Aerospace Breaks Ground on New Colorado Springs Facility

September 23, 2020

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

Update:

The Aerospace Corporation officially broke ground on its second facility in Colorado Springs, Colo. at a socially distanced ceremony on Wednesday.

"Aerospace has a long history of serving the Colorado Springs area defense community dating back to the 1970s," said Jay Santee, Aerospace vice president for Space Systems Operations and site executive for Colorado Springs. "Our investment in a second facility is a testament to the importance this community plays in the space enterprise today and the bright future that lies ahead."

Attendees at the ceremony included Maj. Gen. Tim C. Lawson, Mobilization Assistant to the Commander, United States Space Command; Maj. Gen. Deanna M. Burt, Director of Operations and Communications, Headquarters United States Space Force; and Brig. Gen. D. Jason Cothern, Vice Commander, Space and Missile Systems Center. Local elected officials and representatives from the Space Foundation, Colorado Springs Airport and Colorado Springs Chamber of Commerce were also in attendance, along with several Aerospace employees.

Original Post:

Aerospace is hosting the official groundbreaking of the second state-of-the-art research and development center in Colorado Springs, Colo. on Wednesday with a small, socially distanced ceremony. Local government members will be in attendance, along with leadership from U.S. Space Command and U.S. Space Force.

Aerospace's new facility will be the focal point for delivering technical expertise across the space enterprise to outpace threats to national security. The building's digital engineering environment will enable high-fidelity analysis and physics-based modeling and simulations as well as development of tactics, techniques, and procedures that will provide insight into space warfighting.

"This new facility will be a gamechanger for technical and simulation capabilities for the space warfighters as they shape the future of national security space," said Steve Isakowitz, Aerospace's President and CEO. "As the nation's trusted partner, Aerospace focuses on solving our government and industry partners' most challenging problems. It is our job to help them promote and optimize the combined civil, military, and commercial exploitation of space to best serve our national interests."

Here are some key facts about the new facility and Aerospace's Colorado Springs presence:

- The 90,000 square foot building will be majority classified space
- It will have a multipurpose simulation center to support wargaming capabilities and large meetings with industry and government partners
- The building is designed to accomodate about 200 additional employees and is expected to open in 2022
- Aerospace's first Colorado Springs facility opened in 2007. The company has about 240 people located there and at nearby customer sites

"We're pleased to grow our role as a trusted technical partner to our government partners and industry colleagues in the Greater Colorado Springs defense and space community," said Jay Santee, Aerospace vice president for Space Systems Operations and site executive for Colorado Springs. "Our new facility will boost Aerospace's local economic impact by 75 percent and add 200 technical jobs locally."

The photo gallery below includes project renderings of the new COS-2 facility as well as photos of the site before construction started.

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


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Aerospace Celebrates Hispanic Heritage Month with a Series of Virtual Events

September 21, 2020

The Aerospace Latino Members Association (ALMA) has created an HHM SharePoint site to provide employees with information about HHM, recipes, information about ALMA's Professional Development events, children's activities, and a section for employees to provide feedback and ideas for events.

National Hispanic Heritage Month is already in full swing. Each year, Sept. 15 marks the start of the annual celebration of the history and culture of the U.S. Latino and Hispanic communities. Initiated in 1968 under President Lyndon Johnson as Hispanic Heritage Week, it was ultimately expanded to 30 days by President Ronald Reagan in 1988.

The month-long event, which continues through Oct. 15, commemorates and celebrates the histories, cultures and contributions of Americans whose ancestors came from Spain, Mexico, the Caribbean and Central and South America and how those communities have contributed to and enriched American society at large.

The month of September is of particular significance to the event, as many Latin American countries (such as Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Mexico and Chile) celebrate the anniversary of their independence on this month.

In observance of Hispanic Heritage Month this year, the Aerospace Latino Members Association (ALMA) has created an HHM SharePoint site to provide employees with information about HHM, recipes, information about ALMA's Professional Development events, children's activities, and a section for employees to provide feedback and ideas for events.

ALMA is also hosting events to celebrate HHM, the first of which was the annual "Taste Of" event, showcasing the wide varieties of foods in the Hispanic culture and highlighting recipes for an assortment of dishes from Chile, Ecuador and Honduras. Although this year's event was virtual, it featured an open discussion of these dishes, punctuated with information about the histories of their respective countries.

Participants were encouraged to prepare the recipes themselves and share their experiences with others. In lieu of an in-person cooking competition, a trivia contest was officiated by Master of Ceremonies Manuel

J. Acosta, for which contest winners John Tunnell, Trina Kilpatrick, Lynda Chrisco, Misak Zetilyan and Katy Veliz were awarded gift certificates.

"Many of us at Aerospace are teleworking and experiencing the solitude and stress of working at home. ALMA's HHM events bring us together to celebrate our various Hispanic cultures in a fun and educating environment, such as the "Taste Of" annual event. Our HHM events allow our membership and interested Aerospace employees a time away from the workday and provide a safe place for communicating our ideas and opinions," said Sylvia A. Espinosa, ALMA National President. "It is important to ALMA to promote awareness and pride of our Hispanic culture among our membership and to our greater Aerospace employees."

Along with Cinco de Mayo and the Holiday Food and Gift Drive, last week's celebration is one of the core set of events hosted annually by ALMA. These events provide an opportunity to celebrate Hispanic cultural heritage and to recognize the valuable contributions Latinos have made at Aerospace, nationally, and even worldwide.

ALMA's purpose is to act as a resource to employees and management on matters related to diversity and inclusion, and in furtherance of this objective, ALMA is sponsoring a Professional Enrichment event that directly addresses the issue of unconscious bias and microaggressions on Thursday, Sept. 24.

Hosted by Gabriel B. Grajeda, Process Engineer with Micron Technology, the *Navigating Microaggressions through Diversity Conversation, not Confrontation* seminar explains how the Socratic Method can be used to trigger a discovery conversation and challenge mindsets with regards to diversity.

Grejada is also a Local, Regional, and National member of the Society of Hispanic Professional Engineers (SHPE), a national organization of engineers & STEM advocates that serve as role models and drive impact within the Hispanic/Latino community. He is a former Regional Conference Chair, National Conference Chair for Professionals at the SHPE Convention, and currently supports the Washington DC Chapter, sitting on its board.

Aerospace Elects Three New Members to Board of Trustees

September 17, 2020

EL SEGUNDO, Calif., Sept. 17, 2020 – Three distinguished leaders, bringing decades of military and private sector expertise, were elected to The Aerospace Corporation (Aerospace) Board of Trustees: Admiral Cecil D. Haney, USN (Ret.), the Honorable Michael J. McCord, and former Lieutenant General Vincent R. Stewart, USMC (Ret.).

"We're at a historic moment in America's space program as it continues to undergo unprecedented changes," said Steve Isakowitz, Aerospace president and CEO. "Now, more than ever, Aerospace is being called upon to provide new ideas, outstanding technical depth, and breakthrough innovations to our customers. Our new trustees will help us accomplish that mission by bringing critical thought leadership in areas like space warfighting, cybersecurity, strategic business operations, and financial stewardship."

Admiral Cecil D. Haney retired in January 2017 after completing 38 years of distinguished service in the U.S. Navy. He commanded the U.S. Strategic Command from 2013 to 2016, and was responsible for strategic capabilities involving nuclear weapons, missile defense, space and cyberspace as well as the U.S. Pacific Fleet (2012 to 2013). He now serves on the Johns Hopkins University Applied Physics Board of Managers, the Naval Studies Board, the Board of Directors for General Dynamics Corporation, Systems Planning and Analysis Inc., and the Center for a New American Security.

Lieutenant General Vincent (Vince) R. Stewart retired from the U.S. Marine Corps after more than 38 years of active commissioned service to the nation. On his final tour of duty, he served as the Deputy Commander, U.S. Cyber Command, one of the 11 combatant commands of the U.S. Department of Defense, with military and civilian personnel stationed worldwide. Prior to that assignment, he served as

the 20th director of the Defense Intelligence Agency. Currently, Stewart is the chief innovation and business intelligence officer at Ankura, a global business advisory and expert consulting service.

The Honorable Michael McCord served at the U.S. Department of Defense as Under Secretary of Defense (Comptroller)/Chief Financial Officer and, before that, as the Principal Deputy Under Secretary of Defense (Comptroller). Today, McCord serves as the director of Civil-Military Programs at the Stennis Center for Public Service, a legislative branch organization devoted to promoting public service and enhancing the leadership skills of congressional staff. He also serves as an adjunct research staff member at the Institute for Defense Analyses, with a focus on defense management, cost, and acquisition policy issues, and analysis of the implementation of the National Defense Strategy.

“We’re delighted to welcome these three highly qualified individuals to the board,” said Michael B. Donley, chairman of the Board of Trustees. “Their addition will shape our strategic perspective and ensures Aerospace will remain the nation’s trusted partner for solving the hardest problems in space.”

Aerospace’s Board of Trustees have a myriad of backgrounds, representing academic and scientific institutions, and public and government interests, which bring these points of view to the corporation’s activities. With more than half of the board’s 18 members being women and people of color, the company is committed to increasing diverse representation within all levels of the corporation.

ABOUT THE AEROSPACE CORPORATION

The Aerospace Corporation is a national nonprofit corporation that operates a federally funded research and development center and has approximately 4,000 employees nationwide. With major locations in El Segundo, Calif.; Albuquerque, N.M.; Colorado Springs, Colo.; and Washington, D.C., Aerospace addresses complex problems with agility, innovation, and objective technical leadership across the space enterprise and other areas of national significance. For more information, visit www.aerospace.org. Follow us on Twitter: @AerospaceCorp.

Aerospace Team Earns Top Honors for Biology-Inspired Algorithm

September 16, 2020

Designing a satellite constellation is a mind-bogglingly complex game of tradeoffs. Mission planners must weigh objectives such as lifespan and coverage against constraints like cost and scheduling, all while contending with the physics of space. Add ever-changing threats and orbital congestion to the equation and the problem can become difficult beyond human comprehension.

Fortunately, Aerospace sits at the forefront of a field known as evolutionary computation, which holds the key to assessing numerous conflicting tradeoffs in constellation design. In collaboration with researchers from Cornell University and the University of California, Davis, an Aerospace team earned a gold medal in the 2020 Humie Awards, which recognize advances in genetic and evolutionary computation that yield human-competitive results. Among the winners from Aerospace were Dr. Matthew Ferringer, William Whittecar and Marc DiPrinzio in the Systems Engineering Division, as well as Systems Director Dr. Lake Singh in the Imagery Programs Division.

The group's winning algorithm provides a set of solutions to a much-debated theoretical issue in the space community: the global coverage problem. The findings, published in the prestigious *Nature* family of journals, could lower the barrier to orbit for emerging nations, enabling greater access to space-based services.

Maintaining continuous, complete satellite coverage of the Earth was first achieved with five satellites in 1970 with a design known as the Walker Constellation. A later method, the Draim Constellation, was developed using an elegant geometric proof and provides global coverage with four satellites. This configuration has never been attempted, however, because of weak, perturbing forces ranging from solar radiation to the gravity of Jupiter. Fighting these forces would be prohibitively expensive, making the design impractical.

"As soon as you want to do anything real, these constellations break down," said Dr. Matthew Ferringer, Associate General Manager of the Systems Engineering Division. "The Draim Constellation rips itself apart unless you use a large amount of propellant."

While machine learning has shown that it can outperform humans in other applications, the Aerospace team is looking to leverage the advantages of algorithmic artificial intelligence for designing satellite constellation. Ferringer's research team utilized an evolutionary algorithm, which mimics the process of natural selection, to search for the optimal set of conditions for a four-satellite constellation. The perturbing forces, they discovered, could counteract each other while the system maintains near-total coverage.

"To minimize the required satellites for global coverage, we found special initial positions where the constellation could do a kind of dance," Ferringer said. "The perturbing forces act in harmony and the satellites use less propellant."

The Humie award is the latest achievement for a body of work in evolutionary algorithms spanning two decades at Aerospace. The team won the 2013 Aerospace President's Award and the 2019 Shaping the Future Award for supporting geospatial intelligence.

The proposed designs could lead to longer lasting, more economically viable satellite services for companies and countries that could not afford them otherwise. Industries such as telecommunications, navigation and remote sensing could all benefit in the process.

"As you build space infrastructure, the number of vehicles is a major cost driver. By minimizing that number, we're trying to reduce the acquisition cost," Singh said. "The other driver is vehicle capability. If you have a constellation like Draim that has four satellites but your maintenance requirements constrain your capabilities, you still haven't solved the problem. We found solutions which reduce those onerous constraints."

Ultimately, the algorithm represents not merely a single solution, but rather a massive-scale cost-benefit analysis that weighs a variety of conflicting factors in constellation design. To Ferringer and his collaborators, the goal is to arm mission planners with a decision-making tool that enables them to reach their own optimal solutions.

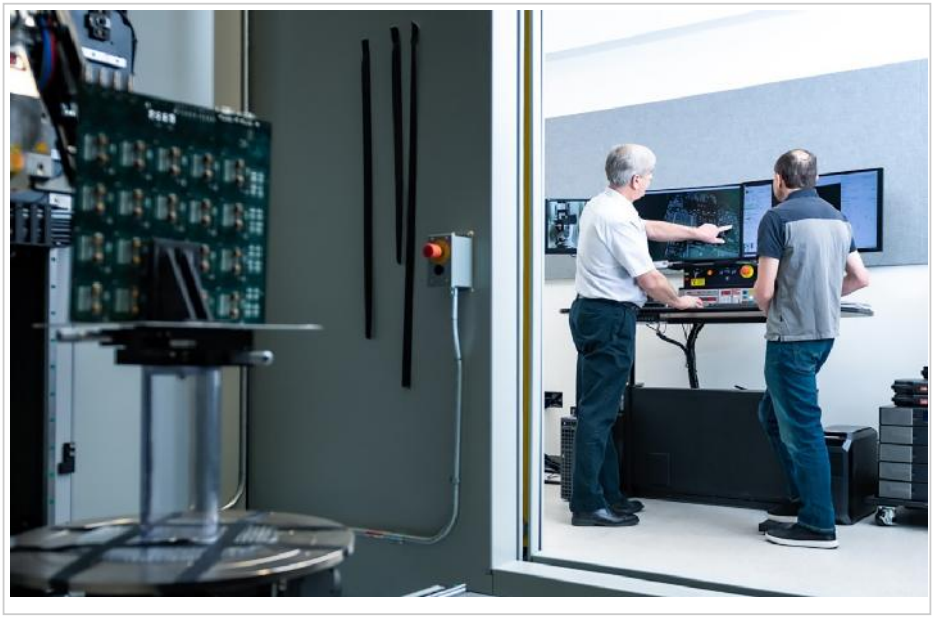
"Aerospace is a special kind of place that gives the staff the flexibility to be very creative," Ferringer said.

"We have over 12 patents associated with the process, but patents are as good as firewood if you don't have something tangible to make an impact with. The currency with our customers is the impact we have on their missions."

*Read the article "**How Algorithmic Darwinism Is Propelling Space Evolution**" on Aerospace.org to learn more about the team's work on evolutionary computation and constellation design.*

Aerospace's CT Scanning Lab Uses X-Rays to Solve the Hardest Problems

September 16, 2020

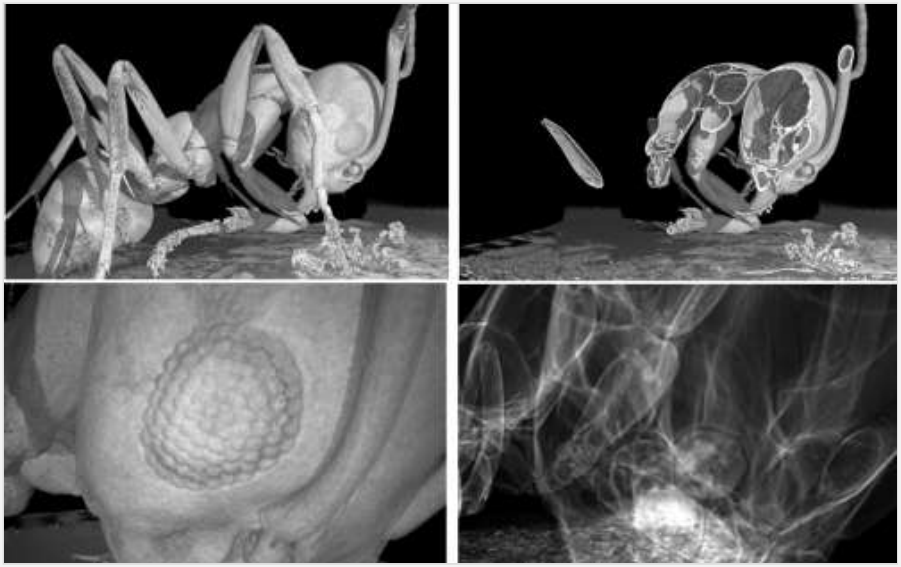


The typical satellite goes through careful planning, rigorous engineering and extensive testing before being launched to space. But even with those measures, sometimes the tiniest, unseen flaws — whether a bad connector or a broken circuit board — can lead to catastrophic failure on orbit.

At The Aerospace Corporation, a team of experts in the computed tomography scanning laboratory are at the forefront of using X-rays to peer deep inside space systems and their components in search of those flaws.

This year, the scientists have been using a newly installed CT scanner that's six times larger than the lab's previous scanners, unlocking a host of new capabilities.

"This new CT scanner is a great addition to Aerospace's state-of-the-art laboratories, providing critical data to ensure the success of our space systems," said Dr. Tim Graves, General Manager for Aerospace's Physical Sciences Laboratories. "Developed over nearly three decades, the deep scientific insight and expertise gained from using X-rays to conduct scientific investigations and evaluate issues for challenging cases remain unmatched in the industry."



The technology is most often used in root cause failure analyses to identify what went wrong, whether in a valve, a battery, cable, antenna or any number of other components that make up a satellite or spacecraft. Other potential uses range widely, from analyzing a part before and after testing to taking precise measurements of internal dimensions and clearances of a part.

Using X-rays allows scientists to look inside a part or system without having to physically alter it, an important tool in non-destructive testing that prevents unwanted damage to a part or the potential loss of critical data about what led to a failure.

The new scanner allows for analysis of large or unwieldy parts, while offering a higher level of power to see more clearly into the densest items. Its larger size complements two existing scanners in Aerospace's lab designed to image objects on nano- and microscopic scales.

"It provides opportunities to look at things we couldn't before," said Senior Scientist Neil Ives. "In the past, we've turned away things that we couldn't get into our cabinet or that didn't fall within the field of the detectors."

*Read the **full article about the X-ray capabilities** of Aerospace's Physical Sciences Laboratories.*

AAPAA Recognizes Excellence With 2020 Dr. Alexander C. Liang Award

September 04, 2020

Vincent Kong in 2013 speaking at the AAPAA Heritage Festival.

On Thursday, September 3, Vincent Kong was honored with The Dr. Alexander C. Liang Asian Pacific American Achievement Award for his outstanding professional achievements and contributions to The Aerospace Corporation. Sponsored by the Aerospace Asian Pacific American Association (AAPAA), the award honors the memory of Dr. Liang, an exceptional Aerospace engineer and manager, by recognizing

Asian American employees who have made significant individual achievements and contributions to the corporate mission and the community.

In a departure from previous ceremonies, the event was held virtually via Zoom due to COVID-related safety considerations. AAPAA President Jake Singh was the Master of Ceremonies, providing the introductory address, while AAPAA Executive Sponsor Dr. Malina Hills provided the welcome remarks. The award ceremony featured a keynote speech from Dr. Wayne Goodman, Executive Vice President of The Aerospace Corporation. Dr. Liang's daughter, Allyson Weston, and granddaughter, Maryn Macha were also in attendance.

In acknowledgment of a year marked by racial and civil unrest, Goodman's speech informed attendees that Dr. Liang's values, vision, and tireless championing of Aerospace's Asian and Pacific American employees remain as timely as ever, especially as our country continues to grapple with its legacy of racial inequality and discrimination.

“Asian and Pacific Americans have their own unique experiences with racism and discrimination in this country that are important to recognize and address. The challenges these communities have faced are tied to the systemic racism that affects all people of color in our country, and it will take efforts from all of us to make progress toward a more equitable and inclusive future,” Goodman said. “This summer has been a powerful reminder that our individual freedoms are bound up with the freedoms of our fellow countrymen and women…We plan to take the same long-term, focused approach to making our company more diverse, equitable, and inclusive for our workforce, by building on existing efforts and launching new initiatives spurred by the calls to action that are reverberating through our country right now.”

In her speech, Hills evoked the words of poet Robert Frost, recalling that Dr. Liang “was not just a teacher, but also an awakener… We also knew him in many different Aerospace roles as a mentor, engineer, leader, and advocate for diversity.”

In his acceptance speech, Kong referenced the implications of enterprise integration and engineering upon the workplace and personnel.

“One of the themes I want to express a little on is the theme of working together and togetherness. We are in really challenging times, with the political landscape the way it is and the unrest in society. I want to take that theme and extend it to our work here at The Aerospace Corporation,” Kong said.

He went on to elaborate, “Everywhere we hear of ‘enterprise.’ How do we do enterprise integration, enterprise engineering? What that means is we must to work together, share information. To do that successfully, departments and individuals, need to share and be open and transparent with their work. Like the *Lego* movie, we can’t all be master builders anymore. We need to be team players. It’s not an us versus them mentality. We have to work together as one Aerospace. We can only succeed if we work together. I hope this is a motivating time for everyone to be respectful and look at their work with a more enterprise approach.”

Kong, a Systems Director of Enterprise Mission Systems, joined Aerospace in 2007. He began his Aerospace career in the Systems Engineering Division where he was tasked with building the Space Tracking and Surveillance System (STSS) Data Analysis Center (SDAC) team. Overcoming numerous obstacles, Kong led a multi-generational team from several ETG divisions to successfully establish initial operational capability in less than a year, accomplishing key programmatic objectives in the process. For his efforts, he received a Team of the Quarter Award from the Missile Defense Systems Group (MDSG). He was also recognized corporately with an SED Team Award in 2010.

Since then, he’s held positions of increasing responsibility in ETG, SSG, DSG, and NSG, supporting SMC and NRO programs. Kong’s proven technical expertise has established him as a trusted partner relied upon by his customers for honest, impartial assessments. In addition to leading ETG teams, he has also applied his skillset to ensuring that program offices and ETG were effectively teamed to optimize their work with customers, contractors, ETG, SETA, UARC, and other FFRDCs, in multiple geographic locations.

As the SBSS Follow on Systems Engineering, Integration and Test Technical Lead, Kong provided technical leadership in the development of the request for proposal (RFP) package for the Air Force. He received a Team Award in 2015 for providing technical and programmatic solutions covering ground systems, systems engineering, integration and test, cybersecurity, and the space segment, which successfully enabled the program to meet key acquisition milestones.

A strong advocate of mentoring, Kong has recently mentored three Aerospace MTS who have since been promoted to jobs in various programs. His continued mentoring has helped these employees navigate their transition to the program office, understand inter-office dynamics, and cope with the accelerated pace of the program office environment. He has also mentored Air Force Lieutenants, Captains and Majors to develop their interpersonal and task prioritization skills, and ability to work with outside entities in preparation for future leadership roles.

A UC Riverside graduate, Kong devotes his time outside of Aerospace to soccer. In addition to playing on the SMC/SP and SMC/ECX soccer teams, he has played for a variety of soccer leagues in Los Angeles' South Bay. He also enjoys coaching competitive youth soccer teams. Kong is a big comic book fan and owns over 300 Dr. Strange, Shang Chi and Incredible Hulk comic books.

Singh presented the award virtually to Kong. In lieu of a customary luncheon, DoorDash credit was provided to the award nominator and award winner.

September 2020 Obituaries

September 01, 2020

Sincere sympathy is extended to the families of:

- **William Bishop,** member of technical staff, hired May 7, 1974, retired Nov. 1, 2000, died Aug. 27, 2020
- **Richard Denno,** member of technical staff, hired Aug. 4, 1979, retired June 1, 1995, died July 30, 2020
- **Samuel Downs,** member of technical staff, hired Feb. 5, 2001, retired Aug. 1, 2020, died Aug. 19, 2020
- **Leroy Drake,** member of technical staff, hired Sept. 16, 1986, retired Oct. 1, 1996, died Aug. 2, 2020
- **Terry Olson,** office of technical support, hired April 5, 1982, retired Aug. 1, 2011, died Aug. 21, 2020
- **Wallis Grabowsky,** member of technical staff, hired Sept. 19, 1960, retired April 1, 1989, died July 19, 2020
- **Linda Muhl,** office of technical support, hired March 2, 1970, retired March 1, 2012, died July 10, 2020
- **Robert Purvis,** member of technical staff, hired Sept. 16, 1971, retired March 1, 1998, died June 17, 2020
- **Michael Rocha,** member of technical staff, hired Oct. 6, 1975, retired Feb. 1, 2015, died June 19, 2020
- **Brady Shroyer,** office of technical support, hired Feb. 8, 1998, retired Oct. 1, 2008, died Aug. 14, 2020

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

These articles are reprinted from The Orbiter, a publication of The Aerospace Corporation 2310 E. El Segundo Blvd., El Segundo, CA 90245-4691 310-336-5000
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