Aerospace Engineer Selected for U.S. Navy Reserve Direct Commission as an INTEL Officer

July 28, 2020

Pictured: Dr. David B. Mayo (left) and Chief Jerma Cloude, US Navy General Officer Recruiter Active and Reserve (NAVET/DCO) (right)

Earlier this month, Aerospace engineer Dr. David B. Mayo received a Direct Commission as an Ensign in the Navy Reserve. The event marks Mayo's return to military duty, having previously taken the "Oath of Enlisted Service" in the Marine Corps over 20 years ago.

Mayo's commission was the culmination of a highly competitive process that included over 170 applicants to the U.S. Navy's Direct Commission Officer (DCO) Selection Board. The commissioning ceremony was broadcast virtually via Zoom, and was attended by a coterie of Aerospace employees, colleagues, family members and friends.

"The U.S. Navy's DCO program is a unique privilege for civilians who have special skills that are critical to sustaining military operations, supporting troops, and scientific study," said Mayo, who was recently promoted to Associate Director in Aerospace's System of Systems Engineering Office. He credited the mentorship and support he's received at Aerospace as having played a crucial role for him through the selection process. "Two key leadership selection areas for this officer program are intelligence operations and engineering. Highlighting my experience supporting our Aerospace National Systems Group in the National Intelligence Division, and DoD support helped with producing a competitive application for Direct Commission as an INTEL Officer."

While now helming an illustrious career, Mayo's early life was not without its challenges. As one of seven children growing up in Tuskegee, Ala., his early educational options were limited. His high school had a dropout rate of around 50%, and there were few opportunities to develop a foundation in STEM.

Determined to succeed, Mayo took a cue from his father (a boxer with a 25-year Army career) to "keep punching and never give up" in his pursuit of academic and professional success. This tenacity of spirit ultimately informed his advocacy of STEM disciplines and the mentoring activities he enjoys.

"I mentor and engage with a lot of students," Mayo said. "One of the things I try to convey to them is that engineering and other STEM disciplines are an opportunity to predict and even shape the future. That cell phone or laptop, or even Bluetooth earphones you use owe their existence to STEM. You can be the one to invent or create or improve things going forward."

Dr. David B. Mayo (right) with his mentor and family friend Dr. Gerald Anderson, Colonel USAF (left) in attendance at the ceremony.

Mayo has applied his own academic challenges as a reference point for mentees who may find themselves daunted by the rigors of STEM disciplines and encourages them to persevere through the struggles.

"Everyone starts out as a novice," he said. "No one starts out knowing differential equations, or rocket science, or advanced thermodynamics. These were all topics most struggled with. For anyone starting out who has felt like they weren't so great at something right off the bat, even pros were rookies at one point. With perseverance, you can be a pro too".

For his efforts to encourage students to consider careers in STEM disciplines, Mayo received a 2016 STEM Award and a 2017 Science Fair Judge Certificate of Appreciation. In 2018, he received a Robert H. Herndon Black Image Award.

"In his tenure at Aerospace, Dr. Mayo has supported upwards of 20 different projects across multiple organizations and has published multiple technical papers. The Aerospace Corporation is honored to count Dr. Mayo amongst its talented and innovative engineers. We look forward to Dr. Mayo's future accomplishments and congratulate him for his promotion," said Via Van Liew, EEO Director of Aerospace's Diversity and Inclusion office.

Prior to joining Aerospace, Mayo served with distinction in the Marine Corps as a Corporal (E-4) in a Combat Engineer Battalion which included two Operation Iraqi Freedom combat tours. He subsequently earned a B.S. in Mechanical Engineering from Virginia Military Institute (VMI) and a master's degree in Aerospace Engineering from the University of Alabama at Huntsville. He performed graduate and post-doctoral

Dr. David B. Mayo (center) receiving the Herndon Black Image Award in 2018, flanked by his nominator Zigmond Leszczynski (left) and Malissia Clinton (right), Aerospace senior vice president, general counsel, and secretary.

research at the University of Maryland's Department of Aerospace Engineering, where he was responsible for the design, execution and analysis of wind tunnel operations, flow visualization, and particle imaging velocimetry (PIV) experiments. His research also included numerical simulations investigating the unsteady aerodynamic flow field inherent to robotic flapping wings, for micro air vehicle (MAV) applications.

Mayo joined ETG's Space Architecture Department after his Ph.D. Within weeks of successfully defending his dissertation, he began contributing his expertise to multi-disciplinary engineering teams performing National Security Group tasks. He also provided his services to civil and commercial endeavors by identifying top-level requirements for developing pre-acquisition architectures and assessing technical risks.

Within six months of being hired, Mayo produced six formal deliverables and participated in multiple technical studies of crowdsourcing for space threat assessments, cognitive computing, predictive analytics and satellite ground system antenna modeling, among others.

In 2016, Mayo received a Vaeros Operations Team and Individual Achievement Award for his contributions leading to Aerospace's expanded role at NASA Earth Science and Technology Office, for which he provided expert project review and support to Program Managers in setting technology investment priorities and building new partnerships.

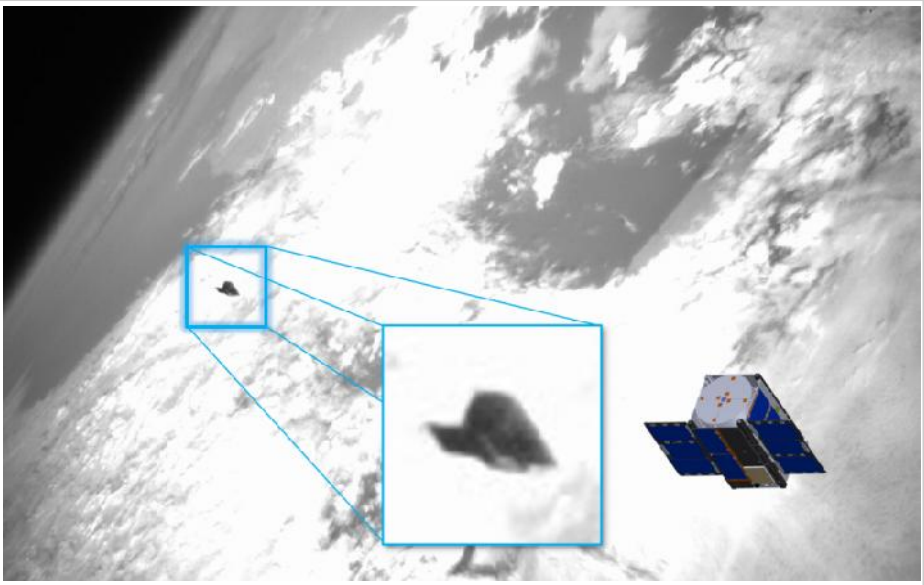
Mayo's proven technical excellence, innovation and dedication to mission success ultimately led to Aerospace Black Caucus Appreciation Awards in 2015 and 2016, and a Spot Award for Counter-UAS Modeling and Simulation in 2016. He also received a 2018 NSBE Space Systems Conference's 21st Century Trailblazers in Space Research Award, a 2018 BEYA Modern Day Technology Leader Award and a 2020 Aerospace Corporate Award for Recognition of Excellence for Leadership of the IC Tech Assessment Study.

"If you've ever been curious about the world and how things work, or how humanity might engage with something you create," Mayo said. "That curiosity has value and you can explore that curiosity for a living."

Cubesats Get Close: Proximity Operation With Interesting Implications

July 27, 2020

With some technical panache, one of Aerospace's CubeSats maneuvered itself within 22 meters of its sibling CubeSat and snapped a series of photos while orbiting at 17,000 miles per hour.



AeroCube-10A (which is only 10 x 10 x 15 cm itself) photographed from 26 meters away.

This incredibly difficult technology demonstration, performed by a satellite the size of a tissue box, paves the way for future inspection or servicing missions.

"AeroCube-10 is by far the smallest spacecraft to have accomplished a rendezvous and proximity operation so close," said Catherine Venturini, an Aerospace Senior Project Leader and team lead for the AeroCube-10 mission. "This operation has successfully demonstrated that the future is open for very small and cost-effective spacecraft to perform on-orbit inspection (and potentially servicing) missions, to participate in science missions that require close proximity, and ultimately to advance to docking scenarios so that nanosatellites can join in the struggle to remove space debris from orbit."

Precise proximity operations are necessary for some of AeroCube-10's science missions, which require spatial separation between the two CubeSats. AeroCube-10's missions include advancing the maturity of nanosatellite-scale technologies and capabilities, studying the Earth's atmosphere via the release of small probes, and studying the radiation environment of the Earth's ionosphere.

Beyond its current tasks, however, AeroCube-10 demonstrates a cost-effective capability that could be used in potential future missions.

As Joseph Gangestad, Systems Director and experiment lead, put it, "The miniaturized technologies and sophisticated processes used to accomplish this proximity operation can be applied to other spacecraft and missions, so that future projects — such as free-flying inspector satellites for the International Space Station — can be accomplished in a small form factor and lower cost."

Read the full article and watch the video about AeroCube-10's proximity operation on Aerospace.org. You can read more about AC-10's mission here.

Press Release: Aerospace to Build a Second Facility in Colorado Springs

July 22, 2020

Editor's Note: *KRDO in Colorado Springs produced a segment on the new Aerospace facility plans, which includes an interview with Jean Michael, General Manager of the Space Enterprise & Warfighting Division. You can watch the video below and read the article here.*

The new facility in Colorado Springs will enhance the company's work providing technical expertise to define and build a more resilient space architecture.

EL SEGUNDO, Calif., July 22, 2020 – The Aerospace Corporation (Aerospace) announced today it is investing nearly $100 million in a second state-of-the-art research and development facility in Colorado Springs, Colo.

This facility, recently approved by the Aerospace Board of Trustees, is planned to be 70 percent classified space and includes a multi-purpose high-technology center to meet the growing requirements of the U.S. Space Command, the U.S. Space Force, and a variety of other customers.

Construction starts this month with groundbreaking activities planned for this fall. Completion and occupancy are scheduled for spring 2022.

"This new, high-tech facility furthers our commitment to supporting our many partners in the Colorado Springs region in advancing our nation's security in space," said Steve Isakowitz, Aerospace's president and CEO. "The space enterprise is changing faster than ever, and our increased capabilities will be critical in helping our government partners tackle critical problems and shape future concepts for space warfighting."

Aerospace employs approximately 240 of the nation's leading engineers, scientists, and analysts at its current facility located in the Colorado Springs Airport Business Park. These employees primarily work for the company's Defense Systems Group, Strategic Space Operations, and the national engineering technology hub, Engineering Technology Group. The second building will be adjacent to the existing location and feature 90,000 square feet of working space, which has the capacity to accommodate company plans to add 200 technical employees.

The new building will enhance the company's work providing technical expertise to define and build a more resilient space architecture. Additionally, it will support acquisition activities, test and evaluation, tactics, techniques and procedures development, as well as furthering concept exploration.

It Has Legs: Students Take On Lunar Landers

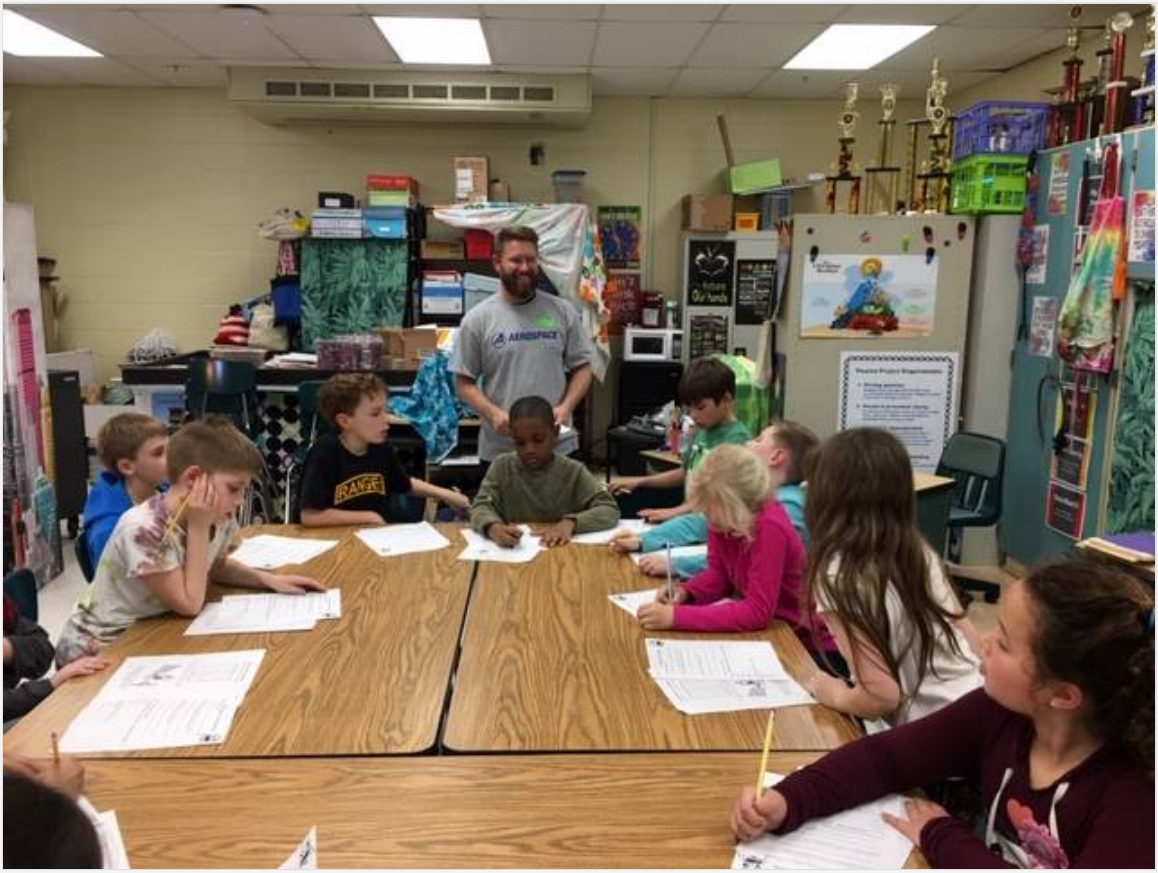
July 20, 2020

[*Editor's Note: The following story was submitted by Paul Zomkowski from the Aerospace Hardware Design and Mission Assurance organization in Huntsville. Zomkowski helped a classroom of third graders design and build Lunar Lander legs until the COVID-19 situation moved the project home. What home science projects are you working on?* ***Post your photos here!***]

The phrase "it has legs" has several meanings. Typically, the phrase means "likely to be successful." For the third graders at Horizon Elementary School in Madison, Ala., it has legs applied to the development of Lunar Lander legs. A group of 20 students set out to design, build, and test Lunar Lander legs as part of a design challenge project envisioned by gifted class specialist Elizabeth Bero, school counselor Jennifer Walker and myself

The students' excitement was piqued early by the television show "Lego Masters" and they were eager to conquer their very own assignment. With the Marshall Space Flight Center, our local NASA research center, receiving the responsibility to develop a program for landing on the moon once again, it seemed only fitting the students should participate in the process as much as possible. Bero expressed her excitement, stating, "One of these students may actually be a future astronaut on these missions".

As part of the Hardware Design and Mission Assurance organization in Huntsville , I often find myself recommending to our customer that they start at the beginning by "thinking about the problem, identifying solutions, and testing the ideas in a prototype environment."



Paul Zomkowski from the Aerospace Hardware Design and Mission Assurance organization in Huntsville teaches third graders about design before quarantine.

The students used the same approach. First, they conducted research to better understand the problem of landing on the moon. Students gathered historical pictures of the many designs previously envisioned to deliver experiments and cargo to the moons surface.

Next, we held design brainstorming discussions where each child could ask questions and express their own ideas. I tell the kids that the technical recommendations I provide to my customer at the Missile Defense Agency are consistent with how other programs are conduced, such as NASA, which begin by planning the steps and conducting discussions with peers to improve the ideas.

Teams were then assembled to build the hardware, well, Lego hardware that is. It was then time for the most exciting part, testing the hardware to see how the creations performed. A test fixture was developed to allow individual testing of the thoroughly unique Lego leg creations in order to better understand the performance.

With individual leg testing completed it was time to down select the designs and move on to prototype development.

Due to the COVID-19 situation and the closing of schools, final integration testing had to be conducted with a much smaller “in-house” development team. Henry Zomkowski agreed to continue the development and integrate a set of four legs to the lander module.

"In-house" design team: Elliott Zomkowski, Paul Zomkowski, and Henry Zomkowski

The student team continued their involvement through online interactions and the steps taken this past year to spark their interest in space vehicle design will continue in the years to come. The lunar lander legs these kids have developed will continue to inspire future lander challenges and maintain the interest of next year's students to participate in similar events. The hope is that this design challenge event "has legs" and will continue in the years to come.

Aerospace's New Infrared Temperature Scanners Keep Employees Safe

July 15, 2020

Throughout the country, state governments are developing plans for businesses to resume normal or phased on-site operations while still limiting the spread of the COVID-19 virus. These plans include the rapid identification of people who may be infectious. Temperature measurement is currently being used as a precautionary screening method to detect the elevated body temperatures that can signal potential COVID-19 infection.

As Aerospace continues its phased return to office (RTO), every precaution is being taken to ensure that the process is thoughtfully and carefully implemented, and that every safety concern is addressed to curtail the spread of the virus.

Aerospace employees returning to office may notice new non-contact temperature assessment devices developed by their own colleagues in xLab and the Physical Science Laboratories (PSL). The Aerospace prototype (dubbed "The T-Case") consists of carefully selected and coordinated off-the-shelf parts, with simplified software written in robust custom code that has achieved high system stability.

Toby Case works on one of the T-Case devices, which will allow employees to check their temperature with great accuracy.

Though commercially available infrared thermometers are now in wider use, their accuracy issues have prompted a need for a device that can perform the same functions while providing more contextually accurate and informed temperature readings. The T-Case is named after Dr. Toby Case, Resident Scientist at Aerospace, who says that the key is to couple infrared imaging with temperature reference.

“We in PSL were determined to find a way to make a reliable, NIST (National Institute of Standards and Technology) traceable, non-contact temperature measurement device as we return to work in the ‘new normal’,” Case said. “My role was to devise and implement a basic prototype that includes IR imaging and a temperature reference, and to make the prototype fast.”

Commercially available thermal imaging cameras and infrared telethermographic systems (commonly known as infrared thermometers) have become essential tools in the virus-fighting arsenal. Among the advantages of these non-contact devices is that they can quickly measure and display a temperature reading so that a large number of people can be evaluated individually. Furthermore, these devices offer the advantage of speed, as the lack of contact obviates the need for cleaning the device after each use.

Unfortunately, these devices can also misread normal temperatures as elevated, and often lack the imaging refinement needed to distinguish a high body surface temperature caused by one’s environment (such as a warm room or hot summer day) from one caused by an infection. Hence, these devices are in the unfortunate position of being both precise and inaccurate at the same time.

The team responded rapidly to the need by assembling multiple T-Case devices in the new xLab facility.

The T-Case improves substantially upon available technology by not relying on available lighting conditions to process faces using the visible spectrum (which often renders erratic body temperature readings). While many other systems read forehead temperature, this approach is prone to variation due to the presence or absence of sweat.

In contrast, the T-Case relies upon low noise measurement to achieve simple image processing when reading human tear duct temperature, a far more reliable way to estimate internal human body temperature. Most importantly, the T-Case prototype represents a triumph of the resourcefulness and innovation that are Aerospace's stock in trade. The devices were assembled in xLab, which has just undergone a complete renovation to allow Aerospace to more effectively build instruments and prototypes.

"The T-Case was an opportunity for xLab to demonstrate its agility and flexibility during challenging times," said Lynn Friesen, Principal Director of xLab. "xLab's expertise as 'developers of prototypes' was brought to the fore as xLab staff quickly engineered and fabricated the thermal imagers Aerospace will use to ensure employee health and safety. This is remarkable in a time when on site staff are at a minimum because of Covid-19 and the newly designed fabrication and assembly labs are still getting organized. The T-Case was one of the first new prototypes out of the new facility, and the side-by-side – metaphorically speaking – rush-to-the-finish with our PSL colleagues was a morale and team-building experience."

An employee is able to determine that his temperature is in the acceptable range by using T-Case, installed in one of Aerospace's lobbies.

To safeguard protected health information, the T-Case ensures a high level of privacy as it cannot store or transmit data. In addition, its interface is readily customizable, minimizing user error by allowing the user to select high contrast color change when a fever is detected.

"The T-Case is a NIST-traceable human temperature measurement system that presents a vast improvement over what's available commercially at present," Case said. "Thanks to the success of the prototype, we've finalized a design for scaling up and are making 10 more systems with basically the same functionality as the prototype that will be distributed between three campuses. This system will serve as one of many necessary steps to provide for employee safety as we transition through our return-to-office phases. The system provides for highly accurate screening, which is essential for coworkers to be and feel safe."

Aerospace STEM Scholarship Providing Opportunities for Next Generation of Space

July 13, 2020

2020 Dr. Wanda M. Austin STEM Scholarship award winner Itzel Thomas Sanchez.

Itzel Thomas Sanchez is dedicated to sharing her passion for STEM. Now Aerospace is honoring her passion by awarding Sanchez the 2020 Dr. Wanda M. Austin STEM Scholarship award.

Sanchez, who is interning in the Acquisition Support and Information Department this summer, sought out extra STEM coursework through advanced placement classes. She led both the FIRST Robotics and Solar Cup teams for Compton High School and was on a team that won third place in Aerospace's Robert H. Herndon Memorial Science Competition, a contest designed to inspire middle and high school students to pursue engineering and scientific careers. Outside of the classroom, Sanchez actively worked to inspire other young, Latina, and underrepresented girls to find their passion in STEM by volunteering at annual STEM events such as Science, Technology, Engineering, Art, and Math (STEAM) Fest and Computer Science Expo.

“Growing up in Compton, I experienced firsthand the lack of resources for STEM education, but I didn’t let that hold me back from succeeding,” said Sanchez. “I’m grateful that I now have that support from Aerospace so that I can realize my dream of attending college and becoming an engineer.”

Sanchez graduated in the top one percent of her class and will be the first in her family to attend college where she will pursue undergraduate studies in civil engineering at Cal Poly, Pomona this fall. She plans to continue volunteering in college because she acknowledges the value and importance of increasing diversity in STEM fields.

“Itzel has proven to be an outstanding student who serves as a role model for all students who are overcoming major challenges and embracing the opportunities of STEM-related careers,” said Steve Isakowitz, Aerospace president and CEO. “We are committed to nurturing Itzel’s interest for engineering with a mentoring and internship opportunity at Aerospace.”

Increasing diversity in science, technology, engineering, and mathematics (STEM) is at the core of Aerospace’s outreach initiatives. For more than five years, the Aerospace STEM Endowment Fund has provided support to underprivileged, minority students achieving their dreams of studying science, technology, engineering, or math at a four-year college or university. The Dr. Wanda M. Austin STEM Endowment Fund was named after Aerospace’s former CEO and President for her dedication to STEM education support.

The scholarship awards up to $10,000 a year—renewable for four years—to cover college tuition and expenses to one underrepresented and underprivileged high school student who demonstrates academic excellence and strong leadership skills. Recipients also receive paid summer internships at Aerospace and are partnered with Aerospace employees who act as academic mentors and life coaches.

In addition to the one annual scholarship awardee, Aerospace also provides awards to the other top applicants for the scholarship. The scholarship awardees and runners-up are collectively known as “AeroScholars,” and are all placed in paid summer internships at Aerospace, where they work in such varied and interesting departments such as the Space Materials Lab, Information and Cyber Security, Software Quality and Analysis, Science and Technology Strategy, and Agile Systems Engineering. There are now 13 AeroScholars.

The inaugural Dr. Wanda M. Austin STEM Scholarship Winner, Heydy Arias, graduated from UCLA with a degree in mathematics June 2020. Heydy will continue pursuing her goal of being a high school math teacher and in fall 2020 will begin her teaching credential program at UCLA.

To help Aerospace give more opportunities to students like Itzel and Heydy for generations to come, consider donating to the Aerospace STEM Endowment Fund today. Contact stem@aero.org for more information.

New Electric Propulsion Chamber Explores the Future of Space Travel

by **Henry Truc**
July 07, 2020

Deep inside a laboratory at The Aerospace Corporation's El Segundo campus, scientists are recreating the vacuum of space here on Earth.

Aerospace's electric propulsion lab specializes in testing electric thrusters in space-like conditions, and they recently installed a new vacuum chamber that will enable them to test the newer, high-powered thrusters needed for future space exploration.

"This chamber adds not just to Aerospace's testing capability, but adds to the world's testing capability," said Rostislav Spektor, Laboratory Manager in Electric Propulsion and Plasma Science. "When it becomes operational, it will be the best electric propulsion testing facility in the world."

Electric propulsion produces significantly less thrust than chemical propulsion but is much more efficient in terms of the amount of fuel used. It's too weak to launch rockets through the atmosphere, but once in space, the lack of gravity allows electric propulsion thrusters' true potential to shine.

Historically, electric propulsion has mostly been used for station-keeping of satellites. But its highly efficient nature opens up possibilities for long-distance space exploration missions with the small but constant thrust building up over time, accelerating the spacecraft to a very high velocity.

The new chamber, 14 ft. in diameter and 30 ft. long, is considerably larger than the lab's older 8-foot diameter chamber. The chamber body was delivered in four segments over the course of a week and then bolted together.

As a federally-funded research and development center (FFRDC), Aerospace is not allowed to produce flight hardware that could compete with commercial companies.

Instead, Aerospace provides end-to-end testing of electric propulsion thrusters, from measuring thrust, exhaust velocity and specific impulse to more advanced work like plume characterization, which helps quantify the risk of damage to other parts of the spacecraft. The lab also offers non-invasive testing using laser and optical diagnostics.

When operational, the expanded testing facility will allow the lab to double its workload, providing testing services to military and civil customers, as well as a growing field of commercial manufacturers.

Read the full article on the new Electric Propulsion test chamber on Aerospace.org.

Launch in the New Normal: SpaceX's Falcon 9 Sends Space Force's GPS III-3 to Orbit

by **Henry Truc**
July 01, 2020

To support the Falcon 9 GPS III-3 launch, Aerospace's team went above and beyond to ensure mission success. The launch was unique, incorporating a recoverable rocket for a NSSL mission for the first time ever. [Photo credit: SpaceX]

For the third time since COVID-19 changed the way Aerospace does business, we successfully used a highly distributed remote STARS capability to support a national security launch. On Tuesday, June 30, the SpaceX Falcon 9 F9-085 vehicle lifted off at 16:10:46 EDT from SLC-40 at Cape Canaveral Air Force Station and successfully lofted the GPS III-3 spacecraft to its medium Earth orbit (MEO) transfer orbit. Built by Lockheed Martin, GPS III-3 is the third satellite to be deployed in the third-generation Global Positioning System. GPS III satellites provide three times greater accuracy and greatly enhanced anti-jamming capability relative to their predecessors.

The F9-085 mission utilized a Falcon 9 Upgrade Block 5 vehicle to launch GPS III-3 into MEO transfer orbit. The F9-085 first stage booster and fairing were first-use items, and this was the first National Security Space Launch mission to include recovery of the first stage booster, which landed on a downrange drone ship.

Although the launch vehicle may have looked the same, the Block 5.4 vehicle that launched today had undergone hundreds of changes from the Block 5.2 version that flew GPS III-2 in December 2018. In addition to verifying the changes between the two vehicles, the Falcon team made tremendous strides in risk reduction, mitigating all 10 elevated (Low-Medium) risks from the GPS III-2 flight down to Low or baseline. In addition, five new elevated risks were identified, with four of the five subsequently mitigated to Low. At the same time, great progress was made in using agile mission assurance techniques to create new efficiencies in our mission assurance processes, resulting in a realization of an approximate 20% reduction in the STE required for recurring mission assurance.

The significant achievements of the team were highlighted at both the Aerospace President's Review and at the Space Force's Space and Missile Systems Center (SMC) Flight Readiness Review. The SMC Commander, Lt. Gen. John Thompson, thanked the team for the outstanding work in risk reduction and execution efficiency, as well as the dedication to the mission under these difficult, but "new normal", conditions during the COVID-19 pandemic.

And just when the team thought they were ready to go, they were challenged with two new issues the weekend before the launch. The late-breaking issues were associated with changes to the coupled loads analysis, as well as changes to the pre-flight trajectory, critical elements of the mission design. Once again the team surged into action, and the Falcon program office and ETG structural dynamics and GN&C teams went above and beyond the call of duty, working long hours throughout the weekend to verify the changes in time for the final readiness reviews on Monday—again receiving kudos for their outstanding work from Gen. Thompson. COVID-19 or not, the Aerospace "new normal" looks a lot like the old normal – technical excellence and dedication to mission success!

Written by Randy Kendall, Vice President of Launch & Enterprise Operations

July 2020 Obituaries

by **Conor Shine**
July 01, 2020

Sincere sympathy is extended to the families of:

- **Claurence Bower,** member of technical staff, hired March 6, 1962, retired Oct. 1, 1993, died June 21, 2020
- **Mac Glenn,** office of technical support, hired Dec. 7, 1981, retired April 1, 2000, died April 26, 2020
- **Charles Kelley,** member of technical staff, hired August 14, 1962, retired Oct. 1, 1990, died May 26, 2020
- **Hisako Shibato,** office of technical support, hired Aug. 6, 1984, retired Dec. 1, 1994, died May 16, 2020
- **Jon Swail,** member of technical staff, hired Jan. 10, 2000, retired June 1, 2012, died June 7, 2020
- **Hang Wung,** member of technical staff, hired Sept. 5, 1960, retired March 1, 1992, died May 25, 2020

To notify Aerospace of a death and have it included in the Orbiter, please contact People Operations at (310) 336-5107.

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