that the deployed solar arrays in the first photo of the DSP spacecraft, they fold up around the barrel in the second photo. The barrel section is hollow (like a barrel) and the main part of the spacecraft (the bus) is the hexagonal section with the telescope on top. Most of the mass of spacecraft is in this section (it contains the avionics, fuel, CMG, etc). The third pic show a notional cross section of the spacecraft with the folded arrays. The next pic is a drawing of the spacecraft, IUS upper stage and T-IV in the UES at SLC-41. The UES or Universal Environmental Shelter is a clean room in the MST at SLC-41. It totally encloses the top of the Titan. The access platforms/levels are represented and are numbered. They surround the spacecraft, IUS and Titan with only 3-6 inches of clearance between the platforms and flight hardware. Next to the drawing is a photo of DSP on an IUS in an integration cell at the SPIF.

It was in the late 1980's; I was in the Air Force stationed at CCAFS. My unit was the 6555th Aerospace Test Group (a unit that had great history but was deactivated in the early 1990's due to USAF reorganization) and I was in the Spacecraft Division. I had two duties: 1. Project Engineer, I was responsible for the planning and support of the prelaunch ground processing of an assigned spacecraft program (which program it was for another forum that has some security levels). We were assigned 1-2 programs and hopefully one would launch during your tour (3-5 years). My other duty was Air Force Test Controller. As AFTC, I supported whichever programs were onsite getting ready for launch. We were the gov't lead for safety, security and test control of the spacecraft ground operations. There was one of us with the spacecraft around the clock. We either had to be with the contractor when they were working on it or in the spacecraft facility during off shifts (yes, we could sleep in the facility if there was no work on the spacecraft, but that is another story).

Here is the story. I was assigned to work as AFTC, second shift, on a LC-41 (as it was called then). There was a DSP/IUS Titan-IV mission. I performed a change of shift debrief with the outgoing AFTC. Since the spacecraft had just been erected on to the launch vehicle just days before, there still was some mechanical work to be done to the spacecraft being electrical testing could start. Protective covers were to be removed, and some secondary instruments were being installed. Most of this work was done on level 14, which was where the bulk of the spacecraft systems were located. I hung around this level, floating between tasks, trying not to get in the way, yet being available to the spacecraft task leaders. One thing I need to mention, is that the UES is a 100K cleanroom and everyone is wearing clean room suits.

One of the tasks involved some soldering on the top of the spacecraft bus. An access platform was set up on level 15 to provide additional access to this area (black item with baby on it in the diagram). I was also on level 15 talking with the task leader as they were finishing up with the soldering. An inspector was on the platform looking over the work. She was using a magnifying glass to look at the work. She had properly tethered the magnifying glass as all tools near a spacecraft should be. However, as she moved forward to get a closer look, her knee hit her notebook and pushed it off the platform on to the spacecraft. *(Continued…)*



# STORIES FOR THE WATER COOLER
# *CONTINUED*

***DSP – Continued:***

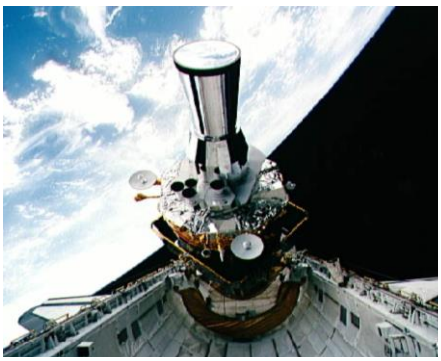
She yelled out that the notebook had dropped. We all dropped what we were doing and went to see the damage, we asked her where it hit the spacecraft, but she didn't see where fell. We looked for the notebook on the floor, but to our amazement we couldn't find it. I went next to the spacecraft and platform to take look and realized that while she was on the platform, she was right over the void between the drum and folded square solar panels (see photo of spacecraft cross section). Knowing this, I went down 2 levels to 13 and started looking around. I couldn't find it, so we started looking at level 15 again. We looked at the solar arrays for more ideas. As we looked closer at the drum, behind the panels, we saw some square openings. The spacecraft team started using flashlights to look in all the openings to see if the notebook as in the drum, since it was hollow.

I went back to level 13 to look around more. I tried going lower to level 12 but the door was locked on both sides to keep the IUS people from coming up and the DSP people from going down. I start walking around level 13 looking in the gap between spacecraft/IUS and the level 13 platform. I could see part of level 12 and some of level 11. I got on my hands and knee to put my eyes as close the gap (3-6 inches) as possible. As I circled the vehicle, I spied the notebook on the floor of level 11.

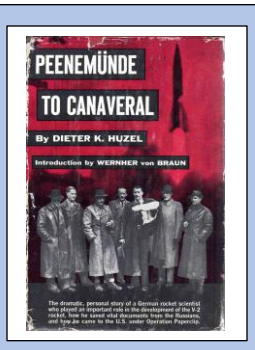
I started my phone calls and wake up the world (called everyone, DSP project Engineer, AF test director, Colonel, etc). The notebook was retrieved in the morning, and a detailed inspection of the spacecraft and IUS ensued. No damage was found. New rules were added, No notebooks on access platforms.

Here is the biggest chuckle.

In the following week issue of AWST, there was a little blurb in the Industry Observer column stating that a notebook had fallen and hit the Titan but there was no damage. Who *cares* about the Titan, <u>there was a spacecraft worth 100's of millions of dollars involved.</u>



## A BOOK TO CONSIDER:

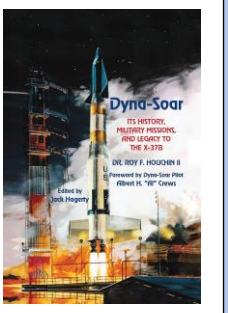



**"Peenemunde to Canaveral"**
- *Dieter K. Huzel*

I recently became aware of this book as it was featured in a local space memorabilia auction. A brief search on Amazon launched me back to the early days of V2 development in Northern Germany. This book offers a fascinating first-hand perspective of the work and life associated with the early days of rocketry. Mr. Huzel experiences the Allied bombings of Peenemünde, air raids, fighter attacks on convoys, and ultimately capture by American forces. Rarely have I experienced the telling of WW2 from the German perspective. Truly a great read! – James Harris

"These pages have brought Peenemünde vividly back to life for me. This is the way it was."
- Wernher Von Braun

## A BOOK TO CONSIDER:




**"Dyna-Soar: its History, Military Missions, and Legacy to the X-37b"**
- *Dr. Roy F. Houchin II*

This volume not only contains many historic photographs, tables, and diagrams – its forward is written by our very own (late) Al Crews.

This is a fascinating look into a program that rarely gets much coverage, and one that has deep roots both in the museum and the cape.

# TO THE FUTURE – AND BEYOND

## Cape Canaveral: Guardians of the Forever Space Ages

*by Jack Kennedy*

Cape Canaveral is more than launchpads and control towers; it is a **living Time Library**, a repository of human ambition, artistry, and defense, where each rocket lift-off is a page turned, every countdown a paragraph written, and every telemetry beep a punctuation mark in humanity's story of reaching beyond itself.

**Space Age 1.0 — The Age of Beeps and Beginnings**

In the late 1940s and 1950s, Cape Canaveral was a sandy outpost at the edge of imagination—a place where soldiers in khaki and scientists in short sleeves tried to make captured German V-2 rockets fly straight. Sputnik and Explorer-1 soon followed, tiny metal moons that taught us to listen to the sky. Families huddled around black-and-white televisions, hearing that faint, haunting *beep-beep-beep*—the first digital music of the cosmos.

Nearby Cocoa Beach diners pulsed with bebop riffs, their improvisations mirroring engineers improvising with rocket fuel. Abstract expressionists splattered canvases as wildly as the Cape launched missiles. Humor was a vital propellant. One engineer quipped, "We're learning the hard way how not to launch a moon."

Cape Canaveral's first Guardians weren't astronauts or generals—they were dreamers, jazzmen, tinkerers, and a few primatologists who turned sand dunes into launchpads and curiosity into an industry.

**Space Age 2.0 — The Apollo Symphony**

By the 1960s, the Cape had matured into a cathedral of technology. The thunder of the Saturn V replaced the jazz horns; its roar was a hymn that shook both Earth and heaven. America raced to the Moon while the Cold War smoldered below—each mission a test of faith, science, and survival. The sense of wonder and awe during the Apollo Symphony was palpable, captivating the world.

Culture and cosmos were inseparable. *Across the Universe* and *The Sound of Silence* scored the decade's wonder and anxiety. In Brevard County galleries, pop artists painted moonscapes and futurists sculpted orbiting dreams. Even mathematicians became cultural icons; slide rules replaced guitars, and mission patches rivaled album covers.

Every Apollo launchpad had a missile silo for a neighbor—a reminder that inspiration and annihilation shared the same coastline. Yet in the hum of computers and flicker of guidance displays, humanity's higher self-prevailed. We learned that exploration was not conquest but communion.

**Space Age 3.0 — Reuse, Reboot, Reimagine**

When the Space Shuttle arrived as the 1980 dawned, it promised a commuter service to the stars. Its landings were ballets of physics and grace, inspiring rock anthems and murals along A1A. *Pink Floyd* and *Yes* provided the soundtrack; progressive rock's ambition matched the Shuttle's orbit.

The Shuttle proved that space could be reused—though often at high cost and with greater courage. It bridged government and commerce, competition and collaboration. Then came the Falcon 9 in late 2015, landing upright like a punchline that science fiction forgot to deliver. "The rocket has landed," the announcer deadpanned, as if centuries of dreamers hadn't just exhaled with a sonic BOOM!

Cape Canaveral became the proving ground for reusability, sustainability, and orbital economics. The U.S. Space Force Guardians, inheritors of that missile-testing legacy in late 2019, now patrol the orbital frontier with quantum sensors and steady humor. The Cape's Time Library holds every lesson—from V-2 smoke trails to silicon chips that hum like miniature artificially intelligent universes.

Art kept pace: drone light shows painted galaxies above Cocoa Beach, and orchestras performed in sync with live launches. The line between celebration and science disappeared in the exhaust plume in 2025.

*(Continued…)*

# TO THE FUTURE – AND BEYOND
# 2

**Space Age 4.0 — The Economy of Forever**
Now the Cape stands at the dawn of Space Age 4.0, where imagination, defense, commerce, and culture converge into a single narrative. What began as exploration is becoming an enterprise. The off-Earth economy is not just a new frontier, but a significant and potentially game-changing development.
A new economy rises above Earth's horizon. Space is no longer a destination—it is a domain of commerce, anchored in mining, energy, data, and diplomacy. Like every industrial revolution before it, it begins with infrastructure.
The next generation of launch complexes and orbital stations will be the ports and railroads of this new age. Cape Canaveral Space Force Station is again the workshop of civilization, where rockets are launched, serviced, refueled, and reused. Around it, a constellation of industries—robotics, quantum computing, advanced materials—clusters like satellites around a star.
Engineers joke that "payload integration" is just a fancy term for packing the universe's most expensive suitcase. But beneath the laughter is truth: humanity is rebuilding civilization's infrastructure—this time vertically and with much greater mass to orbit.

**Mining the Moon and the Meaning of It All**
Off-world mining may lead the charge. Asteroids and lunar regolith hold the rare metals that power our semiconductors and dreams alike. The logistics are dizzying: orbital depots, autonomous haulers, and cargo ships shuttling between the Moon and Earth orbit. It's the supply chain of science fiction—still running late, like every delivery in human history.
This economic potential rivals the digital revolution, but unlike the internet, the off-Earth economy requires hardware: machines, grids, and signals stretching across millions of miles. The sky itself becomes both workplace and marketplace.

**Energy: The Great Enabler**
Energy will make it all possible. Fusion research hints at compact, clean reactors powering lunar bases, asteroid stations, and terrestrial microgrids. Energy designed for orbit may soon stabilize renewables on Earth. The divide between "space tech" and "clean tech" is vanishing faster than you can say "climate conference."
Even Oppenheimer might smile—nervously—to see his atom tamed into a power plant for peace and artificial general intelligence.

**Connectivity: The Nervous System of the Cosmos**
Satellite broadband constellations now trace the night sky like neon hieroglyphs of progress. They connect students in Appalachia with scientists in orbit, farmers in Kenya with servers circling the planet. Soon, these constellations will form the nervous system of the off-Earth economy—linking miners, researchers, and interplanetary freight haulers.
The same heavens once reserved for gods now relay Wi-Fi passwords. Somewhere, Neil Armstrong's "giant leap" has become a seamless Zoom call.

**Governance Among the Stars**
Commerce needs civility. Who owns the Moon's minerals? Who insures a satellite crash on Mars? The rules of the cosmic commons are still unwritten. Cape Canaveral—cradle of rockets and responsibility—may become a cosmic arbitration hub as much as an industrial one, where dispute settlement documents are signed beside launch manifests. Leading to new space lawyer jokes like: "What do you call a thousand lawyers beyond the Asteroid Belt?"
Transparency will anchor trust. Every satellite and cargo drone will require a celestial license plate to prevent chaos in orbit. Insurance companies and investors are already insisting on it—because nothing says "risk management" like tracking debris at 17,000 mph.
Yet beneath the acronyms and automation, this is still a human story. The lineage from the Wright brothers to SpaceX engineers is one of optimism dressed in overalls. Each bolt tightened at the Cape carries generations of belief that the sky is not a ceiling but an invitation.

**Culture in Orbit — The Cape's Creative Gravity**
In Space Age 4.0, culture orbits alongside commerce. Artists collaborate with aerospace engineers to choreograph drone ballets above launches. Composers turn satellite telemetry into symphonies. Students write "gravity poems" or design murals of Martian cities or dream of the first lunar museum.
The Time Library expands not with ink but imagination. The arts remind us *why* we go, even as the engineers figure out *how*.
*(Continued…)*

# TO THE FUTURE – AND BEYOND
# 3

**The Humor and the Hope**
There's something deliciously human about our cosmic ambitions. We strap ourselves to controlled explosions and call it "a nominal launch." We celebrate success with freeze-dried ice cream. We name billion-dollar missions after Roman gods and hope they're feeling generous.
Still, laughter is the sound of courage when logic takes a coffee break.

**The Unwritten Chapter**
The next page of humanity's story is blank, but the pen is already in motion. Cape Canaveral—the Time Library of the species—holds the prelude. From Sputnik's first beep to reusable rockets landing on their tails, from nuclear dawns to quantum dreams, this place remains the heart of our audacious autobiography.
We are the **Guardians of the Forever Space Ages**, scribes of a civilization that dares to dream beyond its atmosphere. Cape Canaveral is our chronicle—the spine of a book whose pages stretch into the infinite, each launch a sentence, each mission a paragraph, each quarter of a century a chapter.

# UPCOMING MISSIONS


ULA – Vulcan:

Launching in 2026

Photo: Farrielle Mohan


ULA – Atlas:

- 11/5/25, Atlas 551, VIASAT – 3 f2

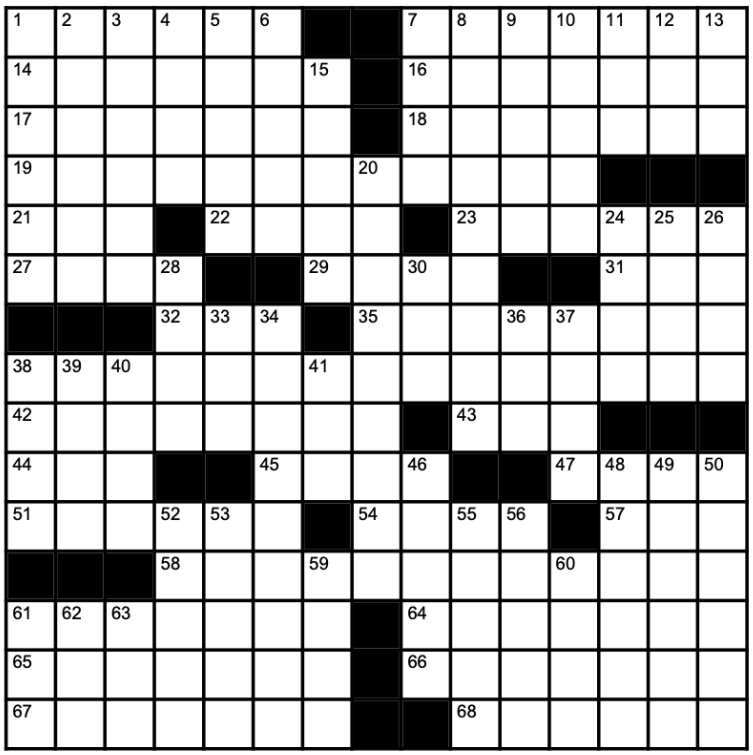
Photo: Farrielle Mohan

SpaceX – Falcon 9:

- 11/5/25, Falcon 9, Starlink
- 11/8/25, Falcon 9, Starlink
- 11/10/25, Falcon 9, Starlink
- 11/13/25, Falcon 9, Starlink
- 11/14/25, Falcon 9, Starlink
- 11/16/25, Falcon 9, SENTINEL – 68
- 11/18/25, Falcon 9, Starlink

Photo: Farrielle Mohan

# BRAIN TEASE



**Across**

**1.** British surface-to-air feline?

**7.** Weekly Jewish rest day

**14.** Navals Shipworms

**16.** Anne of Green Gables mother

**17.** Manned Orbiting Laboratory Astronaut (2 wds)

**18.** Gemini Pad Abort fireman Walt

**19.** Toy version of Bell's GAM-63?

**21.** Hawaiian welcome garland, Apollo crews got them

**22.** Name of astronaut Anders's son, honored on Apollo 8

**23.** Humans to Mars in this decade is _ _____

**27.** Where Winston Scott plays (abbr.)

**29.** USAF Dyna-____ spaceplane

**31.** in addition

**32.** Monitor of astronauts' hearts in space

**35.** Pad 5/6 Mercury _____

**38.** Fee an astronaut might get for a talk

**42.** Morgantown's Colonel John

**43.** Shuttle's robotic arm: Remote Manipulator System

**44.** European version of NASA

**45.** Soviet Army Song (2 wds)

**47.** Tennis organization

**51.** Designer of space age futuristic furniture

**54.** Taxis

**57.** Medical shorthand, 4x daily

**58.** Russian city, WWII site later tied to rockets

**61.** Vitamin

**64.** Cape's home of restored missiles

**65.** Light on console before a rocket abort

**66.** Ingress - boarding Dragon (2 wds)

**67.** What NASA does with data

**68.** "___ go where no one has gone before" (2 wds)

**Down**

**1.** Norway supercomputer

**2.** more long, thin, and slippery

**3.** Polar orbit flyover ocean

**4.** Qualification test flight for USAF

**5.** Singer or Telescope

**6.** Part of launch pad that drops away

**7.** Multiple text messages

**8.** Photog with credential in fedora

**9.** Middle East city near old missile test ranges

**10.** Old word meaning to club together

**11.** variant (abbr), say of Falcon 9

**12.** bitter Beer

**13.** Scottish river

**15.** Antidepressants

**20.** oak seed and water fowl

**24.** Egyptian sun god

**25.** Sands' Jupiter Nose ____

**26.** Irish surname

**28.** Launch title or ___ angle

**30.** Atomic Energy Commission

**33.** "Sea" in Hawaiian

**34.** Bob of Snark fame

**36.** Solar Max Mission acronym

**37.** JAXA test city

**38.** watchers ooh-ed and ____ at the launch

**39.** Leaning tower city

**40.** Mission blueprint

**41.** namesake of galaxy catalog

**46.** City tied to rocket launches in China

**48.** Visible from space. Times _____

**49.** Iraqi city once linked to missile testing

**50.** Spanish word for "addict

**52.** Apollo 17 pilot Ron ___

**53.** Trucks

**55.** all considered: __ ___ large (2 wds)

**56.** Opera heroine who redeems the Flying Dutchman

**59.** Suffix for Draw or Bear

**60.** Low Germanic (abbr.)

**61.** Howard Hughes airline post WWII

**62.** First passenger on 35 Across

**63.** Physicist ___ Bowen

# AROUND THE MUSEUM

**Space Gifts Galore!**

Launch into a great selection of hard-to-find space-related holiday gifts by shopping the Sands Space History Center Gift Shop.
Nothing pleases a space buff more than space related books, patches, models, apparel, or coins. And what better way to encourage your young space buff than with a gift of space related toys and puzzles?
Plus, Sands Space History Center Gift Shop also offers a selection of 45th Space Wing coins and patches plus U.S. Air Force and U.S. Space Force branded items.
Shop in person during regular museum hours, or online at capemuseumgiftshop.org. Proceeds help support museum exhibits and operations.

**It's the Giving Time of Year, Please Remember Us**

As you consider your year-end charitable giving, please remember the U.S. Space Force Historical Foundation, Inc. A non-profit organization, the Foundation relies on private contributions to support museum exhibit maintenance, programs, and services. All gifts are deductible to the extent allowed by law. Consult your tax advisor. For information about giving ranging from purchasing Legacy Wall Tiles to making major contributions, visit ccspacemuseum.org. Click on "support."
Thanks for helping us fly higher!

**SO LONG, AND THANKS FOR ALL THE FISH.**

**TO SABRA, JAMIE, AND ROGER – WE MISS YOU GUYS!!!**


**CAPE CANAVERAL SPACE FORCE MUSEUM**
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