Orbiter
February 2019

Michelle Carter Honored With Herndon Award

by **Lindsay Chaney**
February 26, 2019

Michelle Carter, a senior project engineer in the Space Superiority Division, is the 2019 winner of the Robert H. Herndon Black Image Award.

She received the award during a presentation in El Segundo on Monday, Feb. 25.

Carter was recognized for a long list of professional achievements, as well her participation and leadership in Aerospace groups such as the Aerospace Women's Committee (AWC), the Aerospace Black Caucus, and various mentoring and STEM outreach activities.

In accepting the award, which was presented by President and CEO Steve Isakowitz, Carter acknowledged the various people who had encouraged and mentored her during her Aerospace career. She also thanked her family and offered advice to her children: "As long as you aim high, you will always reach the stars."

Michelle Carter is the 2019 winner of the Robert H. Herndon Black Image Award. (Photo: Elisa Haber)

Sonia Henry, who nominated Carter for the award, provided background on Carter's upbringing and her many professional accomplishments and recognitions and volunteer activities. Most of the corporate officers attended the program, as did Jessica Herndon, granddaughter of Robert H. Herndon.

Jessica Herndon greets Steve Isakowitz. (Photo: Elisa Haber)

Carter first joined The Aerospace Corporation in 1995 and provided technical support until 1999, when she took a position at the State of California Court of Appeals as a senior systems administrator. Over the course of her five-year tenure with the State of California, she managed the court's Wide Area Network (WAN) and Local Area Network (LAN) for more than 75 users, and managed projects for new systems integrations and new software and hardware rollouts.

In 2004, Carter returned to Aerospace as a member of the technical staff in the Software Systems Analysis Department in the Computers and Software Division (CSD). She later advanced to engineering specialist and project leader positions in the Software Systems Assurance Department (SSAD) in another subdivision within CSD. In 2014, Carter completed a rotation assignment with the Military Global Positioning System (GPS) User Equipment (MGUE) Program Office. She was promoted to engineering manager in SSAD in 2015, and advanced to senior engineering specialist in the Systems Engineering Division in 2017. She recently transferred to the Mission C2 program office in Space Superiority Division as a senior project engineer.

The Robert H. Herndon Image Award was created in 1982 to honor the memory of Robert H. Herndon, an extraordinary Aerospace engineer and manager. The award recognizes African American employees who exemplify professional and humanitarian qualities at the individual, corporate, and community levels.

The Aerospace Black Caucus (ABC)-sponsored celebration of African American History Month will continue on Thursday with the annual jazz brunch, featuring the Da'Breeze Jazz Band. Ticket pricing and further information is available at the ABC website: http://pages.aero.org/abc

Press Release: Urgent Space Development Responds to Past Acquisition Reforms

February 28, 2019

EL SEGUNDO, Calif., Feb. 27, 2019 – Decisionmakers urgently developing new space systems acquisition plans to help protect U.S. interests can benefit from insight into decades of defense and space acquisition reforms and best practices. This invaluable insight is thoroughly examined in Acquisition Reform Regimes on Their Own Terms: Context, Mechanisms, Effects, and Space Program Impact, a new report released today from The Aerospace Corporation's Center for Space Policy and Strategy (CSPS).

"Understanding why changes were made in previous defense and space acquisition programs is key to guiding new discussions to field rapid capability and flexibility for acquiring new space systems," said Rosalind Lewis, principal director of Aerospace's Acquisition Analysis and Planning Subdivision and co-author of the CSPS report.

Significant recent developments affecting space acquisition include a call in the Fiscal Year 2018 National Defense Authorization Act (NDAA) to identify a "sole authority" for organizing, training and equipping future space operations. President Trump called for the establishment of a new military branch, the Space Force. The FY19 NDAA asked the Department of Defense (DoD) for a report on how to acquire space systems. This led to a DoD proposal for a new Space Development Agency to ensure that a Space Force would have the personnel, assets and capabilities to support our nation's military interests in space. Finally, on December 18, President Trump ordered the creation of the U.S. Space Command to employ space capabilities and lead space operations.

"This year, we saw numerous government mandates to treat space programs uniquely with more resources," said Jamie Morin, vice president and executive director of CSPS. "We hope that this report provides a good understanding of why acquisition changes need to be made to achieve the critical goal of accelerating our space capabilities."

The CSPS report analyzes the effects of past acquisition reform initiatives that were implemented during six acquisition regimes. Each regime reflected various legislative and regulatory changes, as well as structural changes and initiatives attempted during its time. Each succeeded on its own terms by improving systems and outcomes without having sole responsibility for any specific program.

To learn more, download the CSPS report here.

Aerospace GPS Pioneers in New Documentary

by **Eric Cheevers**
February 25, 2019

SMC Commander Lt. Gen. John Thompson, left, chats with movie director Tom Sylvester, right, and Sylvester's wife, Mary Ellen Sylvester. (Photo: Elisa Haber)

Lt. Gen. John Thompson, left, presents a certificate to GPS pioneer Edward Lassiter. (Photo: Elisa Haber)

Thompson with Aerospace employee and GPS pioneer Karl Kovach. (Photo: Elisa Haber)

Friday, February 22, marked the 41st anniversary of the launch of the first Global Positioning System (GPS) satellite, Navstar 1. To commemorate the event, the Space and Missile Systems Center (SMC) hosted the Los Angeles-area premiere of “The Lonely Halls Meeting,” a new documentary about the creation of GPS and its unsung pioneers. The film, directed by Tom Sylvester, is available for viewing on streaming services.

The SMC event was attended by GPS pioneers, including The Aerospace Corporation’s Edward Lassiter and Karl Kovach, as well as local dignitaries, the local SMC workforce, and STEM students. SMC Commander Lt. Gen. John Thompson was on hand for a ceremony in the Gordon Conference Center prior to the exhibition of the documentary.

The documentary references the launch of Russian satellite Sputnik in 1957, when scientists at MIT noticed an increase in the frequency of radio signals transmitted by Sputnik as it approached, and a decrease in the frequency of those signals as it moved away. This phenomenon, known as the Doppler Effect, led to the observation that satellites could be tracked from the ground by measuring the frequency of the radio signals they emitted. Conversely, the locations of receivers on the ground could be tracked by their distance from those satellites. This notion ultimately became the foundation of modern GPS.

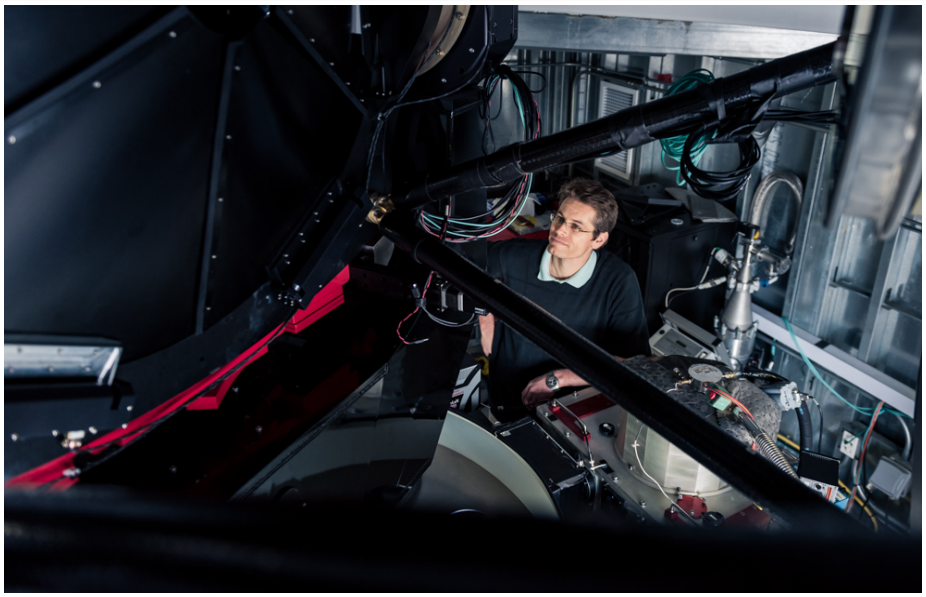
Director Sylvester commented that one of the biggest problems in making the movie was paring down the information he had amassed.

“We had about 30 hours of interviews with various people,” Sylvester said. “We had so many stories we couldn’t fit [them] all in.”

The fact that the handful of GPS pioneers in the room have impacted the lives of billions of people who use and rely on GPS now is “really quite an achievement and something they can look back on and be proud of,” he concluded.

Shining New Light on Space Objects

by **Gabriel A Spera**
February 21, 2019



Dr. Wiktorowicz configures the PHALANX polarimeter for use with Aerotel. (Photo: Jeff Berting)

Thousands of objects are whizzing through space at any given moment. Active satellites make up a small percentage of this high-speed traffic while the rest can be categorized as natural and artificial debris—meteoroids, rocket components, dead spacecraft, and collision byproducts of various shapes and sizes. It's important to have a general sense of all objects in orbit but operators of national security spacecraft are particularly interested in differentiating between space debris and operational satellites. In practice, however, they're not always easy to distinguish.

Currently, U.S. Strategic Command uses a system of radars and optical telescopes—the Space Surveillance Network—to find and track objects in space. When an object is detected, its orbital track is checked against an extensive catalog of known objects to identify it. Although the system has worked well for decades, the proliferation of space objects is placing a greater strain on its resources and increasing the need for faster analysis. Of course, identifying objects traveling thousands of miles an hour through space isn't easy.

Aerospace set out to to enhance the detection and identification of objects on orbit. In particular, researchers are examining whether the polarization of light reflected off an object in space can help determine whether that object is natural or manmade.

Click here to read entire story.

New Executives Join ADAC

February 19, 2019

Two new executive sponsors and four management advisers have joined the Aerospace Diversity Action Committee (ADAC).

ADAC is a corporate committee that provides a forum for the Employee Resource Groups (ERGs), formerly known as Affinity Groups, to collaborate, share ideas, address issues, and ultimately contribute to the corporation's commitment to provide a diverse and inclusive work environment.

The new executive sponsors are Marty Whelan and Jay Santee, who will work with the Aerospace Black Caucus (ABC) and the Aerospace Military Veterans (AMV), respectively.

The new senior management advisers are: Dr. Jim LaPean (Aerospace Totally Adaptable Group); Dr. Shant Kenderian (Aerospace American-Indian and Alaskan-Native Council); Danielle Bernstein (Aerospace Latino Members Association); and Brian Hardt (Aerospace Lambda Alliance).

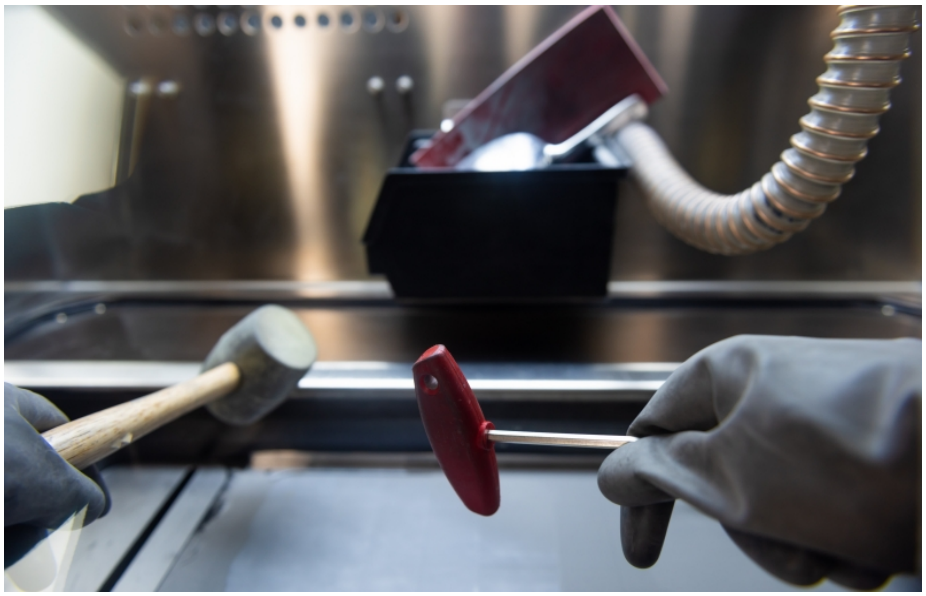
The role of executive sponsors is to be advocates and ambassadors for their ERG, both within and outside of the company, through encouraging other corporate officers to attend events, helping to articulate vision and goals for the ERG that align with corporate strategy, and providing connections to entities outside of Aerospace for obtaining speakers, conference attendance, and so forth.

Senior management advisers provide hands-on guidance and mentorship to their ERG members, including attending events and the monthly ADAC meetings.

For current ADAC members, including executive sponsors and senior management advisers, please click here.

3D Printing is Creating the Future of Space

by **Eric Cheevers**
February 07, 2019



A technician clears off the printing area of a 3D printer. (Photo: Jeff Berting)

Additive manufacturing (also known as AM, or 3D printing) presents tantalizing possibilities for use in space. Engineers hope to one day use the process to print parts, tools and other materials that the aerospace industry has historically relied upon machining and molding to manufacture.

These traditional manufacturing methods require material to be carved or shaped until it resembles the desired product such as a bolt or nut, which can make the creation of certain items difficult or even impossible. In contrast, 3D printing allows parts to be manufactured by adding material in minuscule layers that build up to create a desired shape. This process involves the use of a computer and CAD software, which enable a specialized printer to “print” a specific shape or part.

The durability of these parts depends on the type of material used to print them. An ever-increasing range of plastics, polymers, ceramics, and metals are now available. The Aerospace Corporation is currently targeting two classes of material for use in space: Inconel and Ultem. Click here to read the entire article.

Aerospace Industry Event Aims to Outpace the Threat In Space

February 15, 2019

Kevin Bell (Industry moderator), John Daegele, NGC (panelist); Steve Isakowitz (keynote); Enrico "Rico" Attanacio, Boeing (panelist); Kay Sears, LMC (panelist); Frank Doyle, Ball Aerospace (panelist); Lt. Gen. Thompson, Commander, SMC (keynote); Col. Timothy Sejba, SMC; Col. Wallace "Rhett" Turnbill III, SMC (panelist); Col. Edward Byrne, SMC (panelist); Col. Dennis Bythewood, SMC (government moderator)

An unprecedented group of aerospace leaders from the military and industry gathered at the Aerospace Corporation’s El Segundo headquarters to discuss the growing threat in the U.S. national security space. The Feb. 12 forum included 160 leaders from 19 organizations who took on topics including how to transform the national security space enterprise and ways to streamline military acquisitions and to accelerate innovation.

According to the National Intelligence Strategy and recent reports from the National Air and Space Intelligence Center, the U.S. military and space technologies have seen a rise in adversary espionage which has put information and communication systems at risk. Over the past two decades, the number of foreign reconnaissance and remote sensing satellites has tripled from 100 to 300.

“We must change our acquisition approach to stay ahead of our adversaries in space and to provide more capability for all our warfighters,” said Lt. Gen. John “JT”

Thompson, commander of the U.S. Air Force Space and Missile Systems Center (SMC). “Through continued engagements like this, we can solve these problems together, and address the threats to our nation’s space enterprise.”

The discussion was the first of several in a series of events that Aerospace will hold on this topic. The company will host a similar event in the Washington, D.C., area for members of the industry on Feb. 21. Additional events are planned in the near-term.

At the conclusion of the forum, Col. Dennis Bythewood, SMC Development Corps lead, announced plans to release a Request for Information (RFI) for a “combat” bus that meets military requirements. “We need industry partnerships to help define key interfaces together,” said Bythewood.

The hope is that the industry will help create a new spacecraft bus acquisition approach that can support a number of different modular payloads such as GPS, strategic communications, and missile warning sensors.

“As a federally funded research and development center dedicated to U.S. leadership in space, Aerospace has a unique role in convening the best minds from industry to keep ahead of the threats we know are mounting in space,” said Aerospace president and CEO Steve Isakowitz. “It is vital that the space industry comes together to share our thinking in how to accelerate space capability.”

February 2019 Obituaries

by **Christine T Kato**
February 01, 2019

Sincere sympathy is extended to the families of:

Alice Auck, member of administrative staff, hired March 18, 1963, retired June 1, 1977, died Jan. 28, 2019
John Carney, member of administrative staff, hired April 8, 1986, retired Sept. 1, 1995, died Jan. 1, 2019
Herbert Cohen, member of technical staff, hired July 9, 1962, retired Oct. 1, 1985, died Dec. 27, 2018
Kenneth Easley, member of technical staff, hired July 12, 1976, retired Dec. 1, 2003, died Dec. 2, 2018
Richard Elder, office of technical support, hired May 1, 1989, retired May 1, 2003, died Jan. 6, 2019
Forest Field, member of technical staff, hired Sept. 3, 1963, retired Sept. 1, 1986, died Sept. 27, 2018
Janet Hallett, member of administrative staff, hired May 14, 1962, retired July 1, 1994, died Sept. 20, 2017
Henry Harada, member of administrative staff, hired Oct. 3, 1960, retired Jan. 1, 1993, died Dec. 21, 2018
Mary Higashi, office of technical support, hired March 6, 1971, retired Jan. 1, 1987, died Jan. 16, 2019
Sarunas Karuza, member of technical staff, hired Jan. 28, 1980, retired Jan. 1, 2011, died Jan. 2, 2019
Michael Menn, member of technical staff, hired Aug. 17, 1981, retired June 1, 2012, died Jan. 15, 2019
Donald Moore, member of technical staff, hired Feb. 26, 1968, retired Dec. 1, 1994, died Nov. 29, 2018
Iva Moore, office of technical support, hired June 16, 1963, retired Nov. 1, 1991, died Oct. 6, 2018
John Murdock, member of technical staff, hired March 6, 1967, retired Aug. 1, 2003, died Dec. 10, 2018
Anthony Oates, member of technical staff, hired Aug. 24, 1992, retired Jan. 1, 2003, died Dec. 25, 2018
Robert Perkins, member of administrative staff, hired Sept. 13, 1971, retired March 1, 1998, died Jan. 2, 2019
Samuel Poff, member of technical staff, hired May 21, 2018, died Jan. 22, 2019
Vera Sauve, member of administrative staff, hired June 23, 1997, retired Sept. 1, 2012, died Dec. 29, 2016
Robert Terifay, member of technical staff, hired Aug. 30, 1962, retired Sept. 1, 1984, died Sept. 30, 2018
Velma Voit, member of technical staff, hired Jan. 30, 1961, retired Oct. 1, 1996, died Dec. 30, 2018
Samuel Wheatman, member of technical staff, hired Feb. 4, 1985, retired May 1, 2001, died Jan. 13, 2019

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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