

Awards and Recognitions, November, 2014

by Matthew Kivel
November 26, 2014



Aerospace employees frequently earn recognition for their professional accomplishments. This Orbiter feature will acknowledge 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, or contact Matt Kivel at matthew.k.kivel@aero.org. Include a photo related to the award, if available.

Rebecca Glick

The 2014 Wintroub Fellowship has been awarded to Rebecca Glick, technical staff, Digital and Integrated Circuit Electronics Department. This marks the second straight year that Glick has received the Wintroub Fellowship (In 2013, Glick was awarded the

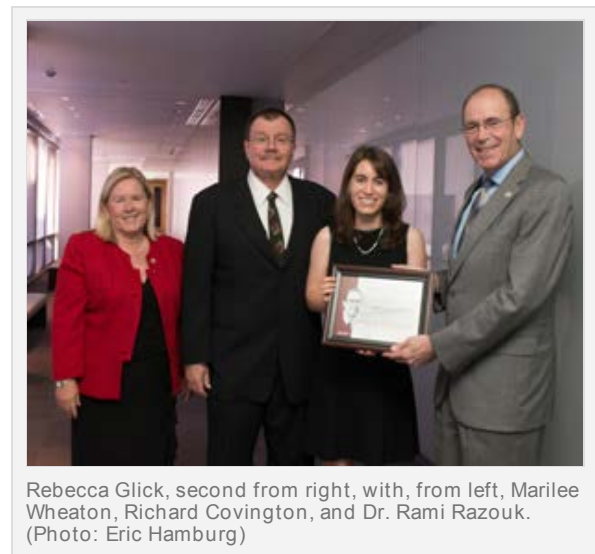
fellowship along with Navneet Mezcciani, manager, Software Applications and Analysis.)

The Wintroub Fellowship, established through a gift from the family of longtime Aerospace employee Herb Wintroub, provides financial assistance to employees in the corporate fellowship program who are working on advanced degrees in science and engineering.

Glick is in the Corporate Fellowship program working on a master's degree in electrical engineering at Stanford University. She joined Aerospace as a full-time employee on May 23, 2011

The Aerospace Corporation

The Aerospace Corporation ranked number three out of 46 companies, as one of the Association for Talent Development's 2014 BEST Award winners. Aerospace was nominated for the workforce development activities performed by its corporate university, The Aerospace Institute.



Rebecca Glick, second from right, with, from left, Marilee Wheaton, Richard Covington, and Dr. Rami Razouk. (Photo: Eric Hamburg)

Aerospace competed against nearly 100 organizations from 14 countries. Every organization submitted quantitative and qualitative information to ATD about its learning and talent development practices and programs. Applications were assessed in a blind review by members of the BEST Awards advisory committee – a select group of experts in the field.

ATD recognizes organizations that demonstrate enterprisewide success as a result of employee learning and development.

Jay Harris and Yogita Shah

The Aerospace Institute honored two graduates, Jay Harris and Yogita Shah, who participated in the Aerospace Systems

Architecting and Engineering Certificate program. A formal ceremony was held on Monday, Sept. 15 in El Segundo, where Harris and Shah each received the designation of Aerospace Systems Architect-Engineer.



From left, Marilee Wheaton, Yogita Shah, Dr. Rami Razouk, Jay Harris, Dr. Wayne Goodman, and Susan Jones. (Photo: Eric Hamburg)

Participants in ASAECP work to attain a corporate standard of knowledge and basic proficiency in systems architecting and/or systems engineering competencies. TAI created the certificate program as a major component of its special technical education curriculum. To meet the certification requirements, each candidate completed over 200 hours of ASAECP coursework, as well as a corporate-sponsored on-the-job training and internship segment in a major technical area of systems architecting or systems engineering.

Russell Averill, Manuel De Ponte, Stanley Gustafson, Dr. Charles Gustafson, Dr. William Krenz, Howard Mitchell, Dr. Christopher Tschan, Dr. Sherrie Zacharius

The American Institute of Aeronautics and Astronautics has selected eight Aerospace employees as AIAA Associate Fellows:

Russell Averill, general manager, Space Based Sensing Division; Manuel De Ponte, senior vice president, National Systems Group; Stanley Gustafson, general manager, MILSATCOM Division; Dr. Charles Gustafson, general manager, Launch Systems Division; Dr. William Krenz, vice president, Enterprise Information Services; Howard Mitchell, vice president, Program Assessments; Dr. Christopher Tschan, senior project leader, SSA and C2; and Dr. Sherrie Zacharius, vice president, Technology and Laboratory Operations.

AIAA Associate Fellows are defined as “persons who have accomplished or been in charge of important engineering or scientific work, or who have done original work of outstanding merit, or who have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics.” The AIAA is “the world’s largest technical society dedicated to the global aerospace profession.”

JPL Engineer Builds on His Native American Heritage

November 24, 2014

Aaron Yazzie, payload and spacecraft mechanical engineer at the Jet Propulsion Laboratory, shared his experiences working on the Curiosity rover and the InSight lander, the next mission scheduled to go to Mars, with attendees at a luncheon held in observance of National Native-American Heritage Month.

Yazzie, who was born and raised on the Navajo reservation, also discussed his heritage and the challenges that make it difficult for Native Americans to break into technical careers. He talked about building on his heritage in his career and his continuing commitment to his tribal family.

The event, held Thursday, Nov. 20, was sponsored by the Aerospace American-Indian and Alaskan-Native Council, one of eight affinity groups at Aerospace dedicated to promoting diversity and inclusion in the workplace.



JPL engineer Aaron Yazzie talks about testing of Mars rovers. (Photo: Elisa Haber)

Propulsion Research Facility Adds to Aerospace Capabilities

by Lindsay Chaney
November 20, 2014

The Aerospace Corporation held a ribbon-cutting ceremony for the newest company laboratory, the Propulsion Research Facility (PRF), on Thursday, Nov. 20. The morning ceremony drew a crowd of 100, who listened to short speeches by Dr. Sherrie Zacharius, Vice President, Technology and Laboratory Operations, and Dr. Wayne Goodman, Senior Vice President, Operations and Support Group. Zacharius and Goodman were joined by Dr. Jeffery Emdee, General Manager of the Vehicle Systems Division and Darrell Reynard, General Manager of the Facilities Division to cut the red ribbon. Afterward, guests received cookies with a frosting picture of the new lab, and had an opportunity to tour the facility.

Enjoy the 90-second video below that captures highlights of the event.

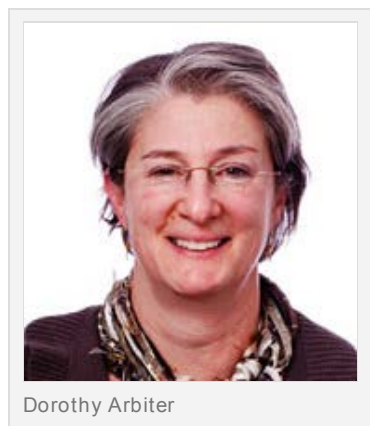
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Dr. Jeffery Emdee, Darrell Reynard, Dr. Sherrie Zacharius, and Dr. Wayne Goodman cut the ribbon to officially open Aerospace's new Propulsion Research Facility. (Photo: Eric Hamburg)

Arbiter Leads Ground and Communications Division

by Kimberly Locke
November 20, 2014



Dorothy Arbiter

Dorothy Arbiter has been promoted to general manager, Ground and Communications Division, National Systems Group (NSG). In her new position Arbiter is directing Aerospace support efforts across several directorates and offices of a national security organization, including Communications, Ground Enterprise, and Mission Operations.

Arbiter's most recent assignment was as principal director for Architecture Engineering within NSG's Systems Engineering and Launch Division, where she provided support to the Office of the Chief Architect.

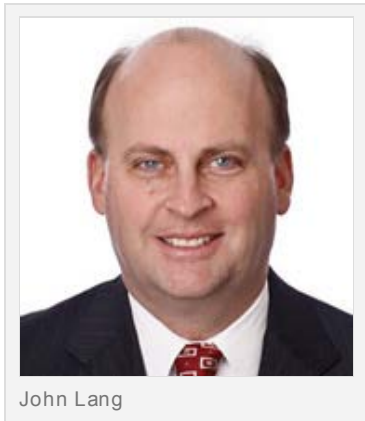
Arbiter joined Aerospace in 1997 as an engineering specialist in the Cost and Requirements Department in the Systems Engineering Division of the Engineering and Technology Group.

Prior to joining Aerospace, Arbiter was a civilian employee of the Department of the Air Force, performing systems engineering, operational test, and aeronautical engineering at several Air Force Materiel Command and Air Force Space Command organizations.

Arbiter has a bachelor's degree in mechanical engineering from the University of Arizona and a master's of science in aeronautical engineering from The George Washington University.

Lang Moves to Principal Director Post in NSG

by Kimberly Locke
November 18, 2014



John Lang has been promoted to principal director of Architecture Engineering for the Systems Engineering and Launch Division, National Systems Group.

In his new position, Lang is responsible for managing the Aerospace resources supporting the Office of the Chief Architect and the Office of Enterprise Analysis, delivering innovative enterprise architecture solutions, investment strategies, enterprise requirements, and mission/architecture analyses.

Lang joined Aerospace in 1985 as a member of the technical staff. His most recent previous assignment was associate principal director in the Acquisition Analysis and Planning Subdivision for the System Engineering Division, Engineering and Technology Group. In this role Lang was responsible for developing acquisition strategies and documents, assessing program costs and schedules, and analyzing economic and industrial issues.

Previously, he served as a Brookings Congressional Fellow supporting the Senate Armed Services Committee, assisted the Space Commission, and worked on the transition from space shuttle operations at NASA headquarters.

Lang earned a bachelor of science degree in aerospace engineering from MIT and a master of science degree in aerospace engineering from the University of Southern California.

St. Bernard STEM Summit a Success

by Heather Golden
November 18, 2014

Six Aerospace mentors and 34 St. Bernard High School students partnered to help more than 70 middle school students put together engineering projects Saturday, Nov. 15, at St. Bernard's campus in Playa Del Rey.

The STEM Summit, which coincided with the school's annual open house, was spearheaded by Aerospace board of trustees member, NASA astronaut, and retired Air Force Gen. Kevin Chilton, who is also an alumnus of the high school.

"In school, you're going to learn everything everyone who has gone to school has," Chilton said to a group of the students during the middle of the event. "But, the fun stuff is finding new things nobody has ever learned. And you're doing a bit of that today."

The mentors and high schoolers spent the prior weeks collaborating on the project that would demonstrate how laser communications function, by using a homemade device to transmit and receive laser light carrying audio information from a student's music player.

"This was about integrating middle schoolers, high schoolers, and Aerospace professionals and giving them a real-world opportunity to work on a project," said Dr. Cynthia Hoepner, St. Bernard principal. "There is a real need for more women and minorities in STEM. We thought, 'What can we do that would be fun, interesting and meaningful?'"



Middle school students experiment with a plastic comb to see what effect the obstruction has on a laser transmitting audio information at the STEM Summit at St. Bernard High School Nov. 15. (Photo: Heather Golden)

St. Bernard invited surrounding middle schools to each send their students to the summit. Approximately 15 schools responded.

The students were split into groups of all-boy and all-girl teams, each with three or four high school mentors and one Aerospace mentor shared between two groups. The day's activities began with a team-building exercise to help the younger students learn each other's names and start to think like a single unit. They were tasked to build the tallest tower they could from marshmallows and other random household goods.

They then spent some time learning about the science behind laser communications before getting some hands-on practice. This instruction period was conducted almost solely by the high schoolers, with the Aerospace mentors remaining in the background to answer questions.



Gen. Chilton presents a medal to one of the 72 middle school participants of the STEM Summit during the closing ceremonies. (Photo: Heather Golden)

The students, now versed in the technology, tested their newfound knowledge on the homemade laser devices, plugging their music into one end and being rewarded with music from the other end when they connected everything correctly. They also experimented with the effects of mirrors, clear glass, distorted glass, and opaque plastic on the light waves. The different effects from each object produced a series of oohs and ahhs from the groups.

The high school mentors, like their Aerospace counterparts, were volunteers who cheerfully agreed to sacrifice a Saturday to promote STEM to younger students.

"Since I am a freshman, just out of middle school, and I did not have these sorts of opportunities at the school I was at, I thought it'd be a good thing to help them (middle schoolers) prepare for high school and show them the things they'll be exposed to," said Chase Perry, St. Bernard freshman. "I have no clue what I want to do as a career. But I do know being exposed to STEM-related things is going to make it easier to find a career I'd like."

"I agreed to help because I thought it'd be a great opportunity to learn about aerospace," said Malik Muhammad, St. Bernard senior. Of course, Malik also had school spirit in mind. "It is always a good thing to help the school bring in prospective students."

Chilton, along with Dr. Malina Hills, vice president, Space Program Operations, and Ellen Beatty, vice president, chief financial officer, and treasurer, visited with every group to check on progress and to view the students' demonstrations of the day's work.

"Technology only moves forward through science, engineering, and math," Hills said. "If we're going to continue to advance, make new discoveries, and create new systems that will benefit our country and even the whole world, we need a steady supply of STEM-trained young people to enter the workforce and solve the interesting and unique problems the future will bring."

Each middle school student was presented with a medal during the event's closing ceremonies, and many stayed afterward to meet Chilton and get his autograph.

Chilton and his wife have agreed to donate up to \$10,000 for scholarships for up to five St. Bernard students each year, who will then be called "Chilton Fellows." Being a Chilton Fellow will come with the added bonus of priority invitations to all special STEM events hosted through the school.

Annual Space Program Mission Assurance Summit a Success

by Amanda McCarty
November 14, 2014

Aerospace brought together U.S. space program leaders at the seventh annual U.S. Space Program Mission Assurance Summit Nov. 12-13 at the corporation's Chantilly campus. Themed "Achieving Mission Success in a Resource Constrained Environment; Managing Risk Across the Supply Chain," the summit provided a forum to collaborate, learn, and enhance mission assurance in all programs by focusing on managing risk in a budget-constrained environment. It also provided an opportunity to improve processes, continue to leverage best practices, and build skills to ensure 100-percent mission success.



Dr. Wanda Austin, Aerospace president and CEO, speaks at the seventh annual Space Program Mission Assurance Summit at Aerospace's Chantilly campus. (Photo: Amanda McCarty)

Small Satellites Growing Into Big Business

by Matthew Kivel
November 11, 2014

Of all the burgeoning trends in the aerospace community, the design and manufacturing of small satellites continues to maintain a relentless momentum, pushing the once-novel technology ever further into the mainstream.

The American Institute of Aeronautics and Astronautics and Utah State University hold an annual small satellite conference in Logan, Utah each year, providing a forum on the USU campus for industry veterans, government employees, students, and all manner of upstart companies to ply their wares and discuss the current state of all things small sat.

Aerospace was well-represented at the conference with a 20-person contingent, members of which staffed a booth on the convention floor, met with industry leaders, and presented at technical sessions.

Among the presentations, Dr. Tom Adang led an afternoon-long special session on the upcoming Operationally Responsive Space ORS-5 mission and its various payloads; Dr. Rich Welle gave a well-received presentation on the Optical Communications and Sensor Demonstration (OCSD) mission, which involves Aerospace building two 1.5U CubeSats for NASA as part of a \$3.6 million contract; and, Kevin Zondervan talked about Aerospace's CubeSat solid rocket motor propulsion efforts.



Kevin Zondervan shares results of Aerospace's CubeSat solid rocket motor propulsion efforts. (Photo: John Langer)

Jerry Fuller, holder of a patent on a hybrid rocket motor produced through 3-D printing technology, was present at the Aerospace booth and fielded numerous inquiries about possible uses for the breakthrough technology.

This year, in its 28th iteration, the once-minuscule conference has exploded in attendance — and significance — hosting more than 1,400 individual participants alongside 130 exhibitors. The theme of the 2014 conference, “The Commerce of \$small Satellite\$,” is indicative of the hype surrounding the technology — elevating a hobbyist curiosity into a serious moneymaking endeavor, over the course of a few short years.

The sleepy summer months in Logan find the small city contracting as its student population departs for graduation, vacation, summer jobs, and internships. Located at the crest of a sprawling valley, Utah State University mirrors the undulations of its student body, and at the beginning of August, is mostly void of activity. But this year’s Small Satellite Conference brings a notable influx of life to the placid campus. Occupying multiple buildings and lecture halls and dotting one of the city’s central streets with prominently placed banners, the conference hums with energy as company and college representatives ready their respective booths, tables, and kiosks in the central event hall.



Small Sat banners were prominently displayed along major streets in Logan. (Photo: John Langer)

It’s Sunday, Aug. 4, the day before the primary conference officially kicks off, but the pre-conference CubeSat developers’ conference is already in full swing. Attendees pack the main lecture hall in the Eccles Science Learning Center, absorbing presentations from Boeing, NASA, The University of Michigan, and George Washington University, alongside agile upstarts like Innovative Solutions In Space, Pumpkin, Inc., NanoRacks, and many others. The subjects and technologies discussed in the lectures vary, but a number of basic concepts recur, representing some of the industry’s primary concerns and immediate goals. Aside from the evergreen issues of efficiency and affordability, communications and data transfer, along with propulsion, represent the most pressing concerns for small satellite builders. Developers realize that without significant enhancements in propulsion, their small satellites will remain limited in terms of the orbits they can reach and the maneuvers they can make. An improvement in the communicative capabilities of small sats is also essential, given the lengthy processing times and limited data download capacity that hampers current versions.

The next day, the conference has a noticeably larger audience, in anticipation of the first full day of convention activities. Members of the Aerospace staff take turns at the company booth in the convention hall, fielding questions, discussing small satellite capabilities, and handing out neon-lit pens. The Aerospace team has brought along a rapid-prototyped model of the AeroCube-8, and also discusses capabilities of other current and future AeroCubes.

For Aerospace, the Small Satellite Conference is an unrivaled opportunity to show off Aerospace innovations on CubeSats to the industry at large, explain the company’s unique capabilities — in both technical and mission

assurance areas — and to see which cutting-edge developments in the field are percolating through academia and making their way into industry products.

The convention hall is crowded with a diverse group of company, university, and government representatives, touting their business capabilities alongside their latest technological creations.

Though each company attempts to highlight its proprietary advantage, one can’t help but be struck by the similarity in goals, capabilities, and general business models in the convention hall. Many of the small, private companies are a kind of one-stop shop for prospective launch/mission assurance/small satellite customers. Essentially, the idea is that they will design your satellite for you and make sure it gets to space safely with your technological specifications on board. Which begs the question: where will the new business come from? If many of these firms are selling similar products, what differentiates one from the other? Well, typically, on-orbit success separates the haves from the have nots, but here at the Small Sat conference, with well-prepared kiosks and beautifully designed handouts, the playing field, at least in terms of perception, is noticeably level.

At 1 p.m. all attention turns to the main conference room, where Steve Jurvetson, acclaimed venture capitalist with Draper, Fisher, and Jurvetson (Also, a physical dead-ringer for the television show *Mad Men*’s fictional Pete Campbell, of Sterling, Cooper, Draper, Price) is set to speak to a packed house. With the lights dimmed, Jurvetson takes center stage, speaking to the audience in rapid bursts of energy. He is visibly passionate about his investments (SpaceX, Planet Labs) and rockets in general. He gives a broad presentation that lays out a vision for the future of the industry, helmed, unsurprisingly, by innovative and challenging upstarts like SpaceX and Planet Labs. It’s an immensely engaging speech, with Jurvetson displaying an undeniable intelligence and passion for his subject matter. He speaks like a man possessed, desperately trying to communicate the dense multitude of ideas and ambitions packed into his brain. After the speech concludes, the crowd is noticeably buzzed — percolating with discussion and excitement.

Jurvetson's keynote can be looked at as a "line in the sand" moment — a call for the industry to step across the line from which there will be no turning back, to definitively transform the context within which the business of small satellites, and space in general, is framed. Jurvetson emphasized that with great ambition and a no-tolerance policy for efficiency-killing bureaucracy, exponential industry growth can be achieved. He seemed to be speaking directly to the tech-focused engineers and career industry professionals populating the conference, making it known that their business is rapidly transforming into a significant, money-making sector with great potential for entrepreneurship. How big the market for commercial space actually is remains to be seen, but the ethos of this year's conference, along with its theme: "The Commerce of \$mall \$atellite\$," was defined by Jurvetson's speech.

Chris Boshuizen from Planet Labs followed Jurvetson, and he delivered similar messages regarding innovation and the paradigm shift in efficiency and problem solving that his company has brought to the industry. Planet Labs is rapidly launching its satellites into orbit, with the ultimate goal of providing a complete Earth imaging service. Boshuizen admits that the profitable applications for such capability are just beginning to reveal themselves and are in no way clearly defined, but he views this as a tremendous opportunity for growth and invention. He closed by challenging the audience to develop technologies that leverage Planet Labs' capabilities, and to contact him regarding collaboration once the concept is in place.

Much like the Homebrew Computer Club of Silicon Valley's halcyon days, Small Sat is beginning to transform from a simple gathering of scientific minds into a hub for entrepreneurs to cherry pick potentially profitable technological concepts. The next few days of the conference saw further presentations that showcased the merits of various companies and their inventions, with a clear focus on profit and product differentiation. Company representatives were acutely aware of the investor presence at the conference, and refined their pitches as the conference wore on.

Ultimately, Small Sat is beginning to transcend the friendly confines of the scientific community, emphasizing competition over collaboration. This may be good and it may be bad. Undoubtedly, the rate of innovation will accelerate as investment continues to increase — which is definitely good for the technology. But, it is possible that the kinetic creativity and collaboration that has defined the small satellite movement thus far, will be lost in the pursuit of venture capital. Either way, the evolution is under way. There's no turning back now.

A Lot Faster than a Speeding Bullet

by Lindsay Chaney
November 06, 2014

Video provided exclusively to the Orbiter shows a projectile from the **DebrisSat Project** striking an Aerospace-designed simulated upper rocket stage at the fastest speed ever recorded for an object of its size on the Earth's surface.

The DebrisLV experiment, which occurred on April 1, 2014, was designed to show what happens when an orbiting object or piece of debris strikes an abandoned upper stage at an orbital velocity. The purpose of the experiment is to help understand the on-orbit debris environment and effects of a collision in space, and the resulting debris, which could possibly result in damage to existing and future satellite systems.

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It may be necessary to refresh your web page in order to play the video a second time.

The experiment took place at the G-Range of the Arnold Engineering and Development Complex (AEDC) in Tennessee, where the world's most powerful known light gas gun is based. (Some countries may not publicly acknowledge existence of light gas gun facilities.) The test was done in the G-Range vacuum chamber.

A light gas gun uses an explosive charge to accelerate a piston, which then forces a light gas, in this case hydrogen, down a barrel to propel a projectile at great speeds.



Aerospace engineer Dr. Joseph Gangestad mans the Aerospace booth at this year's Small Satellite Conference. (Photo: John Langer)

The DebrisLV projectile, which weighed 596 grams or slightly more than one pound, reached a speed of 6.9 kilometers/second or 15,400 mph. That is the fastest speed any object larger than a baseball has ever moved on the surface of the Earth, and is close to orbital velocities.

Both the DebrisLV and DebrisSat experiments were outfitted with numerous sensors and recording instruments, such as high-speed black-and-white and color cameras, a high-speed infrared camera, a mass spectrometer, a nanosecond spectrometer, a borescope, and a hyperspectral system. The resulting data collected is still being analyzed, but some impressive, previously unknown, information has already emerged.

Perhaps the most interesting is an observed effect called a gas-phase jet, which occurred when part of the DebrisLV simulated upper stage, which was made of aluminum, momentarily vaporized at the instant it was struck by the high-speed projectile. This jetting vapor then cut up a nearby strap-on tank in a violent manner that had never before been recorded or observed, and is not built into any current breakup models. By itself, this new observation is expected to have a major impact on future orbital debris models.

Evidence of the gas-phase interaction was independently discovered by the Aerospace team of Paul Adams, Nathan Presser, Gouri Radhakrishnan, and C.C. Wan, who used microscopic and metallurgical analysis techniques of micro- and nano-particles of the DebrisLV debris, and Patti Sheaffer, who used forensic macroscopic analyses of larger debris fragments. She was aided by Naoki Hemmi, whose hydrocode simulations helped differentiate between condensed-phase and gas-phase jetting.

Adams and Sheaffer are contributing authors to a scientific paper about the first findings of the DebrisLV experiment that has been submitted for presentation at the 13th Hypervelocity Impact Symposium, to be held next April in Boulder, Colo.

Participating organizations in the DebrisSat Project are: The Aerospace Corporation, the Space and Missile Systems Center, the NASA Orbital Debris Program Office, the University of Florida, and the Arnold Engineering and Development Complex.

(Editor's Note: Black-and-white footage in the above video was taken with an AEDC camera; the color footage of the explosion was recorded with a NASA camera. There was no audio recording of the experiment. Music and sound effects on the video were added to enhance the viewing experience.)



A projectile traveling at the highest velocity ever recorded on the Earth's surface milliseconds before hitting its target.

Spreading the Word that Mentoring Matters

by Gail Kellner
November 03, 2014

With four generations currently working at Aerospace, the corporation is in a unique position to nurture a mentoring culture in which information and experiences are shared across generational and professional lines. In fact, many employees are already engaged in mentoring relationships on a daily basis without realizing it.

Mentoring Matters is an educational campaign developed through the Aerospace Mentoring Initiative that intends to further enhance the Aerospace mentoring culture and communicate that mentoring is indeed for everyone. The mentoring relationship does not have to fit a prescribed formula, or even take place at the same regional location.

In its finest form, mentoring is a reciprocal relationship in which both mentees and mentors expand their own networks to explore new ideas and technology, with each relationship being distinctly different and mutually beneficial.

Anita Polite-Wilson, learning systems development manager, Organizational Effectiveness, and Rosalind Lewis, principal director, Acquisition Analysis and Planning Subdivision, have been in a valuable mentoring relationship since 2008, although they have never had a formal mentoring session.

"We met casually as we were crossing the street on our way to a meeting and I just boldly declared that she would be my mentor," said Polite-Wilson. "There was something in her presence that commanded my attention, and there was also such a

kindness about her and an acceptance of me as a 'newbie' that made me want to get to know her.

"As a life-long learner, I am always seeking out those who I believe will offer me insightful guidance," she said. "Roz is one of those people. When I need her, all I have to do is pick up the phone or send an email and she's right there for me. I know that she is busy, but she makes time for people."

Polite-Wilson explained that she has many mentors for various reasons. One provides her guidance for strategic thinking, another gives her career advice, and another helps her craft effective messages. In fact, she has mentors across the country at all levels. She is a firm believer that the company one keeps determines one's level of success.

"For me, the most effective mentors reveal their own challenges, how they overcome them, and encourage me that there are valuable lessons in failure because failure helps you figure how to succeed the next time."

Lewis explained that although she doesn't have formal objectives, she likes to instill in each mentee an awareness of belonging, contribution, and ownership.

"Those who see themselves as fitting within an organization and providing a valuable contribution are likely to take ownership and responsibility for what they have been given or assigned," Lewis said. "In other words, they care, and that makes all the difference."

Lewis said that her involvement early in her career in clubs and diversity groups was a deliberate effort to establish relationships and develop an awareness of corporate culture through company-sponsored activities. She said that it is through these activities and others that she was exposed to many who would later become her mentors.

"Over the years, people have called on me, and I have made it known that I am a resource to ask questions, seek advice, or just be a sounding board," Lewis said. "Sometimes, in these relationships, I find that we wear both hats: I am both a mentor and a mentee."



Dr. Anita Polite-Wilson, left, and her long-time mentor, Rosalind Lewis, take a moment to discuss career issues. (Photo: Eric Hamburg)



Dr. George Pollock in El Segundo talks to Cathy Steele in Colorado Springs via remote conferencing. (Photo: Eric Hamburg)

Cathy Steele, Vice President, Strategic Space Operations, has been involved with informal mentoring for years. Although she has had some great leaders and managers in her life, early in her career she said she did not have anyone to turn to, and she would have appreciated having a mentor.

So it is very fitting that one of the programs that Steele is involved in is The Early Career Development Network (ECDN) led by Russell Averill, General Manager, Space-Based Sensing Division. She meets primarily with them as a group, but she occasionally does one-one-one mentoring sessions.

"I see a lot of myself in them at the same stages of their careers, and I try to give insights and information that I know I would have found helpful had someone been available to me to talk with," she said. "It feels really good when a mentee contacts me and lets me know that

something I said, or a discussion we had, made a difference and influenced what they were doing.

"I hope I am giving my mentees some of the benefits I received from specific individuals during my career – presenting straight answers to questions that aren't so clear when you are early in your career, sharing challenges I've had in my career, and generally letting them know that staying positive, being resilient, and focusing on what they want from their careers at different times is very important."

She is also involved with East Coast Mentoring, led by Mal De Ponte, Senior Vice President, National Systems Group. She meets with the group about every two weeks, either in person or via telepresence.

“As a manager, I’ve always felt that our most important role is to support our staff, and to help them to be as successful as possible,” Steele said. “This includes how they present themselves, engage with others, and strive for the highest technical performance levels.

Dr. George Pollock, project engineer, Space Superiority Systems Directorate, is a member of the corporation’s 2014 ECDN group. He has been in small-group mentoring activities and informal dinner discussions over the course of the last year that have created an open environment with candid conversations.

Pollock said that the ECDN mentors (Dr. Rami Razouk, Cathy Steele, Glenn Davis, Rita Lollock, and Peter Carian) shared valuable stories of successes and failures in their careers including: leadership principles, such as how to deal with tough customers; insightful career path advice; tips for effective presentations; work-life balance; and being resilient in the face of setbacks.

“In my experience, some of the most effective mentoring has been intentional, but not particularly formal,” he said. “Many managers and staff have taken the time to understand my interests and goals, and then offer insight from their career experiences to coach me along the way. The time they have invested in me has made a significant positive impact on my career development.”

Patents – Q3 FY14

by Carolyn Weyant
November 06, 2014

The United States Patent and Trademark Office has awarded patents to the following Aerospace employee:

Todd Rose; “Time-Domain Gated Filter for RF Communication Systems;” U.S. Patent No. 8,706,784; issued April 22, 2014.
Rajendra Kumar; “Systems and Methods for Mitigating Spectral Regrowth from Non-Linear Systems;” U.S. Patent No. 8,711,974; issued April 29, 2014.
Jerome Fuller; “Radial Flow Rapid Prototyping Rocket Motors;” U.S. Patent No. 8,707,676; issued April 29, 2014.
Robert Dybdal, Lan Xu, Samuel Curry, and Chris Clark; “Systems and Methods for Reducing Narrow Bandwidth Interference Contained in Broad Bandwidth Signals;” U.S. Patent No. 8,711,675; issued April 29, 2014.
Adam Bushmaker and William Lotshaw; “Systems and Methods for Use in Generating Pulsed Terahertz Radiation;” U.S. Patent No. 8,716,685; issued May 6, 2014.
Kevin Diamant; “Systems and Methods for Cylindrical Hall Thrusters with Independently Controllable Ionization and Acceleration Stages;” U.S. Patent No. 8,723,422; issued May 13, 2014.
George Sefler; “Photonic Impulse Generator;” U.S. Patent No. 8,750,720; issued June 10, 2014.
Ryan Kelly and Felix Hoots; “Space Debris Visualization;” U.S. Patent No. 8,749,545; issued June 10, 2014.

Patents – Q4 FY14

by Carolyn Weyant
November 06, 2014

The United States Patent and Trademark Office has awarded patents to the following Aerospace employees:

Rajendra Kumar; “Increased Capacity Communication Links with Spectrum Sharing;” U.S. Patent No. 8,767,845; issued July 1, 2014.
Philip Dafesh; “Phase-Optimized Constant Envelope Transmission (POCET) Method Apparatus and System;” U.S. Patent No. 8,774,315; issued July 8, 2014.
Robert Dybdal, Christopher Clark, and Flavio Lorenzelli; “Dynamic Equalization Systems and Methods for Use with a Receiver for a Multipath Channel;” U.S. Patent No. 8,804,808; issued Aug. 12, 2014.
Steven Beck and Gary Loper; “System, Apparatus, and Method for Tracking Atmospheric Differential Absorption;” U.S. Patent No. 8,823,938; issued Sept. 2, 2014.
Seema Sud; “Resolving Co-Channel Interference Between Overlapping Users Using Rank Selection;” U.S. Patent No. 8,824,272; issued Sept. 2, 2014.

David Hinkley; "Seamless Fluid Storage and Transport Module;" U.S. Patent No. 8,820,359; issued Sept. 2, 2014.
Siegfried Janson; "Thermo-Photovoltaic Power Generator for Efficiently Converting Thermal Energy into Electric Energy;"
U.S. Patent No. 8,829,334; issued Sept. 9, 2014.
Jerome Fuller; "Stereolithographic Rocket Motor Manufacturing Method;" U.S. Patent No. 8,844,133; issued Sept. 30, 2014.

November 2014 Obituaries

by Carolyn Weyant
November 01, 2014

Sincere sympathy is extended to the families of:

Edward Carlson, member of the technical staff, hired Nov. 21, 1960, retired July 1, 1980, died Oct. 28.
John Choma, member of the technical staff, hired July 16, 1984, retired Dec. 1, 2006, died Aug. 10.
Clarkson Coffin, member of the technical staff, hired Oct. 3, 1972, retired July 1, 1994, died Sept. 30.
Jackson Craven, member of the technical staff, hired Oct. 5, 1981, retired Dec. 1, 1990, died Aug. 5.
Walter Dennis, member of the technical staff, hired April 27, 1970, retired Sept. 1, 2009, died Sept. 23.
Allen Goldstein, member of the technical staff, hired Aug. 28, 1967, retired Feb. 1, 2001, died Oct. 21.
William Griego, member of the technical staff, hired Aug. 14, 1978, retired Sept. 1, 1997, died Sept. 27.
Larry Hagerman, member of the technical staff, hired June 10, 1978, retired Dec. 1, 1997, died Oct. 10.
Denise Hubbard, word processing specialist, hired April 21, 1976, retired Dec. 1, 2008, died Sept. 22.
Laurel Jackson, member of the technical staff, hired Jan. 2, 1990, retired April 1, 2010, died Sept. 28
Christine Jones, office support, hired June 11, 1990, retired July 1, 2014, died Sept. 21.
Eugene Lenk, member of the technical staff, hired July 23, 1962, retired Feb. 1, 1985, died Oct. 20.
Susan Merritt, executive secretary, hired March 19, 2001, retired Nov. 1, 2011, died Sept. 26.
Henry Siesel, member of the technical staff, hired Dec. 1, 1960, retired Nov. 1, 1991, died Oct. 13.
Rufus Thompson, member of the technical staff, hired July 17, 1961, retired April 1, 1979, died Oct. 22.
Sherna Wade, office support, hired July 23, 1984, retired June 1, 2012, died Oct. 16.
Virgil Wall, member of the technical staff, hired Sept. 7, 1962, retired Dec. 1, 1990, died Sept. 17.

To notify Aerospace of a death and have it included in the Orbiter, please contact Cynthia Johnson in Human Resources at 310-336-5806.

November 2014 Notes

by Carolyn Weyant
November 01, 2014

Notes of appreciation to fellow employees and Aerospace for thoughtfulness and sympathy have been received from:

Lynda Bergmann, for the recent passing of her brother, Robert Martin.
Cheryl Bien, for the recent passing of her father, Francis Bien.
Patricia Jefferson, for the recent passing of her mother, Lettie McCrory.
Jon Neff, for the recent passing of his father, Jim Neff.

To submit a note of appreciation to Aerospace, please contact Valerie Jackson in Human Resources at 310-336-0891.

November 2014 Anniversaries

by Carolyn Weyant
November 01, 2014

35 YEARS

Operations and Support Group: Suzan Barrett

Space Systems Group: Lawrence Kahal

30 YEARS

Engineering and Technology Group: Sheuch-Ling Chow

Operations and Support Group: Donald Mundy

Space Systems Group: Rhonda Brown, Michael Chang, Yi-Chung Doo

25 YEARS

Engineering and Technology Group: Lawrence Miller, Ted Nguyen, Dee Pack, Bruce Weiller

National Systems Group: Martin Malarkey, Paul Popejoy

Operations and Support Group: William Martin

Space Systems Group: Denise Kleffman, Randall Williams, Paul Yuhas

20 YEARS

Civil and Commercial Operations: Adina Wadsworth

Engineering and Technology Group: Crystal Arnett

Systems Planning, Engineering, and Quality: Thomas Murphy

15 YEARS

Civil and Commercial Operations: Margaret Abraham

Engineering and Technology Group: Joseph Baca, Kent Bradford, Carl Mutchler, Hung Nguyen, Alan Peterson, George Valley

Engineering and Technology Group: Susan Buckner, John Ready

Operations and Support Group: Moria Cunningham, Diana Dafesh, Bonnie Johnston, Marie Smith

Space Systems Group: Leonard Domenic, Arthur Einhorn

Systems Planning, Engineering, and Quality: Kelly Hand, Mark Kain

10 YEARS

Civil and Commercial Operations: Shannon Mccall

Engineering and Technology Group: David Chien, Gregory Gum, Dawn Hansen-Baxter, Elizabeth Scruggs, Tamitha Skov

National Systems Group: Yoshio Saito, Nicole White

Operations and Support Group: Geneva Connie Varquez, Vijay Freeman, Steven Johnson, Cyndi Pegus

Space Systems Group: Laura Dominguez

5 YEARS

Civil and Commercial Operations: Roy Nakagawa, Kari Wulf

