

## Aerospace Lauded for STEM Workforce Diversity

by **Conor Shine**

December 26, 2019

The Aerospace Corporation was [recognized as a top employer](#) for STEM workforce diversity by *Workforce Diversity for Engineering & IT Professionals* magazine, joining the likes of Google, Amazon and Toyota Motor Corporation.

Aerospace ranked 11<sup>th</sup> among 50 top employers by the magazine's readers, who were asked which companies they'd most like to work for or believe would provide a positive working environment for members of minority groups.

Topping the list were Google, Lockheed Martin, Amazon and IBM, with Aerospace ranking just ahead of Ford Motor Company, the Coca-Cola Company and 3M. It's the [second year in a row](#) Aerospace has been recognized by the magazine.

Aerospace consistently outpaces industry benchmarks for the percentage of women and people of color in our workforce.

The company sponsors eight Employee Resource Groups that support a number of initiatives — from professional development workshops to networking activities — to build a more inclusive and supportive work environment for employees. The Aerospace Diversity Action Committee provides a forum for leaders of these groups and other senior company executives to make recommendations for Diversity and Inclusion program objectives and discuss other workplace-related diversity issues.

The Aerospace Executive Diversity Council, chaired by CEO Steve Isakowitz, was launched in 2017 to assist in creating the corporation's diversity and inclusion goals and to foster a stronger, more diverse workplace.

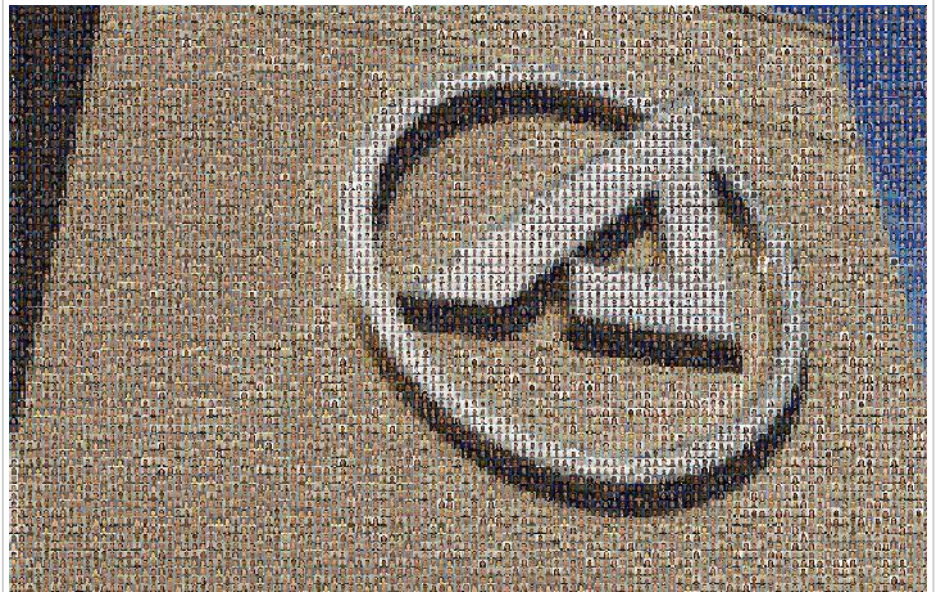
### Isakowitz Reinforces Importance of Diversity at All Hands

During December's Corporate All Hands meeting, Isakowitz reinforced the importance of recruiting and retaining a diverse workforce, especially as the company aims to hire 600 new employees in the current fiscal year.

"There is no doubt that organizations are stronger when you have a highly diverse workforce," Isakowitz said during the December Event. "Organizations are more innovative at the end of the day when you have people from different parts of the country, different backgrounds, different experiences at the table expressing views."

Isakowitz said the company is committed to goals around diversity in the makeup of the leadership team, management team, technical team and early-career hires, along with addressing feedback from Pulse surveys.

Founded in 1994, *Workforce Diversity for Engineering & IT Professionals* is an industry-leading publication for the "professional, diversified high-tech workforce," reaching engineering and information technology graduate students and professionals across the



A mosaic image of Aerospace employees

country.

Aerospace was [previously recognized](#) by *Forbes* as one of “America’s Best Employers for Diversity” in 2019 based on a survey of 50,000 Americans working for companies with at least 1,000 employees.

# Press Release: Aerospace Elects Three Members to Board of Trustees

December 23, 2019

**EL SEGUNDO, Calif., Dec. 23, 2019** – The Aerospace Corporation (Aerospace) has elected three leaders to its Board of Trustees with experience in sectors that span the space enterprise. Former vice chairman of the Joint Chiefs of Staff Gen. Paul J. Selva, USAF (Ret.); former Department of Defense official the Honorable Kathleen H. Hicks; and MIT professor and former NASA official the Honorable Dava J. Newman were elected Dec. 11.

“Aerospace does the vital work of helping our nation chart the future in space, particularly in this period of rapid growth and emerging threats,” said Steve Isakowitz, Aerospace president and CEO. “Our new board members bring invaluable expertise, knowledge, and judgment to the efforts of our organization and the entire space enterprise.”



*Former vice chairman of the Joint Chiefs of Staff Gen. Paul J. Selva*



*MIT professor and former NASA official the Honorable Dava J. Newman*



*Former Department of Defense official the Honorable Kathleen H. Hicks*

Gen. Selva served as the 10th vice chairman of the Joint Chiefs of Staff, the nation’s second highest-ranking military officer. Prior to this assignment, he served as commander of United States Transportation Command, responsible for overseeing all global air, land, and sea transportation systems for the entire Department of Defense. Prior to that, he was commander of Air Mobility Command. Gen. Selva’s distinguished career in the Air Force spanned 39 years and numerous positions in staff, leadership, and command in nearly every operational tier of the Air Force.

Dr. Hicks is currently senior vice president, Henry A. Kissinger chair, and director of the International Security Program at the Center for Strategic and International Studies (CSIS). She previously served within the Department of Defense as principal deputy under secretary of defense for policy, as well as deputy under secretary of defense for strategy, plans, and forces. A frequent writer and lecturer on topics ranging from geopolitics to national security and defense, Dr. Hicks also led the development of the 2012 Defense Strategic Guidance and the 2010 Quadrennial Defense Review.

Dr. Newman is the Apollo Program professor in the Department of Aeronautics and Astronautics and Engineering Systems at the Massachusetts Institute of Technology (MIT), as well as an affiliate faculty in the Harvard-MIT Health, Sciences, and Technology Program, and a MacVicar faculty Fellow. Prior to this position, she served as NASA deputy administrator from May 2015 to Jan. 2017. She made a significant impact by developing and articulating the Human Journey to Mars plan, highlighting scientific missions, advocating for transformative aeronautics capabilities, developing and implementing a strategic innovation framework, and advocating for diversity and inclusion for NASA and the nation’s STEM initiatives.

Outgoing trustees include Mr. Alan C. Wade, Dr. Daniel E. Hastings, Dr. John J. Tracy, the Honorable Keith R. Hall, Dr. Charles Elachi, and Aerospace vice chairman Gen. William L. Shelton, USAF (Ret.). The Honorable Stephanie O’Sullivan has replaced Shelton as vice chairman. Ms. O’Sullivan is the former principal deputy director of National Intelligence in the Office of the Director of National Intelligence (ODNI).

Aerospace’s Board of Trustees varies between 12 to 22 members that represent academic and scientific institutions, public, and governmental interests related to the corporation’s projects.

## 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. With major locations in El Segundo, Calif., 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](http://www.aerospace.org). Follow us on Twitter: [@AerospaceCorp](https://twitter.com/AerospaceCorp).

# Press Release: New Senior VP for Engineering and Technology Group

December 19, 2019

EL SEGUNDO, Calif., Dec. 19, 2019 – To proactively address the expanding and evolving United States space enterprise, The Aerospace Corporation (Aerospace) has selected Aerospace Corporate Chief Engineer Todd Nygren to serve as senior vice president (SVP) for the Engineering and Technology (ETG) Group.

In this role, Nygren will assume leadership of the world-class engineers and scientists who are addressing the nation's hardest problems in space.

“At this time of great change in the space enterprise, Todd's deep knowledge of the space domain and proven leadership in developing new strategies with our customers and industry partners make him the perfect person for this role,” said Steve Isakowitz, Aerospace president and CEO. “Todd will bring a laser-like focus on our ability to respond quickly to our customers with innovative solutions.”

Nygren will lead Aerospace's Engineering and Technology Group, which comprises about 1,500 engineers and scientists making up nearly half the company's technical staff. ETG employees bring their deep knowledge of this nation's space systems to their work of innovating technologies, architecting new solutions, and discovering breakthroughs in areas such as materials, optics, and artificial intelligence in Aerospace's state-of-the-art labs.

In his more than 30 years at Aerospace, Nygren has worked in ETG and across multiple program offices at Aerospace in various roles, including principal director for the Advanced EHF program in the Milsatcom division, Advanced Planning, and general manager for the Systems Engineering Division. Recently, while serving as general manager and corporate chief engineer, he was a focal point for the team that developed innovative strategies to address emerging threats to national security space and helped stand up Aerospace leadership for the portfolio architect as part of the Space and Missiles Systems Center 2.0 initiative.

Nygren joined Aerospace as a summer hire in 1985 and became a member of the technical staff in 1987, supporting military mission planning on the Space Transportation System for the Space Test Program. He earned a bachelor's degree in mathematics from Bethel College and a master's degree in system architecting and engineering from the University of Southern California.

To ensure a successful leadership transition, Nygren will become vice president of special studies Jan. 1, 2019. He will report into current SVP ETG, Dr. Chuck Gustafson. On April 1, Nygren will assume the role of SVP of ETG as Gustafson transitions to lead the Office of the Chief Velocity Officer (OCVO) until his retirement in December of 2020. Dr. Willie Krenz retires as CVO on March 31, 2020.

## ABOUT THE AEROSPACE CORPORATION

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# 2019 Annual Report Now Available Online!

December 16,  
2019

The FY19 Annual Report, *A Year in Growth*, recounts The Aerospace Corporation's continuing national security launch successes and demand for its singular expertise and thought leadership, while also spotlighting new Aerospace initiatives to foster next-generation satellite development and meet the demand for rapid innovation required by the nation's space enterprise.

You'll notice that, in a departure from previous Annual Reports, *A Year in Growth* is exclusively available online (desktop and mobile-friendly). This digital experience is designed to enhance usability and readability, allowing for more graphics and animations to help tell the story of Aerospace's achievements throughout 2019.

[Access the full 2019 Annual Report here.](#)



# The Future of Air and Space Forces: 2019 West Coast Aerospace Forum

December 12, 2019

More than 300 industry, government, media, and academic leaders gathered at RAND Corporation headquarters for the fifth annual West Coast Aerospace Forum in Santa Monica, Calif. last week.

This year's Forum, themed "An Air and Space Force Designed for the Future," offered attendees an opportunity to engage with some of the Air Force's most senior and experienced leaders as well as top civilian national security experts in a setting. The Aerospace Corporation co-sponsored the event along with the Center for Strategic and International Studies, The Mitchell Institute, The MITRE Corporation, and RAND.

Aerospace's Dr. Jaime Morin, vice president of Defense Systems Operations and executive director of Center for Space Policy and Strategy, moderated a panel discussion about "creating a successful space service." Panelists, which included Lt. Gen. John Thompson, the commander of the Space and Missile Systems Center, Margaux Hoar, the research program director of the organizations roles and missions program at CNA, Lt. Gen. David Thompson, the vice commander of Air Force Space Command, and Maj. Gen. Clint Crosier, the director of the Space Force Planning Task Force, discussed the prospective of the new military service, Space Force, and how it fits among established branches and what significant steps need to occur to turn the potential of this vector into reality.

"The world has changed — space is now a war-fighting domain," said Maj. Gen. Crosier. "We have to address adversary activity in the space domain. If we are not in a position to protect and defend, then we are in a position of vulnerability."

Lt. Gen. John Thompson added: "It is imperative to strengthen that bond between space acquisition and operations."

With the pending 2020 National Defense Authorization Act awaiting a final congressional vote as early as this week, the discussion of a new military space service, under Title 10 of federal law under the Air Force, was a timely and lively discussion.

Other Forum panel topics included 21st-century deterrence, power projection, and peer competition. Descriptions and speaker bios are available at [the event website](#).



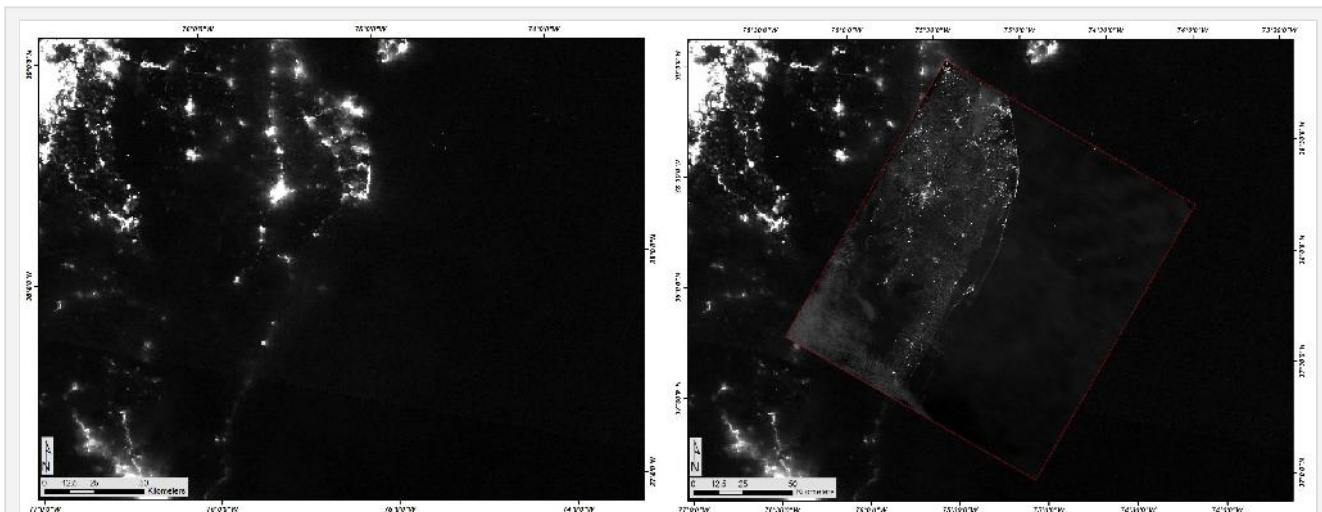
# Press Release: Novel Camera Gives Scientists “Night Vision” From ISS

December 09,  
2019

**EL SEGUNDO, Calif., Dec. 9, 2019** – Scientists from The Aerospace Corporation (Aerospace) are using a camera they have developed and deployed on the International Space Station (ISS) to capture unique high-contrast, nighttime images.

The Near Infrared Airglow Camera (NIRAC) uses an Aerospace-patented orbital motion compensation system to take long-exposure, smear-free images at night. Motion compensation from a fast-moving, low Earth orbiting platform can be difficult, but NIRAC’s custom optical system enables imaging at a spatial resolution of 80 meters, even as the ISS travels more than 10 kilometers during the camera’s 1.5-second image exposure time.

Images are captured when no light is visible from the sun or moon by using airglow, which originates from a thin atmospheric layer near 85 kilometers in altitude, as a source of illumination. NIRAC’s Earth surface imagery covers a 160-kilometer-wide field of view every 10 seconds, producing detailed pictures of terrain features, city lights, clouds, roads, and lakes. Long exposure times enabled by its motion-compensation system further enhance NIRAC’s imaging capabilities over that of current polar-orbiting satellites.



*(Left) The Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the N-20 satellite captures a nighttime image of Wallops Island, Virginia. Photo Credit: National Oceanic and Atmospheric Administration’s Suomi National Polar-Orbiting Partnership day-night band sensor*  
*(Right) Highlighted in the red square, NIRAC’s nighttime image of Wallops Island, Virginia, demonstrates its higher spatial resolution (x10) and sensitivity (x100) as compared to the VIIRS day-night band imagery. (Google map coordinates: 38 latitude and -75 longitude). Faint ripple-like variations seen across the image are waves in the airglow layer similar to ripples on a pond. Photo Credit: The Aerospace Corporation*

“We’re using airglow as a natural flashlight for illumination and experimenting with an infrared wavelength band that isn’t typically used for nighttime Earth imagery,” said Dr. Lynette Gelinis, one of the principal investigators for NIRAC. “We will also use NIRAC to study airglow itself, as airglow brightness varies over the course of the night and responds to changes in lower-atmospheric weather.”

NIRAC employs a state-of-the-art focal plane array, similar to the one being flown on the James Webb Space Telescope, which provides the sensitivity needed to take full advantage of the novel optical system.

“NIRAC is a pathfinder for developing new instruments and applications,” said Gelinis. She notes the camera offers “a spaceflight demonstration of a highly capable, compact, and cooled infrared camera assembly.”

Aerospace scientists are already using these images to observe weather systems at night and explore potential applications related to disaster monitoring for fires, floods, and winter storms. Observations from NIRAC are enhancing scientists’ understanding of the Earth’s atmosphere near the edge of space, including the effects of atmospheric processes on space weather. NIRAC, which launched on May 4, 2019, as part of the Department of Defense Space Test Program, also has other space-based imagery applications, including astronomy.

[Watch the video on NIRAC here.](#)

# Gazing at the Skies with Monocle

December 04, 2019



*The Monocle team includes Gabrielle Mehta, Sean Maguire and Matthew Britton.*

Telescopes have long been one of our most powerful tools for observing satellites, stars and other celestial objects passing overhead.

But they're also among our most sensitive.

"They're fragile and finicky. You have to open domes up to allow the optics to look out, which allows contaminants to get in... You have to have a facility with power and ethernet, and at least one human there to run it all the time. That's very expensive," said Matthew Britton, Director of the Integrated Sensor Design and Analysis Department at The Aerospace Corporation. "It's always been a problem to manufacture multiple units. Each one is kind of a one-off item."

With the potential for tens of thousands of new satellites to be launched in the coming years as low-earth orbit constellations take shape and new launch vehicles make space more accessible, ground systems will have to evolve to keep pace with increased demands for tracking and communication capabilities.

Enter Monocle.

The trash can-sized device designed by Britton and a team of Aerospace engineers presents a new way of thinking about telescopes, offering a glimpse of a possible future where mass-production and resilient design transform how we monitor the skies above.

Read more about Monocle [here](#).



*The Monocle prototype features a dome enclosure that protects the optics from outside elements.*



# December 2019 Obituaries

December 01, 2019

*Sincere sympathy is extended to the families of:*

**Emil Arzoo**, member of technical staff, hired Jan. 21, 1985, retired Dec. 1, 1990, died Oct. 21, 2019  
**Walter Brewer Jr.**, member of technical staff, hired Feb. 6, 1961, retired Feb. 1, 1979, died Nov. 27, 2019  
**Seth Burgess**, member of administrative staff, hired Jan. 15, 1962, retired Aug. 1, 1980, died Oct. 23, 2019  
**Jacqueline Campeau**, office of technical support, hired Oct. 29, 2001, retired Dec. 1, 2015, died Nov. 11, 2019  
**Jason Capps**, member of technical staff, hired Oct. 29, 1962, retired Feb. 1, 1983, died Oct. 26, 2019  
**Daniel Kazarian**, member of technical staff, hired Jan. 6, 1961, retired Nov. 1, 1991, died Nov. 19, 2019  
**William D. Hanna**, member of technical staff, hired Aug. 6, 1970, retired March 1, 1998, died Nov. 6, 2019  
**Richard Kiesel**, member of technical staff, hired March 27, 1978, retired June 1, 2012, died Sept. 20, 2019

*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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