

## CEO All Hands: The Times They Are A-Changin'

by Eric Cheevers  
December 20, 2017

Aerospace President and CEO Steve Isakowitz opened the final corporate all-hands meeting of calendar year 2017 with a rundown of this quarter's mission successes: two national security launches, the GPS-III satellite's availability for launch, shipment approval of SBIRS GEO-3, Falcon 9 fleet surveillance, and certification work on new-entrant launch vehicles such as ULA's Vulcan and Orbital ATK's Next Generation Launch System, among others.

The success of this quarter portends a successful year, as reflected in the company's 99.4% report card score from customers, which was additionally bolstered by more than 2,000 positive comments. While merit increases are not a given every year, Isakowitz reiterated that the board has formally approved merit increases for fiscal year 2018, although merit raises for non-management MTS employees must still be negotiated with their union.

The theme of the all hands was change in the space industry and the need to move faster. There will be challenges ahead. Congress is making changes to the Office of the Undersecretary of Defense for Acquisition, Technology and Logistics, with the primary goal of streamlining and expediting acquisition cycles. Further, the recent passage of the National Defense Authorization Act indicate congressional committees will demand faster, ideally pre-emptive responses from the Department of Defense to changes in the space domain.

Aerospace is ideally suited to helping the DOD and the intelligence community think through their objectives and ensure that their systems are working together. Given the rapidly changing world, Aerospace must adapt and lead in a dynamically changing environment, and the need for new technologies and expedited technology development was further emphasized in a video featuring Gen. John Hyten, head of U.S. Strategic Command. Fortunately, the four corporate imperatives (Shaping the Future, Innovation, Growth, and Velocity) are poised to usher in a new era of expedited technology development and deployment.

Isakowitz also outlined some changes within the Aerospace family, namely the board's promotion of Tammy Choy to vice president and chief information officer, as well as changes to the board of trustees. With regard to the latter, former Secretary of the Air Force Mike Donley and retired Air Force Gen. Willie Shelton are the new chairman and vice chairman respectively, while K. Anne Street has stepped down and Ambassador Barbara Barrett has resigned as board chairman but remains a member of the board.

A recent highlight of this quarter was the visit of United States Secretary of the Air Force Heather Wilson, who spent several hours touring the STARS facility, the A6 labs, and the Exploration, Prototyping, and Innovation Center in A4, and meeting with Aerospace engineers and scientists. Wilson also hosted a special all hands event, where she shared her thoughts on the state of space and its associated challenges.

Aerospace, as always, remains committed to its indispensable staff and has launched several diversity initiatives, among them the Diversity Council, which will expand efforts to promote diversity across the company. In addition, Isakowitz has been granted membership in CEO Action for Diversity and Inclusion, a national pledge in which CEOs commit to undertaking actions to make their



*Aerospace employees packed the Titan IV meeting center for the December corporate all hands hosted by Steve Isakowitz and Wayne Goodman. (Photo: Walt Sturrock)*



*Board of trustees new chairman Mike Donley addressed the corporate all-hands meeting. (Photo: Elisa Haber)*

companies more open and enriched. Aerospace hired 412 new employees in FY17, the largest number of new hires in over 20 years. In an effort to integrate all employees into a common work culture, Isakowitz has launched the One Aerospace initiative and held four CEO New Hire Forums, and will encourage all new hires to attend. Lastly, a forthcoming corporate survey will be launched to gather employee insight and opinions during these changing times.

The corporate all-hands meeting concluded with a tribute to the recipients of the Strategic Imperative Hero award pins during this quarter for Shaping the Future, Innovation, Growth, Velocity, and the CEO 007 pin awarded to an Agile Mission Assurance team.

## Air Force Secretary Heather Wilson Tours Aerospace

by **Lindsay Chaney**  
December 14, 2017

Secretary of the Air Force Heather Wilson took a whirlwind tour of The Aerospace Corporation's El Segundo campus on Thursday, Dec. 14, visiting the STARS Mission Operations Center, A6 laboratories, and the Exploration, Prototyping, and Innovation Center. She also attended classified briefings and concluded with an all-hands briefing to employees.

At the briefing, following an introduction by President and CEO Steve Isakowitz, Wilson thanked and congratulated Aerospace employees on the work being done by the corporation and its historically close relationship with the Air Force.

Her talk centered on the need for the Air Force to innovate and move faster in all areas in order to address emerging threats in space.

"The United States built a glass house before the invention of stones," she said metaphorically. While the challenges in space used to be primarily technical, the challenges now also come from those who would harm the U.S. by attacking its space assets.

"The U.S. Air Force has to change in the face of emerging threats," she said. The first step is space situational awareness, she said, followed by improved command and control, then the creation of effects, meaning the tactics to protect spacecraft, such as using constellations of small satellites instead of single large satellites.

Wilson also discussed the need to move faster in areas such as acquisitions and noted that on many major programs, decision making now has been pushed down to Air Force program managers instead of being done at the Department of Defense level. In one case, this resulted in a request for proposal going out in one week instead of the more typical three months.

In response to a question following her talk, Wilson said she was opposed to creating a separate space corps similar to the Marines or on par with other branches of the military.

There is a need to "integrate and normalize space" across the entire military, Wilson said. "There's not a military operation today that does not rely on space."

In the morning, before arriving at the Aerospace campus, Wilson had toured the Space and Missile Systems Center.

Prior to becoming Air Force secretary earlier this year, Wilson was president of the South Dakota School of Mines and Technology. From 1998 to 2009 she was a member of the U.S. House of Representatives, where she served on the House Armed Services Committee and the House Permanent Select Committee on Intelligence.

A former Air Force officer, she has also served in leadership and management positions with private industry and the government. Following graduation from the U.S. Air Force Academy, she earned master's and doctorate degrees from Oxford University in England as a Rhodes Scholar.



*Dr. Richard Rudy explains the Aerospace telescope on the roof of the A6 laboratories to Secretary of the Air Force Heather Wilson. (Photo: Elisa Haber)*



*Wilson addresses Aerospace employees on the subject of new activity in space. (Photo: Walt Sturrock)*

# Polarized Light Provides Clues to Asteroid Composition

by Kimberly Locke  
December 28, 2017

So what could the polarized light from an asteroid really tell us?

For starters, it can guide NASA scientists when it comes to selecting an asteroid to land on and to investigate its metal content.

Exploring the link between the polarization of light observed from an asteroid and its metal content is Dr. Sloane Wiktorowicz, a member of the technical staff, Remote Sensing Department, Engineering and Technology Group.

Every photon, he explains, is polarized. This refers to the orientation (vertical, horizontal, or in between) of the light wave's vibration in space. Sunlight consists of an equal number of vertically- and horizontally-vibrating photons and is therefore "unpolarized." Sunlight reflecting off a surface, such as an asteroid, will have an excess of photons vibrating with a certain orientation. This light is said to be "polarized," and the excess of photons that are polarized (typically about one percent) depends on the material properties of the surface.

Using an Aerospace-developed sensor attached to a telescope at Lick Observatory near San Jose, California, he carefully and repeatedly observes and tracks the polarization properties of certain asteroids he has identified.

Through the telescope's mirrors, he observes these asteroids and their bright and dark patches at different times during their rotation periods. This effort is being supported by a NASA Solar System Observations grant.

"Asteroids typically make a full rotation every seven or eight hours, which is pretty rapid," he says. "By observing the changes in the polarized light during rotation, you'll identify the pattern of bright and dark patches on a particular asteroid."

He notes that the polarization fraction of visible light from the asteroid depends on whether there is a bright or dark patch in view. Because of the physics of how light scatters off rough surfaces, bright patches have weak polarization, while dark patches are strongly polarized. The fraction of polarized light, he says, changes depending on the number of light or dark spots on the asteroid.

To effectively study the asteroids he has selected, Wiktorowicz is developing a new sensor for Aerospace's telescope mounted atop the corporation's laboratories in El Segundo, California. He also plans to use more powerful telescopes such as Gemini North on the Big Island of Hawaii as well as continuing to use the Lick Observatory, which is owned and operated by the University of California.

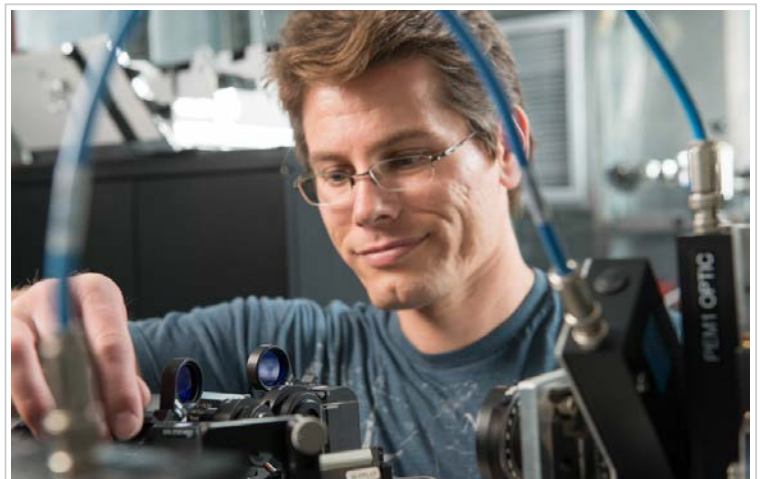
In addition, the presence of surface metals may be detectable based on an asteroid's circular polarization.

"Understanding the link between polarization and surface features, such as composition and metal content, is completely new. Only one asteroid was known to show polarization variations with rotation since the late 1970s, but we've discovered that two others, so far, show this effect," he says.

"When considering whether to land on a particular asteroid, the defining factor may be whether observation indicates that an asteroid has a high metal content," Wiktorowicz adds.

Studying asteroids and their various properties, and in particular their possible metal content, may play a deciding factor in which ones NASA will be inclined to land a rover on for future missions and further study. Another key characteristic in selecting an asteroid for future study, he says, is its size.

The planets and some large asteroids are thought to have formed by billions of years of accretion of rocky material onto their surfaces, according to Wiktorowicz. The high pressure at the core of large bodies causes intense heating, which melts rock and allows heavy metals to descend to the core, he says. Spherical planets and asteroids must have been molten at some point in the



*Dr. Sloane Wiktorowicz has developed a sensor to help study polarized light from asteroids. (Photo: Eric Hamburg)*



past in order to obtain their shape. Thus, metal in large asteroids is expected to be locked up in their cores instead of on their surfaces, he explains.

However, many asteroids are the debris left over from collisions of protoplanets, or planetary embryos still in the process of formation, billions of years ago. These asteroids, pieces of larger bodies, are expected to have their metals spread throughout the entire body. By measuring surface metal content, the formation history of the asteroid may be determined.

Circular polarization, which occurs when light is composed of both vertically and horizontally polarized photons differing in phase by 90 degrees, may highlight metal content and, in these instances, Wiktorowicz says there are three likely scenarios. When there is zero circular polarization during asteroid rotation, this suggests the entire surface has low metal content and that the asteroid may be a fragment originating near the surface of a larger body. When there is constant, high circular polarization during asteroid rotation, this suggests the entire surface has high metal content and that the asteroid may be a fragment originating from near the core of a larger body, according to Wiktorowicz.

Finally, when there is a strong change in the circular polarization during the asteroid's rotation, he says this suggests there are metallic patches on the surface and that the asteroid may be a pristine body formed during the birth of the solar system.

Trying to determine the composition of an asteroid is something he finds both fascinating and fulfilling. "It's what's left over after the planets were formed," says Wiktorowicz. "We are observing points of light in space and wondering if there was a bigger body of magnesium and other materials that were shattered."

NASA is working to find ways of measuring different materials on asteroids, he says. "We're planning to compare the data I'm collecting with in situ observations from space missions. We're working to build confidence in knowing what our data means, which will lead us in a particular direction," he adds.

The work being done at Aerospace will likely contribute to answering the question of which asteroid to visit first.

## Press Release: Aerospace Team Advances in AI Competition

December 11, 2017

### Aerospace's SeedTECH AI advances to second round of \$5M IBM Watson XPRIZE

EL SEGUNDO, Calif. (Dec. 11, 2017) – The Aerospace Corporation's (Aerospace) SeedTECH Artificial Intelligence (AI) team is one of 59 teams out of 147 that are advancing to the second round of the IBM Watson AI XPRIZE – a \$5 million AI and cognitive computing global competition. SeedTECH AI will take on the grand challenge of designing an AI that can dream.

"We're thrilled that Aerospace's all-volunteer team progressed to the second stage of the IBM Watson AI XPRIZE competition," said Dr. Sherrie Zacharius, vice president of Technology and Laboratory Operations and corporate sponsor of Aerospace's SeedTECH community of interest. "The SeedTECH AI team is not the only experts developing AI at Aerospace. Through the iLAB, Aerospace's newly established research and innovation focus, AI and other machine learning techniques are being applied towards challenging problems in national security space and beyond."

Of the 59 teams continuing on to the second round, SeedTECH AI is the only team that will be focusing on artificial general intelligence, which mimicks the reasoning and problem solving skills of a human being.

"We are looking to design a robust AI system that can dream," said Dr. Terence Yeoh, SeedTECH AI team lead. "The AI would take in a limited set of information to make predictions of the most probable—as well as the most beneficial—outcome."

Yeoh added that his team will focus on making major breakthroughs that will benefit the greater good for humanity.

"We are going to focus on changing the 'A' in AI to represent 'Altruistic Intelligence.' There are outcomes that are the most beneficial for all parties involved, but they are often lowprobability. By understanding what is needed for us to get to those long shots, we can tip the scales and influence our systems toward that greater good. We want to utilize AI to show us how to enable that dream that we all have—to benefit all of society, not just a select few."

For example, one of the conceptual applications for the SeedTECH dreaming AI is to employ resourceful algorithms to resolve a complex negotiation between multiple parties—such as a business transaction or international treaty—that results in an optimal agreement that benefits all sides. As Yeoh explained, each side in a negotiation typically acts to negotiate the best outcome for itself at the expense of other parties. However, by working to maximize its own interests, each party not only diminishes the benefits to its negotiating partners, but could cause a stalemate or scuttle any deal's prospects altogether. The SeedTECH dreaming AI would recommend the best set of mutually beneficial solutions to all parties and provide an altruistic framework with universal benefits to all.

The IBM Watson AI XPRIZE is a four-year competition with annual milestone competitions in 2017 and 2018. There will be two subsequent rounds of selection each fall in 2018 and 2019, and the competition will culminate in three finalists participating in the Grand Prize competition on the TED2020 stage in front of a live in-person and online audience. Teams will be judged based on the standards they set in their plans, as well as the performance and scalability of their AI application, with the heaviest weight placed on the potential for solutions to achieve an exponential impact.

A \$3M Grand Prize, \$1M Second Place prize and \$500K Third Place prize will be awarded to the teams that receive the top scores, with the final winner determined based on the results of the live in-person and online audience voting during TED2020. Additionally, \$500k Milestone Prizes will be awarded to 10 teams in 2018 and 2019.

#### **About SeedTECH**

SeedTECH is an after-hours community of interest consisting of employees from The Aerospace Corporation. The team of engineers and scientists volunteer their time to develop technology that is aligned with the company's current and future interests. The SeedTECH AI team brings together the best of Aerospace's interdisciplinary expertise and commitment to technical leadership as the "architect engineers" for its customers. The team is known for surmounting challenges that range from the clandestine to commercial, and apply these unique insights towards greater challenges that define and shape humanity today.

## **Press Release: Survey of Experts on U.S. Space Enterprise**

December 05, 2017

### **Aerospace and Mitchell Institute release new report on policy needs for space operations**

EL SEGUNDO, Calif. (Dec. 5, 2017) – [The Aerospace Corporation's](#) Center for Space Policy and Strategy (CSPS) and the Air Force Association's Mitchell Institute today released the results of a wide-ranging survey highlighting the perceptions and recommendations of more than 30 experts on major areas of concern within the U.S. space enterprise.

The report, *Major Policy Issues in Evolving Global Space Operations*, takes a multi-faceted look at the current state of the space industry and how it might evolve. In particular, the authors examine how future endeavors in space will be shaped by the proliferation of new space entrants and the growing clout of the commercial sector in an increasingly crowded and democratized space domain.

The study covered 11 areas of concern affecting multiple stakeholders, including these key issues: establishing space tracking roles, improving surveillance of small satellites and mitigating orbital debris, enforcing behavioral norms, preparing for proximity operations, addressing foreign counterspace activities, and protecting commercial and foreign assets. The study was conducted between August and November 2017. It presents a diverse range of perspectives, with representatives from domestic and international governmental agencies, universities, research organizations, and commercial ventures.

"We are participants in a fundamental reordering of many tenets and assumptions that have been long-standing attributes of U.S. national space policy and international agreements," said co-author James Vedda, Ph.D., a policy expert with CSPS. "This study highlights expert opinions and recommendations that take this into account and should be considered in the formulation of new policy."

"Senior U.S. officials repeatedly tell us that while space continues to provide support for terrestrial national security activities, it has also become a warfighting domain in its own right," said co-author Peter Hays, Ph.D., adjunct professor at George Washington University. "Expansion in the number and diversity of space operators worldwide may compel greater transparency as the United States strives to build space-capable alliances and maintain trust in its capabilities, reliability, and intentions."

Jamie Morin, vice president and executive director of CSPS, believes the new report will help to build consensus in several key areas. "This focused study identified several areas where expert opinion is beginning to coalesce about how the U.S. and allied nations should adapt to and shape a rapidly changing industry and domain," he said. "We appreciate the participation of so many noted experts in preparing it."

To read *Major Policy Issues in Evolving Global Space Operations* and other publications related to space policy matters, visit [www.aerospace.org/policy](http://www.aerospace.org/policy).

### **About the Center for Space Policy and Strategy**

The Center for Space Policy and Strategy was formed in 2000 to address the need for expert analysis to support development of well-informed, technically defensible, and forward-looking space and technology policy. The center is committed to helping policymakers manage the opportunities and challenges inherent in a time of tremendous change for the overall space enterprise.

# Press Release: Tammy Choy Named VP and CIO

December 21, 2017

## Aerospace names Tammy Choy Vice President and Chief Information Officer

EL SEGUNDO, Calif. (Dec. 21, 2017) – The Aerospace Corporation (Aerospace) announced today that Tammy Choy has been named vice president and chief information officer, responsible for overseeing the company’s computing resources and infrastructure.



Choy will officially assume her new duties Dec. 30.

“Throughout her career, Tammy has distinguished herself by effectively leading multi-disciplined teams and providing innovative solutions to complex problems,” said Steve Isakowitz, Aerospace president and CEO. “In addition to her proven track record within our company, she brings extensive information technology experience developing enterprise solutions that protect information belonging to the U.S. Air Force, intelligence community, and commercial customers.”

Choy’s new role will encompass IT, strategic planning, policy initiatives, customer service, and the development of applications critical to the success of the company.

Choy has a 32-year career solving some of Aerospace’s most complex operational problems. She began her career at Aerospace in 1985 as an intern in the Engineering and Technology Group (ETG). She was later promoted to a Member of the Technical Staff in ETG’s Electronics and Sensors Division. Throughout her career, Choy has held positions of increasing responsibility including engineering specialist, senior engineering specialist, and chief engineer in Enterprise Information Services (EIS).

She was appointed as an Aerospace Fellow and selected to the Aerospace Fellows Leadership Council until her promotion to general manager of EIS and deputy chief information officer in June of this year. Choy was also a technical mentor for the 2015 Early Career Development Network program and the EIS mentor for the Operations and Support Group 7-on-8 program.

Choy earned a Bachelor of Science degree, with honors, in engineering and applied science from the California Institute of Technology. She also obtained the Federal Chief Information Officer Council’s Certificate in Federal Executive Competencies from Carnegie Mellon University.

## D8 Lounge Ribbon Cutting Dedicated to ETG

by Gail Kellner

December 07, 2017

More than 200 Engineering and Technology Group (ETG) employees crowded into the new D8 Lounge Thursday to celebrate its reveal.

Formerly the cafeteria, the Lounge offers a modern, spacious feel with new flooring, vibrant paint colors, and furniture finishes that complement Aerospace’s new branded colors. The goal of the refresh is to create an inviting place to gather and collaborate in and to provide much more than a space to grab lunch.

Steve Isakowitz, president and CEO, welcomed the guests and explained that even the process of deciding how to update the area was a collaborative one. Those who worked in the building were invited to weigh in, as well as business managers and organizational management, and a walkabout with D8 employees was also included.

He said that 750 employees occupy the building, and these are the folks that bring unique technical capabilities to the nation’s toughest problems. Ideally, Isakowitz said he would like to see people meet up in the Lounge for what he calls a “casual collision,” stating that this is where innovation and collaboration meet.



From left, Chuck Gustafson, senior vice president, ETG; President and CEO Steve Isakowitz; and Darrell Reynard, Facilities Division general manager, prepare to cut the ribbon officially opening the D8 Lounge. (Photo: Elisa Haber)

Chuck Gustafson, senior vice president, ETG, added to Isakowitz' comments that ETG is the technical backbone of the company – a unique resource that solves the toughest problems in space. He told the group that this refresh and other improvements coming in the future represent the investment that the corporation is making to this invaluable group of employees to create a better environment in which to work.

The ceremonial ribbon was cut and visitors were treated to a BBQ lunch, celebratory cake, and the opportunity to try out the new space to collaborate with one another.

## Awards and Recognitions, November — December 2017

by Gail Kellner

December 13, 2017

**Aerospace employees frequently earn recognition for their professional accomplishments. This Orbiter feature acknowledges those honors and awards, including the publication of books. To nominate someone for consideration in this section, send details of the award in a timely fashion to [orbiter@aero.org](mailto:orbiter@aero.org), or contact Gail Kellner at [gail.d.kellner@aero.org](mailto:gail.d.kellner@aero.org).**

### **Dr. Rafael Zaldivar, Dr. Hyun Kim, and Geena Ferrelli**

For 25 years, the Awards for Composites Excellence have recognized the superior product and process achievements that are the forefront of innovation to the industry.

The Aerospace team of Dr. Rafael Zaldivar, Dr. Hyun Kim, and Geena Ferrelli, from the materials and surface sciences departments, won Most Creative Application Award in the Design category this month at the 2017 Composite and Advanced Materials Expo in Orlando, FL. Their submission was titled “Rapid Manufacture of Ultra-High Quality Composite Mirrors”

### **Crystal Mcclide**

Crystal Mcclide, project engineer, Operational Programs Directorate, was selected to receive the 2017 Robert H. Goddard Award for Exceptional Customer Service. This award is given to those individuals who provide superior customer service, leadership, and expertise that enabled the successful execution of a major center-wide project. The citation reads “for outstanding service to internal and external customers in achieving mission success of the GOES R Data Operations System.”

Mcclide will be honored at the annual Robert H. Goddard Honor Awards ceremony scheduled to take place at NASA Goddard in April next year.

### **Alida Andrews and Dr. Steve Hoffman**

The NASA Exploration Integration and Science Directorate at NASA Johnson Space Center honored Alida Andrews, associate MTS, Human Exploration and Spaceflight Division, and Dr. Steve Hoffman, engineering specialist, Space Architecture Department, for their expertise in supporting the design and development of the Mars Program – the Mars Development Schedule and Decision Point Analysis. They received their awards at NASA Johnson earlier in December.

### **Dr. Brian Brady**

Dr. Brian Brady, senior scientist, Propulsion Science Department, has been awarded the Agnes Ann Green Distinguished Service Award for his outstanding service and commitment to the Southern California Section of the American Chemical Society (ACS). This award is not given every year as it is reserved for those members who have set an example of their devotion of time and effort to the wellbeing and goals of the section and its relationship to the National ACS.

### **Teang Tripathi**

Teang Tripathi, project engineer, Extravehicular Activity (EVA), Human Exploration and Spaceflight Division, was awarded the NASA Johnson Space Center Exploration Integration and Science Directorate Director's Commendation Award “for outstanding leadership and technical excellence of multiple EVA battery design projects that will reduce the catastrophic risk of thermal runaway on the International Space Station.”



### **Dr. David Mayo**

Dr. David Mayo, senior project engineer, Advanced Research and Engineering, was awarded the NASA Earth Science Technology Office (ESTO) alumni trophy and NASA pin in September for his program management and integration support in an embedded role to ESTO during a transition period within NASA's Earth Science Technology Office.

Mayo was cited for his facilitation of the 2017 ESTO Forum, expertise provided to the Advanced Components Technologies and PICASSO soliciting panel review, and management of several instrument incubator and airborne instrument technology transition projects.

### **Dr. C. Christopher Reed**

Dr. C. Christopher Reed, MTS retired casual, Structures Department, received a Wolfram Innovator Award in October. The Wolfram Innovator Awards celebrate outstanding individuals and organizations that use Wolfram technologies in cutting-edge and innovative ways in business, industry, education, and research. Each award recipient has used Wolfram technologies in a way that contributes to technological innovation in each of their respective disciplines and fields.

### **Dr. Rostislav Spektor**

Dr. Rostislav Spektor, laboratory manager, Propulsion Science Department, was recently elected to the board of directors of the Electric Rocket Propulsion Society, the governing body of the International Electric Propulsion Society known for their International Electric Propulsion Conference.

## **December 2017 Obituaries**

by **Jessie Ding**

December 01, 2017

*Sincere sympathy is extended to the families of:*

**Richard J. Adams**, member of technical staff, hired Oct. 21, 1985, retired Aug. 1, 2007, died Nov. 4, 2017  
**James T. Bayne**, member of administrative staff, hired Nov. 8, 1960, retired June 1, 1993, died Nov. 12, 2017  
**Ellis M. Landsbaum**, member of technical staff, hired Aug. 7, 1961, retired Sep. 1, 2011, died Oct. 31, 2017  
**Paul Martino**, member of technical staff, hired Aug. 25, 1980, retired May 1, 2003, died Oct. 22, 2017  
**Kay L. Mecham**, member of technical staff, hired Apr. 13, 1987, retired Apr. 1, 1999, died Oct. 28, 2017  
**Robert Mercer**, member of technical staff, hired Aug. 10, 1961, retired Nov. 1, 1991, died Oct. 29, 2017  
**John A. Mignot**, member of technical staff, hired Aug. 22, 1960, retired Oct. 1, 1996, died Oct. 23, 2017  
**James R. Miller**, member of technical staff, hired May 14, 1963, retired Oct. 1, 1996, died Nov. 8, 2017  
**Kathleen Miller**, member of administrative staff, hired June 21, 1999, retired Sep. 1, 2012, died Nov. 8, 2017  
**Lillian M. Parra**, member of administrative staff, hired Feb. 24, 1964, retired Dec. 1, 2011, died Nov. 8, 2017  
**John C. Weldon**, member of technical staff, hired Nov. 19, 1963, retired Oct. 1, 1996, died Oct. 19, 2017

*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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