Featured Stories

Image Credit: Courtesy of Czabel Donado

JPL Night and STEM Day at Dodger Stadium

By Christian Hill

It was a week of Dodger Blue science and fun as JPLers descended on Dodger Stadium July 24 to enjoy a baseball game with colleagues and pick up a new JPL-inspired Dodgers hat.

At the opening of the game, a JPL highlights video was shown, giving the audience a glimpse into the projects taking shape at JPL just miles away from the stadium.

Image Credit: Courtesy of Danette Zuniga

The following day, JPL's Public Services Office organized a STEM Day at Dodger Stadium, putting together multiple exhibits and displays for some 6,000 students to explore and experience some of the science, research, and exploration going on at the Lab. Public Outreach Specialist Joseph Williams said the event included displays and handouts for missions and projects including Mars exploration, Europa Clipper, Psyche, SunRISE, EELS, the open-source rover program, and more.

Gates opened at 9:30 a.m. July 25, and students were granted early access to the stadium to experience the interactive displays and learn from JPL scientists and engineers. Two hours prior to the first pitch, all attendees to the game were able to visit the JPL booths. Just prior to the start of the game, members of the JPL-sponsored FIRST Robotics teams (JPL Director Laurie Leshin is chair of the Board of Directors for FIRST) sent their robot to the mound to hurl the ceremonial first pitch.

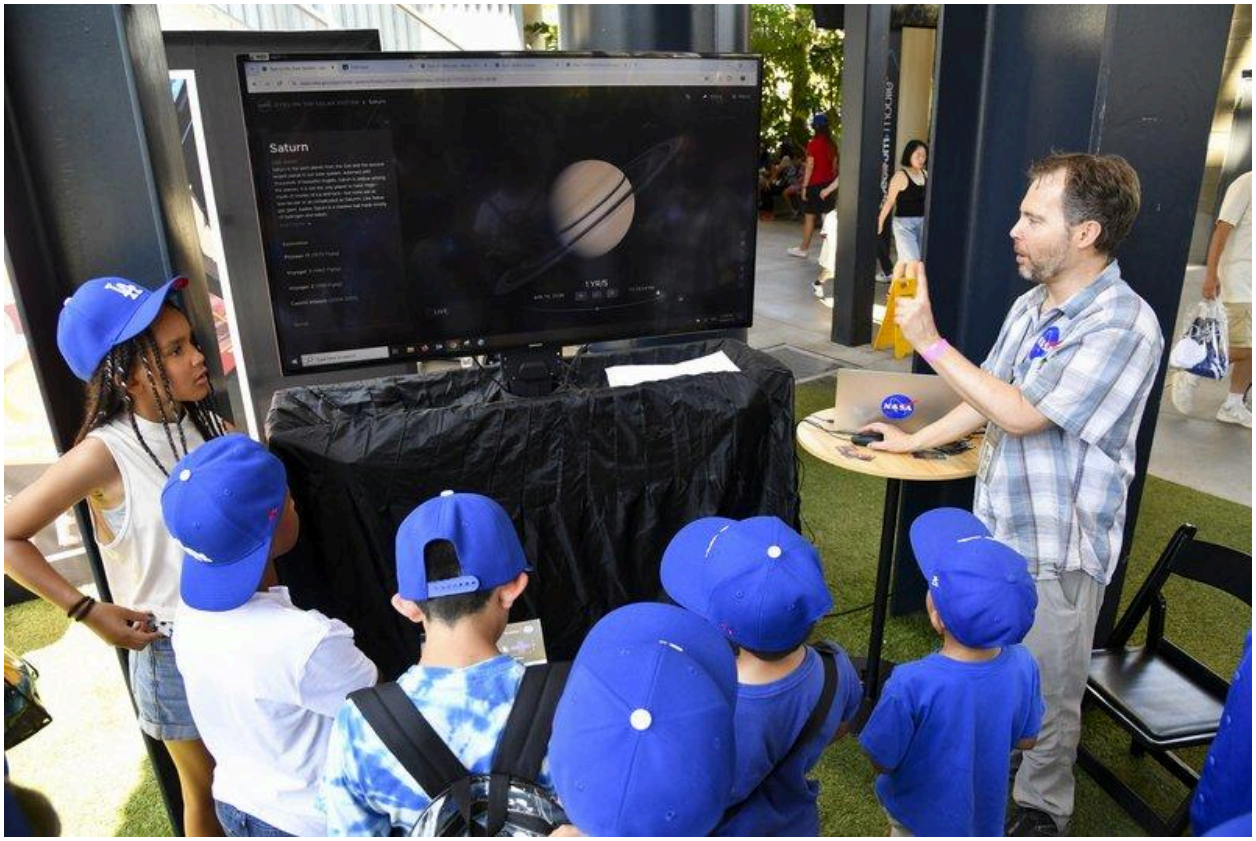
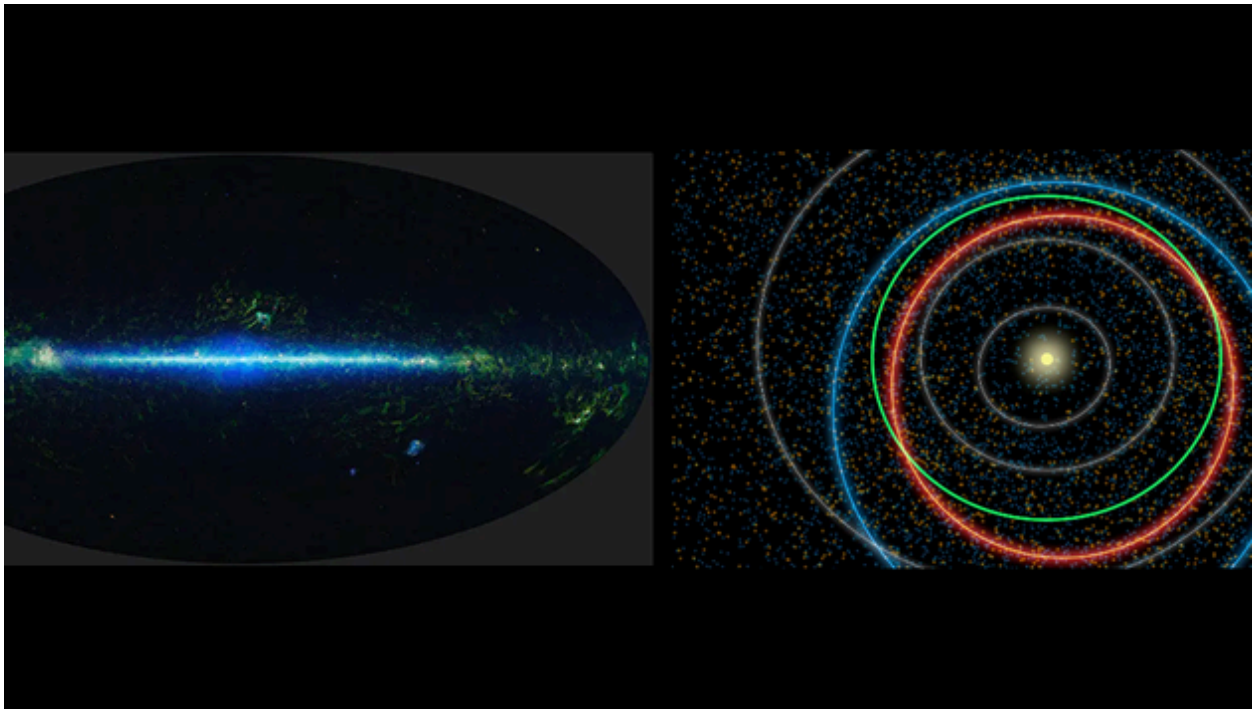


Image Credit: Sebastian Rivas



Left: This mosaic shows the entire sky imaged by the Wide-field Infrared Survey Explorer (WISE). Right: Results from NEOWISE have provided the best overall look at potentially hazardous asteroids (PHAS) population yet. ***Image Credit: NASA/JPL-Caltech***

NEOWISE Chapter to End, Paving the Way for NEO Surveyor

By Christian Hill

JPL's near-Earth-object-hunting mission, NEOWISE, is drawing to a close after more than 14 successful years in space.

While the mission wraps up surveying the sky on July 31, its legacy continues with its successor infrared mission, NEO Surveyor, which is taking shape now in High Bay 1.

Initially launched in 2009 as the Wide-field Infrared Survey Explorer (WISE), the mission exceeded its scientific objectives by studying distant galaxies, comets, exploding stars, and more. WISE mapped the sky twice before entering hibernation in 2011. Reactivated in 2013 as NEOWISE, the mission re-focused on identifying and tracking near-Earth objects, making 1.45 million infrared measurements of over 44,000 solar system objects, including the discovery of 215 NEOs and 25 comets.

NEOWISE will be put into final hibernation on Aug. 8, with an expected slow orbital drop into Earth's atmosphere predicted for late 2024.

Below, current NEOWISE Project Manager Joseph Hunt talks about closing out the mission, and how the legacy of the unique WISE/NEOWISE mission shows JPL's innovative and resilient character.

When did you get involved in the NEOWISE mission and how did the decision/appointment to join the team get made?

Joseph Hunt: My first involvement with NEOWISE was in spring 2020 after the decommissioning of the Spitzer Space Telescope, in the role as deputy mission manager and later project manager. Initially, I assumed the mission was entering its closeout phase, an area in which I had extensive experience.

However, the mission was extended twice more, continuing for an additional three years. In 2022, I became the Mars Odyssey project manager while also managing the NEOWISE project.

Can you talk about the learning curve for becoming Project Manager for NEOWISE?

The mission's extensions necessitated adjustments in mission operations and programmatic knowledge. NEOWISE has a small operations team, with most members supporting part-time. Given the extensive training required to become efficient in operations, I decided to maintain a budget plan that allowed reach-back to experienced engineers while focusing on programmatic aspects to gain more knowledge over time. With my prior experience in mission operations, the learning curve was mainly about the unique differences in the mission operation infrastructure and science planning process.

What made the team dynamics unique on NEOWISE?

NEOWISE was a well-established organization with a transparent collaboration across teams, regardless of location. This transparency was particularly evident during the remote work period caused by COVID-19, which had minimal impact on mission operations or programmatic management.

From December 2009 to February 2011, WISE scanned the distant universe. Why did it come to an end?

The spacecraft depleted the cryogenic coolant required to observe infrared wavelengths emitted by warm objects. It had completed all its primary objectives for astrophysics and was thus closed out.

Then in late 2013, WISE was taken out of hibernation, repurposed, and renamed NEOWISE. How was that decision made?

The WISE survey continued under the Planetary Division through the NEOWISE mission augmentation during its post-cryo survey. During the hibernation that followed, analysis of near-Earth asteroid data demonstrated that reactivating the mission would significantly benefit our understanding of these objects. After reactivation in 2013, the mission's science objectives were managed by NASA's Planetary Defense Coordination Office to search for undiscovered NEOs and determine their orbit, physical properties, and composition.

What are some of your proudest moments from NEOWISE?

Two things come to mind. First, having an asteroid named after me — 350032 Josephhunt (2010 JH151) — which I am still digesting. Second, the discovery of Comet C/2020 F3 "NEOWISE" in March 2020, which became visible to the naked eye in July 2020, marking a great accomplishment by the team.

Comet NEOWISE was discovered by its namesake mission on March 27, 2020, and became visible in the Northern Hemisphere for several weeks that year. It was one of 25 comets discovered by the mission.

NEOWISE is expected to burn up in Earth's atmosphere by late 2024. How is JPL planning for NEO Surveyor and what will it bring to our planetary defense capabilities?

The NEO Surveyor spacecraft design and survey process incorporate many lessons learned from NEOWISE. This optimization will enable NEO Surveyor to characterize 100 times as many NEOs as NEOWISE, significantly enhancing our planetary defense capabilities.

How has JPL's management of the WISE/NEOWISE missions enabled unique research findings?

JPL is defined by world-class science research and a collaborative platform that pushes the boundaries of space exploration. Combining this with innovative engineering built for challenging missions results in a management team that truly has "The Right Stuff."

WEATHER MOON ORBITS

TOP TURK SAFE, AIR CRASH KILLS 12

Street Final

Signals Heard In Bay Area

United Press International

CAPE CANAVERAL, Fla. — A sleeker and perfectly functioning Vanguard rocket put a 20-inch miniature weather station into orbit around the earth today.

For two weeks, the tiny sphere, equipped with photocells, radio transmitters and a tape recorder, will measure light reflections from clouds, land and sea as it circles the earth 16 times in each 24 hours.

Ultimate target for such tiny weather stations circling the earth would be to spot Atlantic hurricanes and Pacific typhoons and greatly aid long - range weather.

(NAPA UP — Press Wireless, Inc., today reported receiving strong signals, possibly from the new Vanguard weather satellite fired from Cape Canaveral.

Robert L. Simpson, manager of the PW station at Napa, about 15 miles north of San Francisco, said the signals were picked up between 9:36 and 9:39 a.m. PST.

THE PENINSULA'S LEADING NEWSPAPER

San Mateo Times

DEVOTED TO THE INTEREST OF SAN MATEO COUNTY

A HOME-OWNED NEWSPAPER

Vol. 59—No. 41 20 PAGES SAN MATEO, CALIFORNIA, TUESDAY, FEB. 17, 1959 10c PER COPY

Some Trapped For Hours in London Wreck

(From AP and UPI)

LONDON — Twelve persons died today, the Ministry of Civil Aviation announced, in the crash of a Turkish airliner bringing Turkish Premier Adnan Menderes to London for Cyprus negotiations. The Premier escaped with bruises.

There were about 20 aboard the plane.

The four-engined Viscount, coming in from Istanbul and Rome, was diverted from London Airport because of poor visibility. It started an approach to Gatwick Airport, 28 miles south of London, but crashed into a woods. The Aviation Ministry said both wings were torn off the turbo-prop ship

Monterey

The International Geophysical Year, II: Project Vanguard

By Erik Conway

In my last pair of columns, I took a deep dive into the Soviet Union's ballistic missile program, tracing the ultimately successful efforts of Sergey Korolev to shove that country into orbit first. While the U.S.S.R. was one of JPL's competitors, it had a domestic competitor, too. The Eisenhower administration had chosen Project Vanguard, proposed by the Naval Research Laboratory, over JPL's Project Orbiter in early September 1955.

Vanguard was the U.S.'s contribution to the International Geophysical Year's satellite program, and by the time Korolev got Sputnik into orbit in October 1957, Orbiter was defunct. So was Project Orbiter's successor, the Re-Entry Test Vehicle program, which ended after its third successful flight in August 1957. The Orbiter/RTV team was revived as it became clear Vanguard had a very slim likelihood of reaching space during the IGY.

This is Vanguard's story.

Project Vanguard Before Sputnik

Project Vanguard originated with a Naval Research Lab engineer named Milton Rosen. He'd heard about the Orbiter proposal in early 1955 and gotten permission to assemble a competitor. Rosen was the manager of NRL's Viking sounding rocket program, and his proposed launch vehicle was a (very loose) derivative. Its first stage was to use a new engine designed by General Electric. Its second stage was derived from the Aerobee sounding rocket, which used a motor from JPL's sibling, Aerojet. The third stage was to be solid fueled, though when Rosen submitted the proposal, its manufacturer hadn't yet been chosen. The Glen L. Martin Company was to be the prime contractor. Funds for the launch vehicle came through the Navy.

While NRL and Martin were responsible for the rocket, the satellite, instruments, tracking, communications and data reduction were the responsibility of the National Academy of Science. A

committee known as the Technical Panel on the Earth Satellite Program was the executive body. Its chair, Richard Porter, had been in charge of GE's Project Hermes to restore and fly captured V-2s, and JPL's director, cosmic ray physicist William Pickering, was a member. The TPESP's funds came from the National Science Foundation. Much of the technical work TPESP was responsible for, including the satellite and ground systems, it subcontracted to NRL.

This split responsibility, and funding streams, would hamper Vanguard throughout its existence. A more important brake on Vanguard, though, was that Vanguard was a civilian project. As such the Defense Department assigned it no priority. So when the Air Force awarded the Martin Co. the airframe contract for its Titan ICBM during the Vanguard contract negotiations, Martin reassigned most of the Vanguard team to Titan. When NRL approached Patrick Air Force Base about use of the Atlantic missile test range, it was rebuffed. Eventually, Vanguard was allowed to build its own launch pad adjacent to a Thor missile complex.

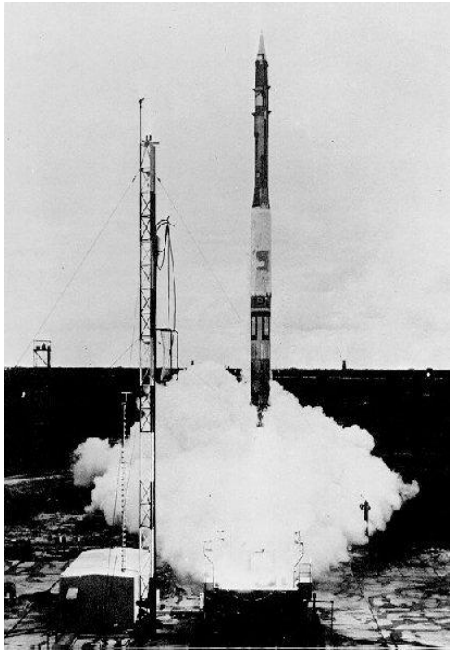
While many individual scientists and engineers within the U.S. perceived a race with the USSR to be first to orbit, as a matter of politics, law, and bureaucracy, the U.S. wasn't racing anything but the end-of-IGY deadline, Dec. 31, 1958. At least, not until after Korolev had already won.

The first Vanguard test launch, known as Test Vehicle 0, or TV-0, flew from Cape Canaveral in the very early morning of Dec. 8, 1956. It was a test of the Viking-derived first stage and of the Minitrack system developed by NRL to enable radio tracking of the Vanguard satellite. The rocket released a suborbital "satellite" two minutes after launch that was successfully tracked to its impact in the Atlantic.

Test Vehicle-1 didn't fly until May 1, 1957, two weeks before the second flight of JPL's re-entry test program. The TV-1 flight's primary goal was testing the new solid fuel third stage designed by Grand Central Rocket Company. Vanguard's intended second stage was not ready yet, so this flight used Grand Central's stage as its 2nd stage. The "payload" was test instrumentation to verify performance and particularly the spin-up and separation mechanisms for the upper stage. This flight again went well.

TV-1's success caused the Vanguard program director, Robert Hagen, to tell Martin Co. that from TV-3 onward, every vehicle would carry a satellite. Because TV-3 was still a test vehicle, it had engineering instrumentation aboard that the space launch version would not. So it could not carry the full size Vanguard satellite. Instead, NRL designed a tiny 6.4 inch diameter, 4 lb sphere containing only a Minitrack transmitter, batteries, and small solar cells, for TV-3 and TV-4.

This proved a little optimistic. TV-2, which consisted of a fully-fueled first stage and inert second and third stages, took months longer than planned to reach the Cape. Martin Co. redesigned the roll control and pressurization systems and got far behind in the modifications. Program director Hagen forced them to ship the incomplete vehicle to the Cape anyway and complete the modifications there. Once at the Cape, the first stage tanks and engine were found to be contaminated with metal shavings and dirt. The tanks were cleaned but the motor was shipped back to General Electric. The replacement then failed static testing. A second replacement was taken from TV-2's incomplete backup vehicle (which now stands in the National Air and Space Museum in Washington, D.C.). That one passed its tests, and TV-2 was finally, and successfully, launched on Oct. 23, 1957, nineteen days after Sputnik.



The Media Riot

TV-2 launched amid a political firestorm. Congress, which was led by the opposition Democratic Party at the time, didn't initially hold public hearings after Sputnik. Party leaders wanted to see where the public discussion would go before trying to steer it. But there was an immediate outpouring of criticism in the media anyway.

President Eisenhower had sought to reform Defense Department procurement in pursuit of a balanced budget. In particular he had targeted the myriad missile programs being pursued by the three armed services. That austerity effort gave editorialists, military officers, lobbyists and other political actors a line of attack after Sputnik: Eisenhower, one of America's most decorated military officers, was undermining American security, jeopardizing the American way of life with his penny pinching. "Most Newspapers Hope Soviet Moon Has Dealt Death-Blow to American Complacency," shouted one St. Louis Post-Dispatch headline. "Reds Are Said to be Capable of Hitting U.S. With an ICBM," read another. Even Eisenhower's own vice president, Richard Nixon, voiced criticism: "Nixon Says Sputnik Gives Arms Priority Over Tax Cut."

This media riot, as historian Walter McDougall termed it, had barely started to fade when Sputnik II carried Laika into space and revealed the much greater "throw weight" of the R-7 compared to the U.S.'s own military missiles. That triggered Senate hearings organized by the Majority Leader, Lyndon Johnson of Texas, who'd previously embarrassed the administration over military preparedness in 1954. In his opening statement on Nov. 25, 1957, Johnson declared the Sputniks a lost "battle in technology," explicitly comparing their challenge to that of Pearl Harbor. The hearings lasted until late January, keeping media attention focused on America's, and Eisenhower's, failures.

Nixon Says Sputnik Gives Arms Priority Over Tax Cut

SAN FRANCISCO, Oct. 15 (AP)—Vice President Nixon said tonight America's reaction to the Russian satellite should be to resolve that military strength takes priority over tax cuts.

The satellite launching may serve the cause of freedom, Nixon said, "if only we react strongly and intelligently to its implications."

"Let us resolve once and for all that the absolute necessity of maintaining our superiority in military strength must always take priority over the understandable desire to reduce our taxes," he said.

This word from the No. 2 man in the Eisenhower Administration added strength to the views of many Congress members that prospects for a tax cut in the 1958 session are rapidly dimming in the wake of Sputnik.

"Militarily the Soviet Union is not one bit stronger today than it was before the satellite was launched," the Vice President said in a prepared talk, his first public comment on the satellite.

He said the free world still "remains stronger militarily than the Communist world," and could defeat any potential enemy.

But at the same time, Nixon said, "We could make no greater mistake than to brush off this event as a scientific stunt of more significance to the man in the moon than to men on earth."

Nixon said that with the satellite the Soviets have "demonstrated again what we had known before — that they had developed the capacity to fire a missile a great number of miles," as well as great scientific and industrial capacity.

He said the Russians will use their "scientific triumph" in their efforts to communize Asia, Africa and any undeveloped areas elsewhere.

"If it succeeds in extending Communist rule throughout Africa and Asia, the Kremlin will have assured its victory in the battle for the world," Nixon said. Loss of resources from these two continents, he continued, would force the west "to surrender without firing a shot."

DEATHS

CRAWFORD—Near Mendenhall, Pa., on Oct. 13, 1957, Edward P. Crawford. Relatives and friends are invited to attend the funeral services from the Yeatman Funeral Home, 119 Washington street, on Wednesday afternoon, Oct. 16, at 2 o'clock. Interment at Riverview Cemetery.

CROWE—In Gwinhurst on October 14, 1957, Mary A., wife of the late James Crowe of 206 Misty Oak Road, aged 67 years. Relatives and friends are invited to attend the service at the McCrery Funeral Home, 2700 Washington Street, on Thursday afternoon, October 17, at 1 o'clock. Interment at Greenhill Cemetery. Friends may call at the funeral home on Wednesday evening after 7 o'clock.

FOLK—In New Castle, Del., on Oct. 14, 1957, William G., son of Maria P. and William A. Folk, Jr., of 140 Clark Street. Aged 3 years 9 months. Relatives and friends are invited to attend the funeral services at the Gebhart Funeral Home in New Castle, Delaware, on Thursday morning, Oct. 17, at 11 o'clock. Interment at Olive Cemetery. Friends may call at the funeral home on Wednesday evening.

HANNAGAN—In this city on Oct. 14, 1957, Edward A., son of the late Thomas and Catherine Hannagan. Relatives and friends are invited to attend the funeral at the Mealey Funeral Home, 203 North Broom Street, on Friday morning, Oct. 18, at 9 o'clock. Solemn Requiem Mass St. Thomas Church at 9:30 o'clock. Interment at Cathedral Cemetery. Friends may call Thursday evening after 7 o'clock.

Sputnik's launch had gotten Vanguard program director Hagen called to the White House to brief the president and staff. TV-2 had yet to launch, and TV-3, while scheduled to launch in December, would reach Florida later that week. Hagen explained that TV-3 was still a test vehicle, carrying the first fueled 2nd stage to be flown, and not the intended satellite launcher. Still, it would carry the miniature radio satellite and might succeed.

Hagen's attempt to moderate expectations, though, did not succeed. The White House put out a statement on Oct. 9 that the U.S. would launch a "satellite-bearing vehicle" in December. This was literally true, and the statement avoided the issue of actually achieving orbit. But the statement contributed to the media riot anyway.

On Oct. 8, Eisenhower ordered the revival of the Project Orbiter/RTV team and preparation of the RTV hardware for a launch in January as a backup to Vanguard. His decision wasn't made public until after Sputnik 2's launch in November. The Army Ballistic Missile Agency's commander, Gen. John B. Medaris, had already ordered the preparation of Missile 29 for this purpose, though, after the extremely well-timed visit of the incoming Secretary of Defense, Neil McElroy, on the day Sputnik launched, Oct. 4.

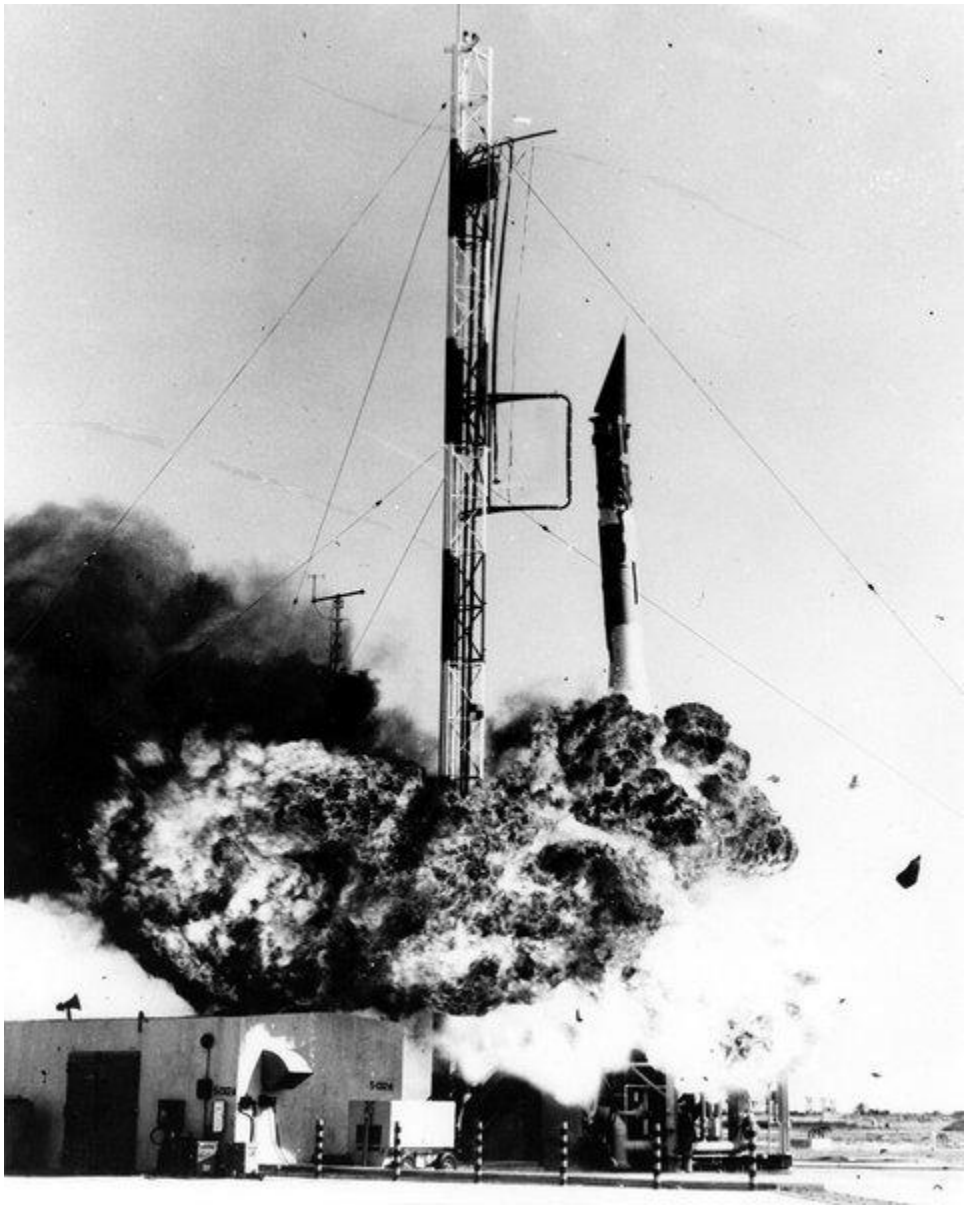
It's during this visit that Wernher von Braun proclaimed that he could launch a satellite in 60 days. "We have the hardware on the shelf," he proclaimed. "For God's sake turn us loose and let us do something. We can put up a satellite in sixty days, Mr. McElroy!"

Medaris was only willing to commit to ninety days. In fact, due to other missile testing requirements, the Atlantic test range wasn't available for the attempt until the very end of January.

Vanguard TV-3 and After

Vanguard's TV-3's planned launch date was Dec. 4. Unlike TV-2, it didn't suffer contamination problems, and its preparation proceeded without major challenges. And because of the White House announcement, thousands of reporters and citizens made the trip to Cape Canaveral to see this first U.S. launch attempt. It was delayed two days by weather—the launch pad design made the vehicle vulnerable to surface winds over 17 mph—and finally launched Dec. 6th.

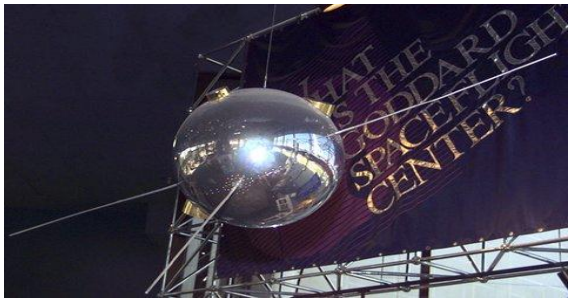
It had a flight of 2 seconds. A failure in the pressurization system caused the first stage to shut down at an altitude of 4 feet. TV-3 fell back on the pad and exploded. The miniature satellite survived the resulting inferno, though, and belongs to the Smithsonian. This very public failure earned the moniker "Flopnik."



Project Vanguard's first orbital launch attempt ends two seconds after ignition on Dec. 6, 1957.

After repairing the launch pad, the Vanguard project prepared TV-3's back up vehicle for a launch attempt on Jan. 23, but heavy rains resulted in a launch scrub. Two more scrubs pushed its launch into February. Finally launched on Feb. 5, TV-3BU broke up in flight due to a control system failure.

Vanguard's first fully successful flight was TV-4, launched March 17, 1958. Like TV-3, it carried the miniature Minitrack satellite, not the intended fully instrumented satellite meant for the "space launch" version of the vehicle. That larger satellite didn't reach orbit for nearly a year. On Feb. 17, 1959, "Space Launch Vehicle 4," SLV-4, finally carried the 23.7 pound Vanguard II into Earth orbit.



The Vanguard program ended after a final launch in September 1959, of TV-4's backup vehicle. With some additional modifications, including a significantly lighter 3rd stage motor casing, it was able to orbit a 52 lb scientific satellite, Vanguard III.

By the time Vanguard III was in orbit, NASA had been formed out of the National Advisory Committee on Aeronautics, and the Vanguard project had become part of the new agency. Project Vanguard's personnel became the core staff of NASA Headquarters and of what was originally known as the "Beltsville Space Center," and soon renamed Goddard Space Flight Center.

In 1972, JPL's Homer Stewart, one of the members of the committee that chose the Vanguard proposal over Project Orbiter, reflected that ". . .the Martin and the Aerojet and the Douglas people did a fine job. It's just that they were asked to do something that logically you shouldn't have asked them to do, from my viewpoint." Vanguard had met all their objectives—just 21 months late. They hadn't been given enough time to develop a new launch vehicle from scratch.

In the next column, I'll trace JPL's Project Deal, which launched the U.S.'s first successful satellite, Explorer 1, after the Vanguard TV-3 failure.

JPL Family News

Retirees

The following JPL employees recently announced their retirements:

40+ Years:

Michelle M. Leonard, Org 1710, 46 years
Carol A. Oken, Org 319D, 45 years
Steven J. Wells, Org 1100, 44 years
Logan L. Thomas, Org 398E, 44 years
Shehenaz A. Bhanji, Org 3317, 44 years
Leslie L. Lowes, Org 1853, 43 years

30+ Years:

Gary H. Blackwood, Org 7000, 36 years
Douglass S. Abraham, Org 9100, 36 years

10+ Years:

Dudee Chiang, Org 319F, 19 years

Passings

Passings must be submitted through Human Resources, which coordinates with the family of the deceased.

Aileen Kemanian died on July 20, 2024 at the age of 33. Kemanian worked at JPL for 1.5 years, most recently in Org 3413 and held the staff assistant position. She received her one-year commitment award this year.

Kemanian is survived by her dad Erick Kemanian and sister Paula Kemanian.

Anthony "Tony" Joseph Spear passed away peacefully in La Jolla, CA on Monday, June 3, 2024, at the age of 87. He is predeceased by his parents, Joseph Spear and Mary Ann Spear. Tony is lovingly remembered by his daughter, Maria Toglia of Newtown Square, PA; daughter, Kristen D' Alessio of Los Angeles, CA; sister, Joanne Oliver of Melbourne, FL; sister, Kathy Foucault of Westminster, SC; sister Helen Seja of Casa Grande, AR; sister, Mary Jones of Columbus, OH; grandchildren, Gianna Toglia, Alexander Toglia, Nicholas D' Alessio and Leonardo D' Alessio; first wife and life long friend, Elizabeth Phelps of La Jolla, CA; and his nieces and nephews. Tony was born in Martins Ferry, Ohio on June 8, 1936. After graduating high school, he spent four years in the Airforce as a jet aircraft radio repairman. Following his discharge in 1958, Tony attended Carnegie Mellon University, graduating in 1962 with a B.S. in electrical engineering. He then went to work at Jet Propulsion Laboratory in Pasadena, CA, while simultaneously earning his master's degree in engineering from UCLA. He later went on to earn a second master's degree in the Executive Engineering program at USC. Tony held a wide range of positions at JPL, including serving on the design teams for NASA's Mariner and Viking program missions, managing the development and implementation of

microwave instruments for the NASA SEASAT mission, and working on the Magellan probe mission. At the pinnacle of his career, Tony served as the project manager for the Mars Pathfinder mission. He was considered a maverick leader, and implemented NASA's "faster, better, cheaper" mission imperative, resulting in the successful landing of the Pathfinder shuttle and Sojourner rover. NASA Administrator, Daniel S. Goldin, described Tony as a "legendary project manager at JPL and helped make Mars Pathfinder the riveting success that it was." Tony retired from JPL in 1998 and went on to consult widely with both business and world leaders. He was an avid gardener, enjoyed skiing and playing golf, and loved adventurous travel, including mountain climbing in Nepal and many trips to Brazil where he was enthralled by the culture and the people. Tony was a character, full of passion, compassion for others, and willing to take chances to succeed. He was dearly loved and will be greatly missed by his family, friends, and colleagues.

-This obituary was published by Legacy Remembers.

Richard M. Goldstein was born in Indianapolis, Indiana in 1927. He passed away June 22, 2024 in La Cañada, California after a very brief illness.

Richard is survived by Ruth, his loving wife of 60 years, their adult children and their spouses, three grandchildren, one great-grandchild, and many friends and admirers. He was preceded in death by his parents, Dorothy Drozdowitz Goldstein and Samuel Goldstein, and his older brother Samuel.

Richard was a pioneering radar astronomer and planetary scientist known as "the Father of Radar Interferometry." He studied electrical engineering at Purdue University, served state-side in the US Army during the Korean War, then worked for eleven years at the family furniture store before beginning work at NASA's Jet Propulsion Laboratory. While working at JPL, he completed a PhD at Caltech, where he used the antenna at the Goldstone tracking station to get the first radar echos from the planet Venus. He followed this by being the first to obtain echos from Mars, the moons of Jupiter, and an asteroid. In 1963, he created the first map of the surface of Venus.

In the mid 1980s, Richard developed techniques and algorithms using radar interferometry to create highly precise elevation maps and to detect minute changes in the earth, glaciers, and ocean currents. His innovations are used today worldwide in myriad applications, including earth sciences, defense, construction, mapping, forestry, agriculture, water management, and more.

In the 1990s, Richard created methods for measuring "space junk," small bits of debris in orbit. His system allows NASA to track tiny particles at large distances, and has helped the planning that keeps satellites safe, as well as influencing legislation designed to help control the proliferation of orbital debris.

In addition to his professional accomplishments, Richard was dedicated to his family and friends, and he enjoyed puzzles, flying his remote control glider, and repairing mechanical devices. He was a regular participant and frequent award-winner in the annual JPL Invention Challenge.

He maintained his sharp intellect and wry sense of humor until the very last. He was deeply loved and will be greatly missed.

-This obituary was written and submitted by Samuel Goldstein.

The Iowa Hawkeyes and St Louis Cardinals have lost a lifetime fan with the death of **Robert Alan Johnson** on April 29, 2024. “Bob” was born in Northwood Iowa to John and Ada Johnson. Brother David was added to the family 18 months after Bob. He was confirmed at First Lutheran Church in Northwood.

Bob attended Northwood High School, St. Olaf College, and Iowa State College before enrolling in the Army and becoming a paratrooper. After his stint in the army, he again attended Iowa State and graduated with a degree in Electrical Engineering. First job after graduating was with Lockheed in Sunnyvale California. He met and married his wife of 63 years, Marilyn, in Sunnyvale. They moved back to Iowa for several years while Bob earned his master’s degree and worked at the Atomic Energy Commission. Son, David was born in Iowa. Upon graduation, they returned to California while Bob worked at several companies before he found a home at Jet Propulsion Laboratory in Pasadena California. Son John Erik was born while in San Jose, and third son Jeff was born in Pasadena. A fourth son, Stephen Suy, was adopted form Cambodia.

Bob always wanted a daughter and gladly welcomed three daughters in law to the family. Tamara “Tammy”, married to David, Gina married to John Erik, and Victoria “Tori” married to Jeff.

Grandchildren are Amber, Erik, Madie, Noah, Caleb, Luke, and Jacob.

Great grandchildren: Tyler and Wesley

Bob retired from JPL after 29 years and moved to Woodlake, California near Jeff and his family and became active in Abounding Grace and Cornerstone churches. In retirement Bob was involved in mentoring men in prisons. He made the trek to prisons twice per week for nearly 10 years. We wrote upwards of 30-40 letters a month to the men he became friends with, until he struggled to write, at which time Marilyn typed his dictated words.

In lieu of flowers Bob and the families wishes would be for donations to continue his prison ministries made to Good News Global, in Tulare County.

https://gnglobal.org/tulare-memorial/

-This obituary was submitted by Marilyn Johnson.

Awards & Honors

JPLers often Dare Mighty Things, and nearly as often earn awards or professional designations. JPL Space periodically features a roundup of recent honorees. Please join us in congratulating your accomplished colleagues.

Ethan R. Elliott
International Space Station 2024 Compelling Results Award in Physical Sciences and Materials Development
"For your outstanding observation of the first ever dual species Bose-Einstein Condensates and dual atom interferometry in space using the Cold Atom Lab." Award citation

Amy Braverman
American Statistical Association, Section on Statistics and the Environment Distinguished Achievement Award
"This award honors your statistical advancements in the field of remote sensing from Earth observing satellites and recognizes your exceptional contributions to statists that span from problem formulation, spatial and temporal methods, algorithm development for analysis of massive datasets, to quantification of uncertainty. Beyond the technical contributions, the award recognizes your contributions in the creation of new programs and initiatives that have nurtured the new generation of statisticians." Award citation

Nacer Chahat
Institution of Engineering and Technology Fellow
"Fellowship is the prestigious IET membership level awarded only to individuals who have demonstrated recent significant achievement(s) sustained at high levels for a period of at least five years in engineering, technology, or related disciplines relevant to the IET (usually within the last 10 years)." Award citation

Personnel Appointments

Star Tracks is a monthly series highlighting recent personnel appointments on Lab.

Keith A. Rosette: Deputy Manager of 4810 MSR Sample Retrieval Lander Project on June 3.