

THE FLIGHT PLAN

The Newsletter of AIAA Albuquerque Section
 The American Institute of Aeronautics and Astronautics

SECTION MEMBER HONORED ON 100TH BIRTHDAY

By Robert Malseed, Treasurer

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Basil Hassan

Hal Behl

Laura McGill

On 3 July, **Harold (Hal) Behl** celebrated his 100th birthday at the National Museum of Nuclear Science and History. Behl has been a member of AIAA and its predecessor organizations since joining as a student in 1941. AIAA President Laura McGill and AIAA Immediate Past President Basil Hassan attended the festivities and recognized Behl with a plaque for his many years as a member.

Behl, an aeronautical engineering graduate of the Guggenheim School at New York University, volunteered for the Army and was assigned to a course in nuclear engineering at Ohio State before being assigned to Oak Ridge on the Manhattan project. After the war, Behl went to Boeing to work in their advanced project group on gas-turbines for aircraft. Over the years, he also worked with Douglas and R & D Associates (RDA), and as an independent contractor on directed energy ideas with Naval Research Laboratory, funding by the Strategic Defense Initiative Organization (SDIO). He also did SDIO con-

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CALENDAR

Local Section Events

Next General meeting TBD

Hybrid Meeting In-Person & Zoom

Meet & Greet 5:45 pm

Presentation Start 6:00 pm

Presentation End 7:00 pm

National AIAA Events

[2022 Yvonne C. Brill Lecture in Aerospace Engineering & Reception](#)

4 OCTOBER 2022 1400 - 1700 (EASTERN DST)

Washington, DC, USA | Virtual

[Launching into Grad School with WoAA and AIAA](#)

6 OCTOBER 2022 1800 - 1900 (EASTERN DAYLIGHT TIME)

Virtual

[Mock Interviewing Webinar](#)

7 OCTOBER 2022 1500 - 1600 (EASTERN DAYLIGHT TIME)

Virtual

[2022 ASCEND \(Accelerating Space Commerce, Exploration, and New Discovery\)](#)

24 OCTOBER - 26 OCTOBER 2022

Las Vegas, Nevada & Online

[SmallSat Education Conference](#)

29 OCTOBER - 30 OCTOBER 2022

Kennedy Space Center Visitors Center, Florida, USA

[AIAA Young Professionals, Students, and Educators \(YPSE\) Conference](#)

18 NOVEMBER - 19 NOVEMBER 2022

Laurel, Maryland, USA

Upcoming U.S. Launches

NET Sep 27 SLS • Artemis 1

Late Sep Falcon 9 • Starlink 4-36

Sep 30 Alpha • Demo Flight 2

Sep 30 Atlas 5 • SES 20 & SES 21

Oct 3 Falcon 9 • Crew 5

Oct 5/6 Falcon 9 • Galaxy 33& 34

Oct Falcon 9 • Starlink 4-29

Oct 13/14 Falcon 9 • Hotbird 13F

Oct Falcon 9 • Starlink 4-37

Oct Falcon Heavy • USSF 44

TBD Starship • Orbital Test Flight

Nov 1 Atlas 5 • JPSS 2 & LOFTID

NET Nov 6 Antares • NG-18

4th Quarter Falcon 9 • Worldview Legion

4th Quarter Falcon 9 • Hotbird 13G

ALBUQUERQUE SECTION OFFICER NEEDED

By Robert A. Malseed, Treasurer

Your Albuquerque Section needs you to serve on the section Council. Our **Communications** position is currently vacant. (It would be nice to return to monthly newsletters.)

“The **Communications Officer** shall be responsible for the Section publication activities including, but not limited to, the periodic preparation and distribution of the Section newsletter and any other print or social media required to support Section activities.”



WE WANT YOU!

SECTION MEMBER HONORED ON 100TH BIRTHDAY

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sulting for the U.S. Air Force, via The Aerospace Corporation. He was the foremost expert on vulnerability of Soviet warheads.

After retiring, Behl became involved with STEM education and served as president of the Maxwell Museum Foundation. He served on the Board and was chairman of the Albuquerque Museum of Art & History Board of Trustees, as well serving on the Board of the National Museum of Nuclear Science Foundation.

In addition to being honored by AIAA and the museums, Albuquerque mayor, Timothy Keller, proclaimed 3 July 2022 to be “Harold ‘Hal’ Behl Day”.



Basil Hassan

Hal Behl

Robert Malseed

SECTION MEMBER HONORED

Robert Malseed, Treasurer

Jill R. Meyers to Receive the 2022 Katharine Wright Trophy

Washington, DC, May 16, 2022 – The National Aeronautic Association (NAA) is pleased to announce that Jill R. Meyers, a Fellow of the Royal Aeronautical Society, has been selected as the recipient of the 2022 Katharine Wright Trophy. The trophy was established in 1981 and is awarded annually in partnership with the Ninety-Nines, International Organization of Women Pilots to an individual who “... has contributed to the success of others or made a personal contribution to the advancement of the art, sport, and science of aviation and space flight over an extended period of time.” Meyers is being recognized for “... her 40 years of dedication to the aerospace industry and her tireless commitment as a volunteer and role model, working to educate and inspire young girls around the globe.”

Meyers’ passion for aviation began when she was 12 years old, when she was given a ride in a family friend’s Cessna 140 airplane. That short flight over the coast of Massachusetts sparked her lifelong interest in things that fly. She earned her private pilot rating during her senior year of high school and went on to join the United States Air Force as an operational computer systems analyst. While stationed in Germany supporting NATO missions, Meyers was responsible for successful operations of ground radar sites that spanned the entire country. During a deployment in Italy, supporting a month-long international military exercise with 12 NATO countries participating, Meyers single-handedly identified and resolved a major computer problem, resulting in success of the operation. She received an award in recognition of her efforts in saving the mission. After the launch of the first space shuttle in 1981, Meyers had her mind set on becoming an Aerospace Engineer. An Air Force education officer recommended that she apply to the Airmen Education and Commissioning Program, a special program that sent top candidates to college full time while on paid active duty. Meyers became one of only five people in the Air Force selected for the Astronautical Engineering degree program that year and went on to attend the University of Texas at Austin, where she graduated in 1987.

After eight years serving her country, Meyers spent the next 30 years working in industry, providing support to many key platforms, both military and civilian, and cultivating various mentorship programs to offer a role model to those interested in taking a similar path. She supported many military airborne platforms in her impressive career, making major contributions to enhance our warfighting capabilities. Meyers worked as a lead Systems Engineer at Boeing on the NATO, U.S., and U.K Airborne Warning and Control System (AWACS) reconnaissance aircraft program, for which she was presented a prestigious Vice-Presidential award for her efforts; she served as Senior Program Manager for Connexion by Boeing’s government and executive customers, managing mission-critical airborne communications systems for aircraft including Air Force One; and working for Northrop Grumman on the F-35 Joint Strike Fighter “Lightning II” program, Meyers was one of two senior managers overseeing production and delivery of the F-35’s communications, navigation, and identification systems.

While leading the Women in Aviation International San Diego Chapter from 2015-2017 and again in 2019, Meyers managed the planning and execution of annual Girls in Aviation Day (GIAD) events, educating hundreds of young girls about aviation careers. In 2016, Meyers planned a special event with the U.S. Navy Blue Angels, including a private meet-and-greet with USMC Capt Katie Higgins, who at the time was piloting their C-130 aircraft, “Fat Albert”. In



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SECTION MEMBER HONORED

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2019, the annual event Meyers planned for GIAD hosted 200 girls, mostly from underprivileged communities, on a custom overnight aviation education program on the USS Midway aircraft carrier. Meyers' passion for inspiring young girls to "be all they can be" led her to leave the F-35 program in early 2017 to become a full-time volunteer for the non-profit organization Dreams Soar, Inc. (DSI), offering her assistance after learning about founder Shaesta Waiz's plans to fly solo around the world to inspire young girls and boys. Soon after, Waiz asked Meyers to lead DSI's Outreach Program in addition to managing the logistics for DSI's Global Flight for STEM. Meyers not only collaborated with the International Civil Aviation Organization (ICAO) and their Civil Aviation Authority representatives around the globe during the successful 145-day mission, but also led the planning of 32 DSI Outreach Events, which inspired more than 3,000 youth in 14 countries. Presently, Meyers spends a portion of her time as a sought-after industry advisor and professional mentor and speaker. For nearly 20 years, Meyers has inspired thousands of people through her STEM-focused speaking engagements, panel discussions, and outreach events. Her current and regular speaking roster includes public schools, universities, museums, and conferences. "I always say the Katharine Wright Trophy goes to someone who has not only accomplished awesome things but also makes those around them better," said NAA President, Greg Principato. "In her career and in her broader aviation activities, Jill has personified those characteristics. It will be our honor to present Jill with this wonderful award and to recognize her consequential career." "This award means a great deal to me as it represents my goal of being a driver of good things," said Meyers. "Having an impact on young people's lives makes all of my hard work worth it. The most important thing to me is to inspire others to know that the sky is not the limit!" Members of the 2022 Katharine Wright Trophy Selection Committee included: Darby Becker, GE Aviation; Dorothy Cochrane, 2020 Katharine Wright Trophy Recipient; Major Eleanor Morgan, 2021 Katharine Wright Trophy Recipient; Pat Prentiss, Past-President, The Ninety-Nines; Barbara Walters-Phillips, 2019 Katharine Wright Trophy Recipient; and Brian Wynne, Association for Uncrewed Vehicle Systems International (AUVSI).



The Katharine Wright Trophy will be presented on a date and location to be determined.

VIRGIN GALACTIC PLANS ASTRONAUT TRAINING FACILITY IN NEW MEXICO

By [Brett Tingley](#) published August 02, 2022 www.space.com

Virgin Galactic has acquired land for a new state-of-the-art astronaut campus and training facility.

The aerospace and space tourism company purchased a site for the campus in Sierra County, New Mexico, close to its primary launch site, Spaceport America. The future facility will help prepare commercial space tourists for flights aboard Virgin Galactic's air-launched SpaceShipTwo suborbital space plane, as well as accommodate up to three guests per passenger.

The campus will include "training facilities, purposeful accommodations and tailored experiences as well as an observatory, wellness center, recreation activities and unique dining options," according to a [Virgin Galactic statement](#) (opens in new tab). The company wrote that the facility was designed with sustainability and minimal environmental impact in mind, incorporating principles such as "water conservation and reuse, eco-friendly materials, and low-carbon mobility" as well as encouraging visitors to view and appreciate the natural landscape surrounding the site. "Our future astronauts begin a journey that is curated, high-touch and distinctly Virgin, which will culminate at the astronaut campus and training facility," Blair Rich, Virgin Galactic's president of commercial and consumer operations, said in the statement. "Customers who buy a ticket today will stay and train here, along with their guests, for five nights. While our future astronauts are completing spaceflight training, their guests will live out a tailored itinerary of discovery and educational experiences on the campus and throughout southern New Mexico."

In the same statement, New Mexico Governor Michelle Lujan Grisham said that the new astronaut training facility will "spur further economic activity for New Mexico,

creating more local jobs and attracting new visitors and spending to the area," adding that "New Mexico is proud to be home to the future of aerospace innovation and space tourism." A large part of that future aerospace innovation stems from the state's development of [Spaceport America](#), widely considered to be the first spaceport dedicated entirely to commercial spaceflight. Virgin Galactic signed a 20-year lease with the state of New Mexico to operate its "Gateway to Space" terminal at the spaceport, which opened in 2019. Other tenants at Spaceport America include [Spinlaunch](#), UP Aerospace, HAPSMobile, and Aerovironment.

Virgin Galactic is in the conceptual design phases of development on its new astronaut training facility at Spaceport America, and the company has not yet announced a timeline for its construction or opening.

Although the company has not yet flown any paying customers, Virgin Galactic has already flown one of its space planes, VSS Unity, in a fully crewed flight that carried passengers including billionaire Virgin founder Richard Branson to 282,000 feet (86,000 meters) in July 2021. In May 2022, Virgin Galactic announced that the company will delay the start of its commercial space tourism flights to the first quarter of 2023 due to "supply chain and labor constraints." A seat aboard VSS Unity currently costs \$450,000.

Follow Brett on Twitter at [@brettingley](#) (opens in new tab). Follow us on Twitter [@Spacedotcom](#) (opens in new tab) or on [Facebook](#) (opens in new tab).

RESILIENT SPACE SYSTEMS REQUIRE AUTONOMY, CULTURAL SHIFT: SPACE FORCE CHIEF SCIENTIST

By Robert Malseed, Treasurer

Many of the technology challenges facing the Space Force are "fundamental and architectural," requiring the service to figure out how "to get these new, rapidly evolving ideas into the system in a way that makes sense and it's not utter chaos," said Joel Mozer, director of science, technology and research.

Joel is a former chairman of our Albuquerque Section.



Joel Mozer (center), Space Force director of science, technology, and research.

(Air Force photo by Dennis Rogers)

WASHINGTON: Space Force science and technology efforts are concentrating on [autonomous systems](#) to help the service in its effort to overhaul military space systems to better withstand adversary attack, according to the service's top scientist.

"We have to build resilience in our systems. Had we thought about this 15 years ago, it would be simple — we would have that resilience built in. But now we're having to redesign our architectures figure out how to do it. And so that's where the rub lies and where the challenges are," Joel Mozer, Space Force director of science, technology and research told the America's Future Space Innovation Summit on Tuesday.

"Autonomy and automation, human-machine interfaces, trust in our autonomy. All of these are areas that we're really concentrating on today to really shore up and be able to do the operations," he said.

It is not only the fact that satellite systems have to operate in the vast volumes of space out of the reach of human engineers that require improved and more reliable autonomous capabilities, but also the fact that the Space Force is small people-power wise, Mozer explained.

"We're just a few percent of the size of the Air Force, and a very small percentage of the size of the Army. So we have to learn how to do things in the most technologically complex domain: space — at its most vast space is infinite — with a very small number of people," he said.

The small size of the service is one of the driving forces behind the push by Chief of Space Operations Gen. Jay Raymond to maximize the use of [digital tools](#) as a foundational maxim.

Mozer said that one of the biggest challenges for the Space Force is staying on top of the technology curve.

"Part of it is, is really, the rate of change of technology and trying to keep up with that. So, the ability to the great ideas that are coming not only from our own research labs, but from commercial industry and civil space, and figure out how to put those into an architecture that we can live with and extend into the future is a big challenge and that plays out all over the place," he said.

As an example, Mozer noted that the dramatic reduction in the cost of launch has led to an explosion of very large satellite constellations in Low Earth Orbit (LEO), that cost much less than the much smaller traditional military satellite systems in higher orbits. These distributed systems, which are inherently more resilient, are "a good thing," he said, but are "driving new architectures" that will not be easy to implement.

"In my position, I see just fantastic, eye-watering new ideas, innovative ideas from commercial entities almost every day. And we would love to be able to to implement those. But if it requires a complete ... change in

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RESILIENT SPACE SYSTEMS REQUIRE AUTONOMY, CULTURAL SHIFT: SPACE FORCE CHIEF SCIENTIST

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the way of doing business, that's a significant thing that we must consider," he said. "If it doesn't fit in our architecture, sometimes we have to say no to some of these technologies."

Even if the concept and tech are a fit and will provide a return on investment, innovative leaps require the service to "figure out how to redesign everything and to do things ... to have the operators, to have the resources to make it happen," he added.

"So, a lot of the technology challenges that we face are really kind of fundamental and architectural in that way — trying to get these new, rapidly evolving ideas into the system in a way that makes sense and it's not utter chaos," Mozer said.

And convincing a risk averse acquisition culture within

the military space community and the Pentagon to take on such major muscle movements that come with inherent risks, especially budgetary risks, isn't easy, he explained. One way to change that thinking is rather than concentrate on what the risks are of taking new action, but to reverse the thought process and look at "the risk of not doing something" new that could change the calculus for adversaries, he said.

Noting the large investments China is making in space — for example, he pointed to Beijing's current focus on exploration and operations in the [cislunar region](#) around the Moon — Mozer said the more important question is: "What's the risk of not investing in science and technology if our strategic competitors are aggressively investing in these areas?"

NEW FREE AIAA HIGH SCHOOL MEMBERSHIP NEW

By Robert Malseed—Treasurer

Our section currently has ten members in the new High School Student grade.

MEMBERSHIP IS FREE AND INCLUDES:

- AIAA Mentor Match

- 
STEM-focused webinars and on-demand content
- Access to our exclusive Engage community platform

- 
Online subscription to *Aerospace America*
- Discounts to AIAA forums and events


ALBUQUERQUE SECTION AT ISOTOPES GAME

By Robert Malseed—Treasurer

On 26 July Young Professional members of the Albuquerque Section met at the ball park to see an Isotopes game. No peanuts and Cracker Jacks, but we did have some pizza.



The Isotopes won

15—7.

JUL, AUG, SEP IN AIR & SPACE HISTORY

ANNIVERSARIES -- JULY 2022

115 Years Ago – 1907

July 7: Science fiction writer Robert Heinlein born.

65 Years Ago - 1957

July 1: The beginning of the International Geophysical Year.

60 Years Ago – 1962

July 1: NASA officially opened the Launch Operations Center at Cape Canaveral, later to be named the Kennedy Space Center.

July 10: Telstar 1 launched by Delta, Cape Canaveral, Fla., 4:35 a.m., EDT. Sends first live TV broadcast between the U.S. and Europe. First privately built satellite for communications.

July 22: Mariner 1 launched by Atlas Agena, Cape Canaveral, Fla., 5:21 a.m., EDT. Planned Venus flyby mission, spacecraft and final rocket stage blew up when accelerated to escape velocity.

55 Years Ago - 1967

July 14: Surveyor 4 launched by Atlas Centaur toward Moon, Cape Canaveral, Fla., 7:53 a.m., EDT. July 17 radio contact was lost 2-1/2 minutes before lunar touchdown when the signal was abruptly lost. Impacted in Sinus Medii.

July 19: Explorer 35 launched by Delta, Cape Canaveral, Fla., 10:19 a.m., EDT.

50 Years Ago - 1972

July 22: Venera 8 Venus Landing.

July 23: Landsat 1, formerly ERTS 1, launched by Delta, Cape Canaveral, Fla., 2:06 p.m., EDT. First demonstration of global remote-sensing of Earth's surface.

40 Years Ago - 1982

July 4: STS-4 landed at EAFB, CA., 12:09 pm., EDT. Crew: Thomas K. "Ken" Mattingly and Henry W. "Hank" Hartsfield. President Reagan attended the landing along with a half-million other tourists. In a speech he stated: "... beginning with the next flight Columbia and her sister ships will be fully operational ..."

July 16: Landsat 4 launched by Delta, Vandenberg AFB, 1:59 a.m., EDT.

35 Years Ago – 1987

July 22: USSR launched Soyuz TM-3 aboard a Soyuz rocket from Baikonur at 1:59:00 UTC. Ferry flight to Mir space station and partial crew exchange. Cosmonauts: Aleksandr S. Viktorenko, Aleksandr P. Aleksandrov, Muhammed A. Faris (Syria).

30 Years Ago - 1992

July 3: Solar, Anomalous and Magnetospheric Particle Explorer (SAMPEX) launched by Scout, 10: 19 a.m., EDT, Vandenberg AFB.

July 10: Giotto Flyby of Comet Grigg-Skjellerup.

July 24: Geotail satellite launched by Delta 2 rocket, 10:26 a.m., EDT, Cape Canaveral, Fla.

July 27: Russia launched Soyuz TM-15 aboard a Soyuz rocket from Baikonur. Ferry flight to space station Mir. Cosmonauts: Anatoli Y. Solovyev, Sergei V. Avdeyev, and Michel Tognini (France).

July 31: STS-46 (Space Shuttle *Atlantis*) launched 9:56 a.m., EDT, KSC. Crew: Loren J. Shriver, Andrew M. Allen, Claude Nicollier

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JUL, AUG, SEP IN AIR & SPACE HISTORY

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(ESA-Switzerland), Marsha S. Ivins, Jeffrey A. Hoffman and Franklin R. Chang-Diaz and Franco Malerba (Italy). Deployment of ESA's European Retrievable Carrier (EURECA) and the joint NASA/Italian Space Agency Tethered Satellite System (TSS). Landed 9:12 a.m., EDT, Aug. 8, KSC. Mission Duration: 7 days, 23 hours, 15 minutes.

25 Years Ago - 1997

July 1: STS-94 (Space Shuttle *Columbia*) launched 2:02 p.m. EDT, KSC. Crew: James D. Halsell, Susan L. Still, Janice E. Voss, Donald A. Thomas, Michael L. Gernhardt, Roger K. Crouch, and Gregory T. Linteris. A reflight of the STS-83 Microgravity Science Laboratory (MSL) mission. MSL was originally launched on April 4, 1997. The mission was cut short due to a problem with Fuel Cell #2. Landed July 17, 1997, 6:47 a.m. EDT, KSC. Mission duration: 15 days, 16 hours, 45 minutes.

July 4: Mars Pathfinder landed on Mars following its launch in December 1996. A small, 23-pound robotic rover, named Sojourner, departed the main lander and began to record weather patterns, atmospheric opacity, and the chemical composition of rocks washed down into the Ares Vallis flood plain, an ancient outflow channel in Mars' northern hemisphere.

20 Years Ago – 2002

July 3: CONTOUR (Comet Nucleus Tour) launched by a Delta 2 rocket from Cape Canaveral at 2:47 a.m. EDT. Six weeks later, on August 15, contact with the spacecraft was lost after a planned maneuver that was intended to propel it out of Earth orbit and into its comet-chasing solar orbit.

15 Years Ago – 2007

July 20: Johnson Space Center hosted the grand opening of a restored Saturn V rocket, 38 years to the day after humans first walked on the moon. The 30 story tall rocket, which rests at the JSC front gate, is part of the Smithsonian National Air and Space Museum collection and one of only three such rockets in existence.

10 Years Ago – 2012

July 11: High Resolution Coronal Imager (Hi-C), a sub-orbital telescope designed to take high-resolution images of the Sun's corona launched by a Black Brant sounding rocket from White Sands Missile Range, New Mexico. The images taken during the ten minute long mission were the highest resolution photos ever of the Sun's corona.

July 15: Soyuz-TMA 05M launched from Baikonur cosmodrome by a Soyuz-FG launch vehicle at 2:40 UTC. It carried Yuri Malenchenko, NASA astronaut Sunita Williams, and Japan's JAXA astronaut Akihiko Hoshide to the International Space Station (ISS).

July 23: Sally Ride dies at age 61.

5 Years Ago – 2017

July 28: Soyuz MS-05 spacecraft launched at 15:41:00 UTC by a Soyuz FG launch vehicle from Tyuratam (Baikonur Cosmodrome), Kazakhstan. Crew: Sergei Ryazanski, Randy Bresnik, and Paolo Nespoli. (ISS (Expedition 52). CRS-12 docked with ISS on August 16.

ANNIVERSARIES -- AUGUST 2022

60 Years Ago - 1962

August 11-12: Vostok 3 and Vostok 4 (Andrian G. Nikolayev and Pavel R. Popovich) launched, 0824 UTC and 0755 UTC, both aboard Vostok rockets from Baikonur. First simultaneous flight of two spacecraft.

August 27: Mariner 2 launched by Atlas Agena, Cape Canaveral, Fla., 2:53 a.m., EDT. First successful planetary flyby - Passed Venus December 14, 1962. Spacecraft subsequently entered solar orbit.

August 31: Communications Satellite Act signed by President Kennedy, Washington, DC

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JUL, AUG, SEP IN AIR & SPACE HISTORY

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55 Years Ago - 1967

August 1: Lunar Orbiter 5 launched by Atlas Agena, Cape Canaveral, Fla., 6:33 p.m., EDT.

50 Years Ago - 1972

August 13: Meteorological Technology Satellite (Explorer 46) launched by Scout from Wallops Island at 11:10 a.m. EDT.

August 21: Orbiting Astronomical Observatory (OAO) - 3 named Copernicus, launched by Atlas Centaur from Cape Canaveral, Fla., 6:28 a.m., EDT.

45 Years Ago - 1977

August 12: HEAO I launched by Atlas Centaur, Cape Canaveral, Fla., 2:39 a.m., EDT.

August 20: Voyager 2 launched by Titan 3E, Cape Canaveral, Fla., 10:29 a.m., EDT.

August 27: Sirio A launched aboard Delta rocket from Cape Canaveral at 7:50 p.m. EDT.

40 Years Ago - 1982

August 19: USSR launches Soyuz T-7 aboard a Soyuz rocket from Baikonur at 17:12 UTC. Ferry flight to Salyut-7 space station. Cosmonauts: Leonid I. Popov, Alexander A. Serebrov, and Svetlana Y. Savitskaya.

35 Years Ago - 1987

August 17: "Leadership and America's Future in Space" known as the Ride Report was released. Former shuttle astronaut and first U.S. woman in space, Sally K. Ride headed a group at NASA Headquarters that finished an assessment of NASA's options beyond the space station. The report recommended major programs to study earth sciences with powerful orbiting sensors and exploration of the solar system with new generations of robot probes. Ride also urged the space agency to establish a permanently manned lunar base before sending astronauts to Mars.

30 Years Ago - 1992

August 2: European Retrieval Carrier (Eureca) launched from Shuttle Atlantis for long duration space stay and ultimate retrieval by another shuttle flight.

August 10: Topex/Poseidon launched from Kourou, French Guiana aboard Ariane 42P launch vehicle, 8:08 p.m., local time. Satellite to measure ocean dynamics.

25 Years Ago - 1997

August 5: Russia launched Soyuz TM-26 aboard a Soyuz rocket from Baikonur at 15:35 UTC. Ferry flight to space station Mir. Cosmonauts: Anatoly Y. Solovyev and Pavel V. Vinogradov.

August 7: STS-85 (Space Shuttle *Discovery*) launched 10:41 a.m. EDT, KSC. Crew: Curtis L. Brown, Jr., Kent V. Rominger, N. Jan Davis, Robert L. Curbeam, Jr., Stephen K. Robinson, and Bjarni Y. Tryggvason of the Canadian Space Agency (CSA). Deployment of the Cryogenic Infrared Spectrometers and Telescopes for the Atmosphere-Shuttle Pallet Satellite-2 (CRISTA-SPAS-2). Landed at KSC on August 19, 1997, 7:07 a.m., EDT. Mission Duration: 11 days, 20 hours, 28 minutes.

August 22: Lewis spacecraft was launched successfully at 11:51 p.m. PDT from Vandenberg Air Force Base, CA, aboard a Lockheed Martin Launch Vehicle (LMLV-1). It entered a flat spin in orbit that resulted in a loss of solar power and a fatal battery discharge. Contact with the spacecraft was lost on August 26, and it then re-entered the atmosphere and was destroyed on Sept. 28.

August 25: Advanced Composition Explorer (ACE) (Explorer 71) launched by Delta 2 carrying six high resolution spectrometers to measure the composition of energetic particles from the Sun, the heliosphere, and the Galaxy.

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JUL, AUG, SEP IN AIR & SPACE HISTORY

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August 28: Intelsat 5 / Panamsat 5 launched aboard Proton K rocket from Baikonur at 00:33 UTC.

20 Years Ago - 2002

August 12: Frederick D. Gregory was sworn in as the first African-American Deputy Administrator of NASA that evening in a small private ceremony on the 9th floor of NASA Headquarters.

15 Years Ago - 2007

August 4: Phoenix Mars Lander was launched by a Delta 2 rocket from Cape Canaveral at 5:36 EDT, carrying science instruments to analyze soil samples of the Martian northern polar region. It will dig into an icy layer just below the surface to determine if the subsurface environment in the far northern plains of Mars has ever been favorable for sustaining microbial life. It will also monitor the polar weather. Phoenix landed successfully on Mars at 7:53 p.m. EDT on Sunday, May 25, 2008.

August 8: STS-118 (Space Shuttle *Endeavour*) launched 6:36 p.m. EDT, KSC. Crew: Scott J. Kelly, Charles O. Hobaugh, Richard A. Mastracchio, Dafydd (Dave) Williams (Canada), Barbara R. Morgan, Tracy E. Caldwell, and Benjamin Alvin Drew. It continued ISS construction by delivering a third starboard truss segment. Also, replaced a defective gyroscope, and installed an external equipment storage platform. Landed at KSC on August 21, 12:33 p.m., EDT. Mission Duration: 12 days, 17 hours, 55 minutes.

10 Years Ago – 2012

August 5: The Mars Science Laboratory carrying the Curiosity rover touched down on Mars at Gale Crater.

August 25: Neil Armstrong dies at age 82.

August 30: Radiation Belt Storm Probes (RBSP), the first twin-spacecraft mission designed to explore Earth's Van Allen radiation belts, launched at 4:05a.m. EDT from Cape Canaveral Air Force Station, Fla. by a Atlas V 401 launch vehicle.

5 Years Ago – 2017

August 18: Tracking and Data Relay Satellite-M (TDRS-M), which is the third and final in a series of next generation communications satellites. TDRS-M launched Friday at 8:29 a.m. EDT (12:29 UTC) from the Cape Canaveral Air Force Station in Florida on a United Launch Alliance (ULA) Atlas V rocket. Renamed TDRS 13 once in orbit.

August 21: The total solar eclipse was one of the biggest internet events in recent history and the biggest online event NASA has ever measured. There were more than 50 million views of the live broadcast on NASA.gov and multiple social media platforms, and almost 31 million unique views on Facebook before and after the eclipse.

ANNIVERSARIES--SEPTEMBER 2022

170 Years Ago - 1857

September 5: Konstantin E. Tsiolkovskiy born in village of Izhevsk, Spassk County. Ryazan Province. Research done in Kaluga, USSR.

75 Years Ago - 1947

September 6: V2 fired from deck of USS Midway, near Bermuda.

September 25: First launch Aerobee, White Sands, NM.

60 Years Ago – 1962

September 12: President John F. Kennedy's address at Rice University on the nation's space effort. In this well-known speech, Kennedy stated that we explore space not because it is easy but because it is difficult.

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JUL, AUG, SEP IN AIR & SPACE HISTORY

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September 18: Tiros 6 launched by Thor Delta, 4:53 a.m., EDT, Cape Canaveral, Fla.

September 28: Alouette 1 launched, by Thor Agena, 2:05 a.m., EDT, Vandenberg AFB. Although launched by the U.S., it became the first satellite operated by a country (Canada) other than the USSR or the United States.

55 Years Ago - 1967

September 7: Biosatellite 2 launched by Thor Delta, 6:04 p.m., EDT, Cape Canaveral, Fla.

September 8: Surveyor 5 launched by Atlas Centaur, 13:47 a.m., EDT, Cape Canaveral, Fla.

September 28: Intelsat 2 F4 launched aboard Delta rocket from Cape Canaveral at 8:45 p.m. EDT.

50 Years Ago – 1972

September 22: Explorer 47 (IMP 7) launched by Delta, 9:20 p.m., EDT, Cape Canaveral, Fla.

45 Years Ago – 1977

September 5: Voyager 1 launched at 8:56 a.m., EDT from Cape Canaveral on a Titan IIIE-Centaur launch vehicle.

September 29: USSR launched Salyut-6 space station aboard Proton K rocket from Baikonur at 06:50 UTC.

40 Years Ago – 1982

September 27: Intelsat 5 F5 launched aboard Atlas Centaur from Cape Canaveral at 7:41 p.m., EDT.

35 Years Ago – 1987

September: Ariane 3 launches Aussat-3 and Eutelsat 4 satellites from Kourou, French Guiana - significant because the Ariane rocket program had been grounded 16 months after a 1986 launch failure.

30 Years Ago - 1992

September 12: STS-47 (Space Shuttle *Endeavour*) lifted off, 10:23 a.m., EDT, KSC. Crew: Robert L. "Hoot" Gibson, Curtis L. Brown, Jr., Mark C. Lee, Jerome "Jay" Apt, N. Jan Davis, and Mae C. Jemison. Payload specialist: Mamoru Mohri (Japan). Mae C. Jemison becomes first African-American woman in space. Mamoru Mohri first Japanese astronaut to fly on Space Shuttle. Mark C. Lee and N. Jan Davis first married couple in space together. Landed September 20, 8:53 a.m., EDT, KSC. Mission Duration: 7 days, 22 hours, 30 minutes.

September 25: Mars Observer launched on Titan III, 1:05 pm., EDT, Cape Canaveral, Fla. Spacecraft fell silent Aug. 21, 1993, three days before it would have entered Mars orbit.

25 Years Ago – 1997

September 23: Launch of Intelsat 803 aboard Ariane 42LP rocket from Kourou, French Guiana, at 23:58:00 UTC.

September 25: STS-86 (Space Shuttle *Atlantis*) launched from KSC at 10:34 p.m. EDT. Crew: James D. Wetherbee, Michael J. Bloomfield, Vladimir G. Titov (Russia), Scott E. Parazynski, Jean-Loup J.M. Chrétien (France), Wendy B. Lawrence, and David A. Wolf. Docked with Mir and exchanged David Wolf for Michael Foale who returned with the rest of the crew. Landed at KSC, October 6 at 5:55 p.m., EDT. Mission Duration: 10 days, 19 hours, 20 minutes.

20 Years Ago – 2002

September 6: Launch of Intelsat 906 aboard Ariane 44L rocket from Kourou, French Guiana

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JUL, AUG, SEP IN AIR & SPACE HISTORY

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at 06:44:00 UTC.

15 Years Ago – 2007

September 18: WorldView 1, a U.S. commercial (DigitalGlobe) imaging satellite, was launched by a Delta 2 rocket from Vandenberg AFB at 2:35 EDT. The camera is a panchromatic imaging system featuring half-meter resolution imagery. The National Imagery and Mapping Agency (NIMA) is among the primary customers.

September 14: Kaguya, a Japanese (JAXA) lunar orbiter, also known by its pre-launch name SELENE (for SELEnological and ENGINEERING Explorer), was launched by a H-2A rocket from Tanegashima Island at 01:31 UTC. Kaguya entered lunar orbit on October 3 and subsequently deployed two subsatellites.

September 27: Dawn was launched by a Delta 2 rocket from Cape Canaveral at 8:34 a.m. EDT. It is to visit two nearby asteroids, Vesta (between August 2011 and May 2012) and Ceres (by February 2015), and transmit multi-color images of them.

5 Years Ago – 2017

September 7: OTV-5 launched at 14:00:00 UTC by Falcon 9 Full Thrust from Cape Canaveral. X-37B mission carrying the Air Force Research Laboratory (AFRL) Advanced Structurally Embedded Thermal Spreader (ASETS-11) to test experimental electronics and oscillating heat pipes.

September 12: Soyuz MS-06 launched at 21:17:00 UTC by a Soyuz FG launch vehicle. Crew: Alexander Misurkin, Mark Vande Hei, and Joseph Acaba. (ISS Expedition 53). The arrival of the Expedition 53 crew marked the first long-term increase in crew size on the U.S. segment from three to four, allowing NASA to maximize time dedicated to research.

September 15: Cassini spacecraft plunged into the atmosphere of Saturn, ending its 13-year tour of the ringed planet.

IMAGES OF THE QUARTER



DART MISSION READY FOR IMPACT ON 26 SEPTEMBER



SLS ARTEMIS READY FOR LAUNCH ON 27 SEPTEMBER

PARTING THOUGHTS

“The science of today is the technology of tomorrow . ”

- Edward Teller -

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