

Aerospace Rocks Their World

by Lindsay Chaney
July 31, 2013

Although the majority of Aerospace interns are college students, the company also participates in two intern programs aimed at high school students.

Shariee Newman and Roxana Ruiz, high school seniors at Cesar Chavez High in Compton and Los Angeles River School, respectively, recently completed an internship in the Corporate Communications Directorate as part of a program run by the Constitutional Rights Foundation.

Ruiz called her time at Aerospace “truly an unforgettable experience ... The internship has forever influenced my outlook on life and future decisions, not only in my professional but personal life as well.”

Newman was also effusive about her internship, describing it as “a life-changing experience.”



Shariee Newman, left, and Roxana Ruiz, recently completed an Aerospace internship through the Constitutional Rights Foundation. (Photo: Elisa Haber)

Their work during the four-week stint in Corporate Communications included preparing technical workshop CD labels, writing communications to company managers, organizing files, and helping put on the Public Sector Innovation Workshop. They also wrote a story for the Orbiter that was posted on both the Orbiter and Inside Aerospace websites.

Denise Betts, technical publications manager, said the young women “were bright, eager, and ready to tackle every assignment we threw at them ... In the process, they gained confidence and hands-on experience that enabled them to truly realize the wide variety of career possibilities that are ahead of them and are theirs for the taking.”

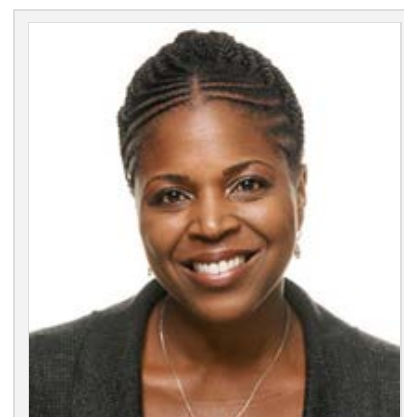
Newman and Ruiz will be applying to colleges in the fall. Both say their current first choice is the University of California, Santa Barbara.

Aerospace became involved with the Constitutional Rights Foundation program in 2010 through Malissia Clinton, company senior vice president, general counsel, and secretary, who is a member of the CRF board of directors.

“CRF’s internship program is near and dear to my heart,” said Clinton. “When I see Shariee and Roxana, I see myself. CRF interns are first generation, college-bound students from inner-city schools. It’s extremely rewarding to know that Aerospace interns come out of the program more confident, determined, and prepared to make a better life for themselves.”

Aerospace also is a sponsor of the Verbum Dei High School Corporate Work Study Program that gives students the opportunity to work one day a week as part of their school curriculum.

Aerospace’s involvement with the Verbum Dei program began in January, 2007, when then-Chief Financial Officer Dale Wallis was introduced to the program through a member of the Aerospace Financial Advisory Panel.



“When I see Shariee and Roxana, I see myself.” — Malissia Clinton, Aerospace senior vice president, general counsel, and secretary

For the past six years, Aerospace has participated in the program, taking four students in any given school year, who do clerical or light office work in Finance and Business Operations.

Mentoring Programs Build Skills, Professional Relationships

by Heather Golden
July 30, 2013

Those looking for expert advice on taking their careers to the next level need look no further than the Aerospace Mentoring Initiative.

AMI provides employees with a way to participate in mentoring activities, both on a one-to-one level and in larger groups. These different types of programs offer a wide range of mentorship; essentially, there is something for everyone.

“We’re trying to combine the formal method with the informal method,” said Todd Nygren, AMI chairman and general manager, Developmental Planning and Architectures Division. “We’re saying we know this is important, and we want to be fluid.”

Mentoring is an important part of growing, both professionally and personally.

“Mentoring is important because it provides answers to those questions of ‘How do I advance?’ and ‘How does one successfully navigate a career?,” said Marilee Wheaton, general manager, Aerospace Institute. “I really believe in it.”

“Every one of the last four or five bosses I’ve had has been an outstanding mentor,” Nygren added. “You learn a ton when you are under the tutelage of different people.”

Mentoring is a professional relationship that everybody benefits from, and it keeps corporate knowledge intact by passing information from one generation to the next.

“Everybody can be a mentee,” Wheaton added. “What makes this successful is the mix. It isn’t just older to younger. The good thing about being an early career professional is having something new to bring to the table. For the mentors, when you spend time teaching someone else, you learn too.”

Employees may not always know how to find a mentor, and some may be a bit shy about approaching someone they don’t know. AMI alleviates that issue. Employees can sign up as mentors or mentees on AMI’s website, and the site’s team pairs together suitable mentoring matches.

“There are a lot of different ways to get into that mentoring relationship,” Nygren said. “Here, we really have a culture that embraces it. We’re always trying to figure out ways to make it easier.”

The “7-on-7” and “5-on-5” group mentor sessions pair a small number of mentees with an equal number of experts in their field to offer a “broad set of perspectives,” Nygren said. These group events have been well-received and have gained in popularity in the few years since they began.

“If a one-on-one mentoring relationship is a little intense for you, maybe do it in a small group, and kick around some ideas,” he added.

“Here is something that doesn’t require a huge amount of overhead, just a willingness to do it,” Wheaton added.

AMI’s steering committee is always looking for other effective approaches to mentoring, and is open to suggestions.

“We as a company are rolling out new ways to do these things,” Nygren said. “These are opportunities to do some of those



There are many options for mentoring available to Aerospace employees, from one-on-one and group sessions to speed mentoring. (Photo: Eric Hamburg)



Speed mentoring is one of the options offered to Aerospace employees. The next speed mentoring event, hosted by the Aerospace Women's Committee, is scheduled for Monday, Aug. 5. (Photo: Eric Hamburg)

things provided in a mentoring forum.”

“There is no one right way,” Wheaton added. “There are any numbers of ways you can make mentoring work.”

Training workshops are available for those who want to learn to become better mentors. Hours spent in these also have the added benefit of counting toward employee continuous learning hours, Wheaton said.

Participating in the programs is voluntary, but it is something both Wheaton and Nygren said is a win-win situation for the employees and the corporation.

“Our commitment is to our people,” Nygren said. “This is helping people become the best business managers, engineers, scientists, and office support they really can be.

The next mentoring opportunity is a speed-mentoring event Monday, Aug. 5, hosted by the Aerospace Women's Committee. Visit the AWC website at pages.aero.org/awc or call Carmelita Johnson at ext. 62591 for information on how to sign up. The event counts as one hour of Continuing Learning credit.

If interested in registering as a mentor, mentee or both, visit the AMI website at pages.aero.org/mentor.

“There's a Lot Going On” at Skrinska's Retirement

by Lindsay Chaney
July 29, 2013



Ray Skrinska and his wife, Carol, left, chat with Lauren Kim at Ray's retirement reception. (Photo: Elisa Haber)

Friends and colleagues turned out Monday, July 29, for a lunch-hour retirement reception to honor Ray Skrinska for 45 years of service to The Aerospace Corporation.

Skrinska worked his entire career at Aerospace in the area of guidance and controls. He was principal director of the Guidance and Controls Subdivision from 1990 until two months ago, when he became a principal engineer for a transition period.

During Monday's tribute, Jeff Emdee, general manager of the Vehicle Systems Division, read a list of commendations Skrinska received over the years from Air Force generals and colonels praising his work on satellite recovery operations.

“Ray saved a lot of satellites,” Emdee noted.

Chris Dunbar, who succeeded Skrinska as principal director of the Guidance and Controls Subdivision, lauded his predecessor as a mentor and example of dedicated work habits. “There's a lot going,” was a frequent Skrinska comment, Dunbar said.

Skrinska began work at Aerospace as a summer intern in the summer of 1966, then returned the next summer. His full-time employment began in December 1968 when he was hired as a member of the technical staff. Over the course of more than 20 years, he rose through a series of technical and management positions to the principal director post.

Skrinska said that going back through old papers and archive material during the past few weeks has made this a bittersweet time.

“It's been a great 45 years,” he concluded, noting that Aerospace provided the opportunity to work on challenging technical

problems and to “feel good about your ability to help the nation.”



Chris Dunbar, right, describes Ray Skriniska's work habits. (Photo: Elisa Haber)

Aerospace Tests a Mars Lander at the Edge of Space

by Matthew Kivel
July 25, 2013

When searching for inspiration for his latest, interplanetary engineering concept, Aerospace's Matt Eby decided to keep things close to home — relatively speaking. Eby's sister, Mars geologist Rebecca Williams — who recently published a widely circulated report detailing the discovery of an ancient Martian streambed — had repeatedly expressed her frustration at the lack of diversity in Martian exploratory vehicles. Aside from the decidedly complex rovers that seemed to emerge every decade or so, Williams balked at the limited numbers of observational outlets available to Mars specialists.

With his sister's perspective in mind, Eby quickly realized that relatively cheap, CubeSat technology could provide a solution to the current bottleneck in Mars-serving probes. Thus, the concept for a low-cost Mars lander was born.

“She's always gotten me interested in Mars,” Eby says of his sister, who is a senior research scientist at the Tucson-based Planetary Science Institute. “She used to do some of the on-orbit camera-targeting for Mars — taking high-resolution pictures. This was about a decade ago and I was visiting her and it was my birthday. As a gift, she let me select where on Mars I wanted to take a picture. So, I picked this one crater and drew a narrow swath across it, and a few days later, it came back: a great high-resolution image. And I spent hours looking at that one image because it was the only high-resolution image of that one spot on Mars. And it was so spectacular. And it's amazing how much on Mars we've never explored because we've only been to a handful of spots.”

It is with that intrepid sense of discovery and wonder that Eby and a team of Aerospace engineers, supported by the Aerospace Independent Research and Development (IRAD) program, set about designing an economical vehicle for Martian exploration as part of the MarsDrop project.



A weather balloon carrying a test version of Aerospace's Mars lander bursts at 80,000 feet over the Nevada desert. (Photo: The Aerospace Corporation)

MarsDrop's basic goal is to repurpose Aerospace's Reentry Breakup Recorder (REBR) vehicle as a planetary micro-probe for use in a Mars-based mission. The current aeroshell that houses a given REBR vehicle is aerodynamically stable and well-suited for Mars entry. Eby and his team have developed a landing system for the REBR vehicle that leaves volume within the spacecraft for scientific experimentation.



Matt Eby in the Nevada desert with the weather balloon that carried the MarsDrop lander to the edge of space. (Photo: The Aerospace Corporation)

The MarsDrop, which would hitch a ride to the red planet as a secondary payload aboard a Mars mission, will also make use of a style of gliding parachute known as a parawing that was developed in the 1960s for the Apollo and Gemini missions. The parawing's lift creates less vertical speed than a standard parachute, which enhances steering capacity and enables long-distance gliding. The gliding capability of the MarsDrop is one of its most exciting features, allowing for potentially stunning flyovers of the Martian surface.

The large, wildly expensive Mars rovers (Curiosity, Opportunity) are incredibly complex and remarkable in their ability to collect data and execute numerous functions while exploring the planet, but they are hamstrung by budget limitations and the sheer, physical size of the vehicles. The MarsDrop, though technologically rudimentary by comparison, offers a low-cost means of exploring Mars that can be utilized in a host of different mission plans. Eby sees potential for solo scientific missions, flyover missions,

and even fleet missions that spread a group of landers over a spectrum of the Martian landscape.

In May of this year, Eby and his team performed an initial test of the technology in the Nevada desert by sending a MarsDrop lander up to 80,000 feet in a weather balloon and then cutting it free— forcing an earthly descent. Unlike the expensive rovers, MarsDrop landers can be tested under representative conditions on Earth without fear of financial catastrophe due to a potential crash or malfunction. “You could test this in a wind tunnel,” says Eby, “but the problem with a wind tunnel is that you are at sea level. It doesn't match what the atmosphere on Mars is like. It's not cold. It's not a near-vacuum. But in high-altitudes on Earth the atmosphere is very thin, very cold, and almost a near-vacuum, which is about what the Mars surface atmosphere is like.”



After the balloon burst, a camera aboard the lander took this wide-angle shot of the Earth below. The lander was recovered in the foothills in the lower right portion of the picture. (Photo: The Aerospace Corporation)

In its initial test, the MarsDrop lander performed well, though an electrical short prevented its parawing from deploying, forcing the lander to use one of its backup parachutes. “This first flight was a lot about just seeing whether we could get the experiment to work. It was a great learning experience,” says Eby.

Over the next year, Eby and his team plan to test the lander a few more times in order to prove the concept. Once all of the kinks are ironed out, the group will have developed a compact, cost-effective vessel for future scientific exploration on Mars. “You can't replace a three billion dollar Mars rover with a million dollar, six-pound lander,” says Eby. “The rovers can do amazing things. But the lander will be a good complement. You can send them out very inexpensively, scout-out high-risk areas and do some simple science.”

One of the more fanciful applications that the Aerospace team has dreamed up is a flyover of Mars' magnificent canyon system A Valles Marineris. Aside from its scientific utility, Eby sees the lander — and its potential for theatrical flyovers — as a wonderful PR tool for current and future Mars missions. “To say this is the first time we've ever flown over Mars or

flown on Mars, I think it would capture the interest of the public,” says Eby. “On the last mission that landed on Mars, they had a descent imager that captured a minute or two of video. It's really quite spectacular. Imagine doing something similar to that over

ten minutes of imagery. That would be quite interesting.”

With a mere six pounds of entry mass, the MarsDrop would be the first micro-probe to ever land on Mars and the first vehicle to ever fly within the confines of the red planet. That seems quite interesting, indeed.

Celebratory Ribbon Cutting Crystallizes Mission of New Office

July 24, 2013

By Jessica Brown

Top Aerospace executives, board of trustees members, and local Aerospace employees attended a celebratory ribbon-cutting ceremony for the new Crystal City office on Wednesday, July 24.

The Aerospace-maroon ribbon was cut by Dr. Wanda Austin, president and CEO of The Aerospace Corporation; Rand Fisher, senior vice president, Systems Planning, Engineering, and Quality (SPEQ); Randy Kendall, vice president, Civil and Commercial Operations (CCO); Dan Barbee, general manager, Facilities Division; and Alan Wade, board of trustees member.

After the ribbon was cut, guests mingled and toured the new office. Attendees also ate small desserts including cake and cookies decorated with the Aerospace logo.

On June 17, the employees of the Rosslyn office relocated to the new Crystal City office.

“This relocation will have a number of benefits to both the corporation and its customers,” said Austin. “The new centrally located office will allow better access to, and interaction with, customers. In addition, we will increase our efficiency, and reduce our leasing cost.”

Austin also thanked the team that organized, coordinated, and supported the move.



Wielding a pair of large scissors, from left to right, are: Rand Fisher, Alan Wade, Wanda Austin, Dan Barbee, and Randy Kendall. (Photo: Amanda Mccarty)



The ribbon-cutting festivities included a celebratory cake. (Photo: Jessica Brown)

Organizations in the Crystal City office are SPEQ and CCO. SPEQ provides analysis-based decision support on space architectures, developmental planning, system-of-systems engineering, threat reduction, and mission assurance that help shape future space missions across the national security space (NSS) enterprise. SPEQ is a unique group in that it not only directly supports major NSS customers – the Missile Defense Agency, Air Force Space Command, and the U.S. Strategic Command – but also provides a broad range of services and support across the NSS enterprise, both internal and external to Aerospace.

CCO provides expertise gained from experience in space and space-related areas to civil and commercial business customers who operate in the public interest. CCO customers include NASA, the Department of Energy, the FBI, and the National Oceanic and Atmospheric Administration.

Leaders Share Inspiring Personal Stories at Lifestyle Event

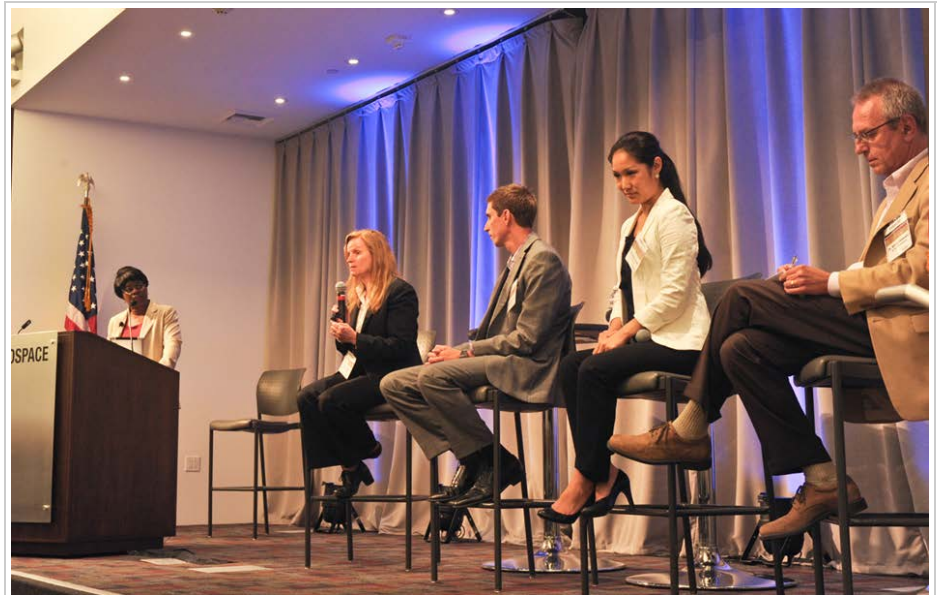
by Gail Kellner
July 22, 2013

Balancing your personal life with your role as a leader in the workforce or the community is not an easy task. How do you negotiate through barriers successfully and move from opportunity to opportunity?

Can you really have it all?

These were just a few of the questions that sparked a dynamic discussion aptly titled "Leadership Lifestyle: In Work, Life, and the Community" on July 18. Dr. Wanda Austin, Aerospace president and CEO, hosted the event that offered a unique opportunity to learn about individual traits of successful leaders by exploring their personal stories on their quest to succeed at work, in their personal lives, and in the community.

Invited employees, local industry, and community and university leaders were attentive as Austin moderated candid conversations including a "coffee talk" interview with a national bestselling book author, and a panel discussion with an esteemed group of leaders. An interactive question and answer session and a networking reception followed.



Dr. Wanda Austin moderates a panel discussion at the Leadership Lifestyle event on Thursday, July 18. Panel members, from left, are Claire Leon, vice president, Boeing Space and Intelligence Systems; Dr. Timothy Graves, senior project engineer, Space Based Surveillance Division; Christina Youn, Commander's Action Group, Space and Missile Systems Center; and Dr. Bruce Janousek, principal scientist, Strategic Planning. (Photo: Elisa Haber)

Aerospace co-chairs Dr. Jeff Emdee, general manager, Vehicle Systems Division; and Dr. Malina Hills, general manager, MILSATCOM Division, acknowledged distinguished guests, and introduced Austin.

Austin is frequently asked when she decided to become a CEO. Although she never consciously set out on that path, she said she realized at a very early age that solving math problems had a practical application – solving engineering problems.

"This thing that I loved, and that I could do well, was also very helpful; it helped make people's lives better," she said. "I was encouraged and helped along the way by my parents, my teachers, and my mentors. At the same time, I've been very blessed to have a wonderful husband and two marvelous sons who understand both my need to do my work, and the importance of being grounded."

Austin introduced her first guest, Nell Scovell, co-writer of the national bestseller, "Lean In: Women, Work, and the Will to Lead." The book describes the corporate ladder as more of a jungle gym than a linear ladder to the top and asserts that women must have the ambition to lean in to their career and bring a voice to the decision table. It also delves into many other questions, including "What would you do if you weren't afraid?"

In the 1980s, Scovell was a young journalist who took risks. She had a dream — to write for David Letterman. Although it was a long shot, she set her sights on joining the staff of an almost all-male writing staff. She sent jokes off to the show and never heard anything back from them, but those same jokes she sent in just for her "dream job" launched her television career.

Her dream persisted and she was eventually hired as the second female writer in the history of Late Night with David Letterman. She soon discovered that the job was not a good fit, and moved on to other writing endeavors that were much more satisfying.

On the topic of balance, Scovell describes herself as "a full-time mother, a full-time wife, a full-time writer, and a full-time person." She added, "My husband never said 'you are working too hard,' so all of these aspects mesh together."

Austin moderated the panel discussion with the precision of a talk show host, using quick off-the-cuff humor. The panelists were Claire Leon, vice president, Boeing Space and Intelligence Systems; Dr. Timothy Graves, senior project engineer, Space Based Surveillance Systems; Christina Youn, Commander's Action Group, Space and Missile Systems Center; and Dr. Bruce Janousek, principal scientist, Strategic Planning.



Dr. Wanda Austin with author Nell Scovell during the “coffee talk” portion of the leadership event. (Photo: Eric Hamburg)



Dr. Jeff Emdee, co-chair of the event, with Tomeka Fisher of Northrop Grumman, during the reception. (Photo: Eric Hamburg)

The group initially shared their stories on how they juggle their responsibilities and what they have learned along the way.

Leon wanted to make it clear that although she has achieved much success in her 34-year career, life is a journey and it is “messy.” “You have to make choices, prioritize, and choose your battles,” she said.

She said that her family afforded her one night off a week to do whatever she wanted. Since her passion was education, she pursued this, one week at a time, for years.

In the workforce, she feels that senior leaders set the tone and that modeling good leadership is very important. At Boeing, she has teams for strategy, people, and execution to keep those priorities out front and visible.

“Managers need to give their employees some space,” she said. “Flexibility is the key; we will have loyal employees if we allow them to take time off when they feel it is necessary or work part-time to refuel.”

Graves, a 2012 President’s Distinguished Achievement Award recipient, believes that passion and enthusiasm are very important. He views work as an extension of what he does with his life.

When he was in college, his parents expressed concern that he studied too much and they gave him money to go out and have some fun. He took his parents’ advice and started trying new adventures and experiences. He gained a lot of knowledge by pursuing internships, and he is paying that forward by being very involved with the summer intern program here at Aerospace.

“In order to lead, you must be excited about what you are doing,” he said. “When I believe in my project, I do better, and once it’s fun, it’s no longer a job.”

Youn’s advice about finding life/career balance was to step back and be honest about your career choice. If it is not fulfilling, be honest and admit that it doesn’t work for you. She did just that.

She went to law school, passed the bar exam, and had two short stints at different law firms. At her first job in a large law firm, it became apparent to her that the firm’s values and practices did not line up with her own so she tried another firm. After this, she was still unhappy, so she stepped back to admit that this was not the path for her. She took a course on negotiations and her professor became her mentor. Her mentor helped her to realize that she had tunnel vision regarding a career in the legal field and Youn then made a definitive decision to not pursue another job in the law field.

She is currently enjoying a federal service career as a speechwriter for Lt. Gen. Ellen Pawlikowski, commander, Space and Missile Systems Center.

Youn added that she believes the younger generation is more cognizant of the work-life balance issue and that they may define success differently due to the fact that they have had access to much more information at an earlier age.

Janousek made an unorthodox decision to work part-time for the last 20 years, but he has proven that you do not have to be a full-time leader to make significant contributions.

He believes that having a lot of interests and going to a small college gave him a myriad of experiences to add balance to his life. He also suggested that you can gain great leadership skills by working for the community. He said that he learned how to manage by stepping away for awhile and leading in the community.

What precipitated his decision to work part-time? He became the father of two children. He said early on that he was greeted with “attitude” by some men who wonder why he would ever want to give up his full-time career. He shared that he has spent his

adult life surrounded by a lot of women and he finds them to be empathetic, communally minded, and people who share.

“I don’t think we allow men to behave that way,” he said. In support of the irony of this statement, Austin said that in the United States, 20 percent of single households are led by men.

In wrapping up the evening, Austin said, “We need to encourage communication so employees can tell us what they need and what works for them in order for them to reach their full potential. Men and women both need to be part of the solution.”

Workshops on intentional career development and work-life balance will launch in early August. Watch for more information via the Talent and Learning Center.

Below is a video with some highlights from the event.

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Atlas V Launches Its Biggest Payload Ever

by Lindsay Chaney
July 19, 2013

The most powerful version of the Atlas V rocket lifted the Navy’s second Mobile User Objective System (MUOS) communications satellite to orbit Friday morning, July 19, from Cape Canaveral.

At nearly 15,000 pounds, it is the heaviest satellite launched by an Atlas V.

Flying in the 551 configuration, with a five-meter fairing, five solid rocket boosters and a single-engine Centaur upper stage, the rocket lifted off at 9 a.m. Eastern time (6 a.m. on the West Coast), 12 minutes into its 44-minute launch window. The delay from the launch window opening was a precaution due to upper atmosphere winds.

Reporting from Cape Canaveral three hours after the liftoff, Ray Johnson, vice president of Space Launch Operations, noted that MUOS-2 had “just completed ... a very successful spacecraft separation. This was a very clean flight with no major issues.”

Johnson added “congratulations to the Atlas team for completing this very important and very successful launch.”

In a variation from a typical Atlas 5 trip to geosynchronous transfer orbit, where communications satellites are released, Friday’s launch utilized three firings of the second-stage Centaur’s engine, instead of the normal two firings. The three firings allowed the Atlas to carry an extra 1,000 pounds.

It was only the fourth Atlas V launch in the 551 configuration. The other three were the first MUOS launch, and NASA missions to Jupiter and Pluto.



An Atlas V rocket carrying the Navy's MUOS-2 satellite is transported from the Vertical Integration Facility to the launch pad at Space Launch Complex 41 at Cape Canaveral. (Photo: United Launch Alliance, LLC)

Lam Named 2013 Liang Award Recipient

by Heather Golden
July 15, 2013

Dr. Tung Lam was honored as this year’s Dr. Alexander C. Liang Asian Pacific American Achievement Award recipient during a ceremony Wednesday, July 10. Lam is the director of the Spacecraft Thermal Department in the Engineering and Technology

Group (ETG).

The award, presented by the Aerospace Asian Pacific American Association (AAPAA), was renamed in 2010 in honor of Liang, who was a general manager of the Vehicle Systems Division, ETG, and a champion for Asian Pacific Americans working at the corporation, said Amy Peter, national president of AAPAA.

The annual award recognizes employees who demonstrate the same characteristics as the event's namesake, who is remembered as a great mentor, teacher, and friend.

"The purpose of this award is to recognize Asian American employees who have made significant individual achievements, contributions to the corporate mission, and contributions to the community," Peter said.

Dr. Wanda Austin said the award "speaks to one of our most important corporate commitments: to diversity and inclusion in every facet of our work, and throughout our community." Austin mentioned diversity as a key factor in maintaining 100 percent mission success.



Dr. Tung Lam was recipient of the 2013 Dr. Alexander C. Liang Asian Pacific American Achievement Award on July 10. (Photo: Eric Hamburg)

"Diversity provides fresh perspectives on new problems," Austin said. "The more diverse our workforce, the more potential – and creative – solutions we will have for any given problem. A diverse workforce is the ultimate win-win."

The selection committee received ample nomination applications, and Lam stood out among the rest for "his outstanding work at the Concept Design Center; his contributions to the successful deployment of the Enhanced Imaging System Satellite System; his contributions to the GPS, NASA and NRO programs; for authoring about 30 conference and journal papers, some of which were invited papers; his leadership positions in many Thermal Control Workshops and Thermophysics Committees; his mentoring of students at the His Lai Chinese School; and his many community fundraising activities and supervising school sporting events," said Kalyani Rengarajan, awards committee co-chair for the ceremony.



Liang Award recipient Dr. Tung Lam, left, with Betty Liang, widow of the award's namesake, and Mike Gin, keynote speaker and former mayor of Redondo Beach. (Photo: Eric Hamburg)

Upon being presented with the award, Lam said he was "surprised, honored, and humbled."

"I have always believed that to succeed in life, it is essential to be a hard worker," Lam said.

Lam came from what he called "humble beginnings" in Hong Kong, and said he had to fight for his education. His trip to school involved buses, ferries, and a very long walk that took him past the U.S. Consulate building. It was during these walks that Lam was inspired to think he could one day study in the United States.

"And here I am, after 45 years," he said. "I did not have luck on my side as a child, but with hard work and focus, I created my destiny."

Lam also credited part of his success at the corporation to Liang himself, who had been a mentor to Lam.

"He taught me that excellence and success is derived from a balance between passion and integrity. This award also features bamboo, a symbol of integrity – the balance of strength and flexibility. It is all of these qualities that I really admired in Alex, and I strive for them every day in work and life."

Lam thanked those who he said stood beside him and helped him get to where he is today, including his principal director, Dr. Carl Gran, who nominated Lam for the Liang Award.

He also thanked his children, Kirsten and Waylan, for the hours they willingly sacrificed their time with him so he could work on his many technical papers; and his wife, Estee, whom he referred to as his "dearest partner in life," for her years of support.

Former Redondo Beach mayor Mike Gin, and also a former member of the aerospace industry, served as the day's keynote

speaker. Gin spoke on the Asian Pacific American National Heritage Month theme of building leadership, embracing cultural values and inclusion.

Gin quoted from several articles and shared personal anecdotes to demonstrate those values, saying that “through all of these anecdotes and quotes, words such as connection, relationship, communication and the concept of engagement” were prevalent features. He shared a Haiku poster produced by the U.S. Forest Service in celebration of APA National Heritage Month.

“Without boundaries
Birds, fish, trees, rain, winds and seas
Cultures connecting.”

“Leadership in my experience has been about connection with individuals, building relationships, strengthening communications, and actively engaging with groups and individuals,” he said.

The ceremony was co-sponsored by the Aerospace American-Indian and Alaskan-Native Council, the Los Angeles Air Force Base, the Aerospace Totally Adaptable Group, and the Aerospace Women’s Committee.

Advanced EHF 3 On Its Way to the Cape

by Lindsay Chaney
July 10, 2013

In the early morning hours of July 9, a truck convoy left the Lockheed Martin factory in Sunnyvale, Calif., carrying the third Advanced Extremely High Frequency (AEHF) spacecraft on the first leg of its journey to Cape Canaveral, in preparation for its September 2013 launch.

An Aerospace team was on hand as the satellite was loaded onto a C-5 military cargo transport at Moffett Field. The satellite in its shipping container fit into the giant aircraft with just inches to spare.

The C-5 flew to Florida on July 10, where the AEHF-3 was scheduled for transport to the Astrotech processing facility for final preparations before launch.

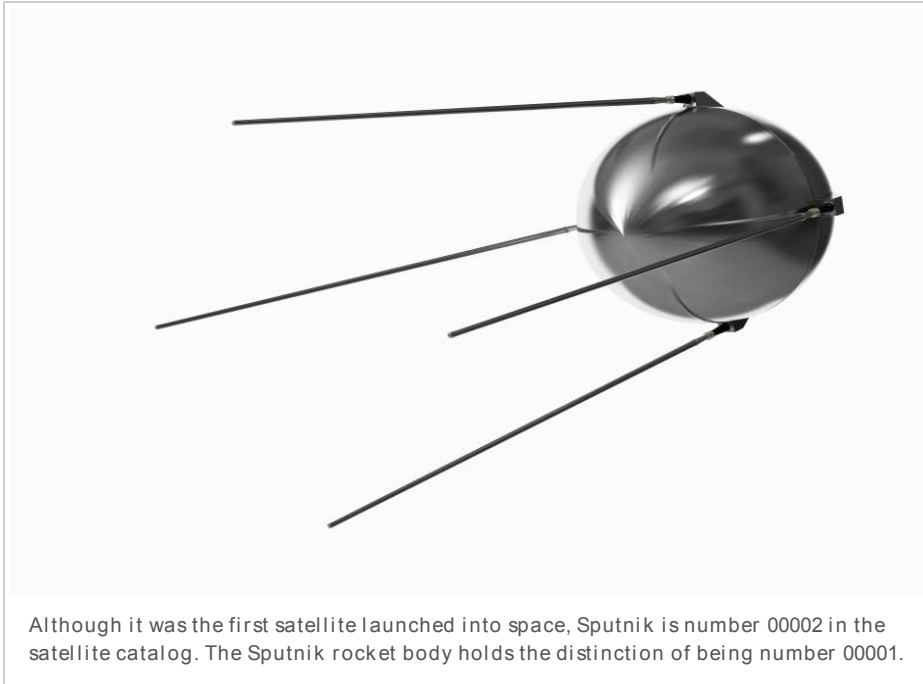
AEHF is a joint service satellite communications system that will provide survivable, global, secure, protected, and jam-resistant communications for high-priority military ground, sea and air assets. The AEHF system is the follow-on to the Milstar system, augmenting, improving, and expanding the Department of Defense’s MILSATCOM architecture.



The AEHF-3 container fits into a C-5 aircraft with inches to spare. From left to right, Terita Norton, James Liau, Andrew Dawdy, and Kimberly Chung. (Photo: The Aerospace Corporation)

A Counting Conundrum

by Laura Johnson
July 03, 2013



Pi may be infinite, but unfortunately that's not true of all numbers ...

A U.S. government system to track objects in space is running out of digits, and a new system must be developed to fix the problem.

Dr. Felix Hoots, a distinguished engineer in the Engineering and Technology Group, is following the issue to help Aerospace and its customers navigate the change with as little difficulty as possible. He encourages employees to start thinking about this issue now to ease the transition.

The Dilemma

The U.S. government has a satellite catalog that it uses to track all manmade items in space — everything from operational satellites to pieces of debris. The catalog contains information such as the launch date, launch site, orbit characteristics, and more.

Every item in this database has a unique five-digit number attached to it. For example, the International Space Station is 25544, and AeroCube 2 is assigned number 31133.

With only five digits to work with, there are only 99,999 numbers to assign. However, numbers 70,000 to 99,999 are only used for special items, such as launch processing, breakups, etc. Also, more sensitive sensors are being developed, which can see smaller objects in space. This means more objects to track.

So, while 99,999 numbers may have seemed like plenty at the dawn of the space age, it is now anticipated that the numbers may run out in five or ten years, depending on how many items are added to the catalog.

Can't You Just Add More Numbers?

A casual observer might suggest simply adding another digit to the numbering scheme, but this presents a surprising number of challenges.

The data on each object is presented in a standard format known as a two-line element set (TLE). The government, civilians, and international agencies can take this data and plug it into their formulas and programs to, for example, determine the position of a particular satellite to enable data exchange.

The problem is that the data in the TLE is presented in a very specific way, and computer programs are written to process the data accordingly. The satellite number currently has five digits. When that changes, computers programs around the world will not work, and a huge mess could ensue.

Ted Muelhaupt, associate principal director of the Systems Analysis and Simulation Subdivision, pointed out the impact to Aerospace.

"We already know that a considerable number of Aerospace software tools will be affected, and it will certainly impact much of operational and contractor software used to support our customers," he said. "We need to do a thorough review to identify everything that needs to be changed."

This is not just a problem for Aerospace, the government, or the military. Satellites have become a part of daily life, involved in everything from the weather report to the movie channel to personal GPS units.

Stay Informed
The time to start planning and budgeting for this problem is now!

If you would like to sign up for an Aerospace mailing list on this topic, visit [this webpage](#).

“Somewhere behind the scenes there is a TLE, a two-line element set, that is helping make all of those things possible,” Hoots said.

Moving Forward

The government has formed a Satellite Catalog Renumbering Working Group (SCRWG) to address the issue. The plan they have developed is to change the catalog number to a nine-digit format.

Obviously, this will have a broad impact, and software will have to be reprogrammed and modified to accommodate the change.

[Video Removed]

Felix Hoots explains the satellite catalog renumbering issue.

“For people who use these products, this is just like the Y2K problem we all faced when the calendar rolled over in the year 2000,” Hoots said. “That means every piece of code will have to be examined to see if it is affected. After examination, we will find only a fraction of the code that needs to be changed. But all will have to be examined.”

To make this a little easier, at the beginning, the nine-digit numbers will be assigned to smaller objects, such as debris, while the five-digit numbers will continue to be assigned to larger objects. For those who only need to track active satellites, this will delay the impact of the change.

The bottom line, however, is that at some point the format will be different and software will have to be adapted accordingly.

“The SCRWG cannot mitigate the fact that the count of satellites will eventually exceed the five-digit number currently used,” Hoots said. “All they can do is to anticipate the problem, decide what a new format will be, and get the word out to people that they need to modify their software.”

Hoots is carefully monitoring the issue, so Aerospace and its customers can be prepared for the transition, which will likely occur between 2015 and 2019.

Lab Renovations Help Ensure Mission Success

July 09, 2013

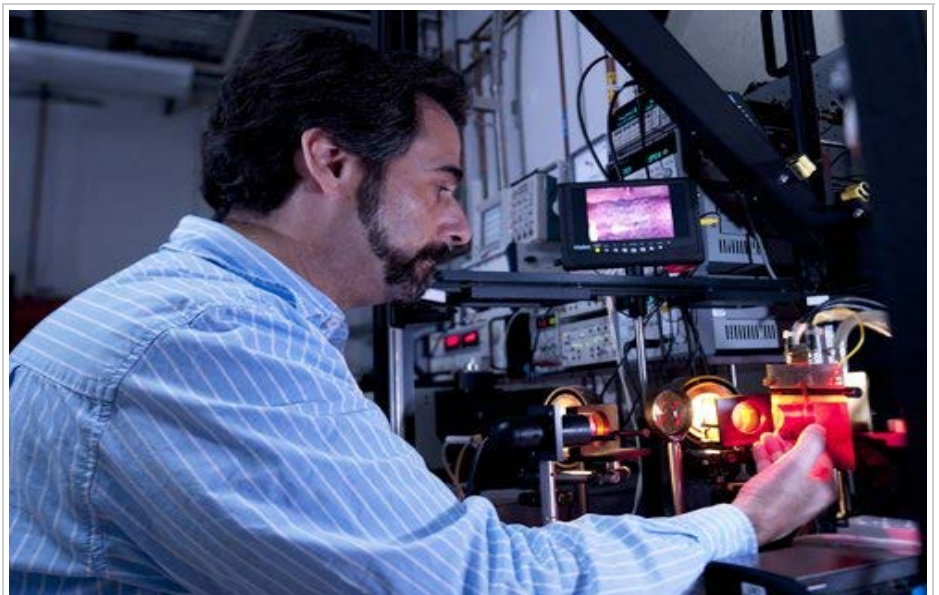
Aerospace’s A6 labs have undergone a \$12 million renovation to add a variety of new capabilities that will allow Aerospace to better support its customers.

About 20,000 square feet were renovated from February 2010 to September 2012. Yet to come is a Propulsion Research Facility, scheduled for construction in FY14.

The new and improved labs will support the effective and timely development and operation of national security systems through scientific research and the application of advanced technology.

The renovations provide better facilities for research in the areas of electronics and photonics, space materials, and space science applications.

The new Battery and Solar Cell Laboratory contains state-of-the-art and custom-made testing, evaluation, and destructive physical analysis tools that allow Aerospace experts to accurately characterize the performance of batteries and solar cells, determine degradation modes and rates, and model their on-orbit performance.



John Nocerino investigating the root-cause degradation of a space solar cell by measuring its light emission in the Battery and Solar Cell Laboratory. (Photo: Eric Hamburg)

The new Solid Mechanics Lab contains all of the test and fabrication facilities necessary to develop future picosatellites.

The capabilities of the new Advanced Composites Laboratory are centered on a high-performance Autoclave system, which allows Aerospace material scientists to work with advanced composite material systems including nano-materials.



High-performance autoclave in the Advanced Composites Laboratory used for the fabrication of advanced component material test articles. (Photo: Eric Hamburg)



Manuel Acosta setting up a CubeSat for launch vibration load testing in the Fluid Mechanics Lab. (Photo: Eric Hamburg)

The Nanostructured Materials Characterization and Contamination Mitigation Lab adds new capabilities for the synthesis and characterization of nanostructured materials.

The Microelectronics Reliability and Radiation Effects Lab includes three class-four laser bays, two non-laser labs and two sample preparation areas. This lab will allow increased space for characterization of the performance, reliability, and susceptibility to space radiation effects of advanced microelectronic and optoelectronic devices.

The High-Power Laser Lab adds new capabilities for development of high-power lasers at near-infrared to mid-infrared wavelengths, and laser applications such as LIDAR, active remote sensing, sensor calibration, and laser communications.

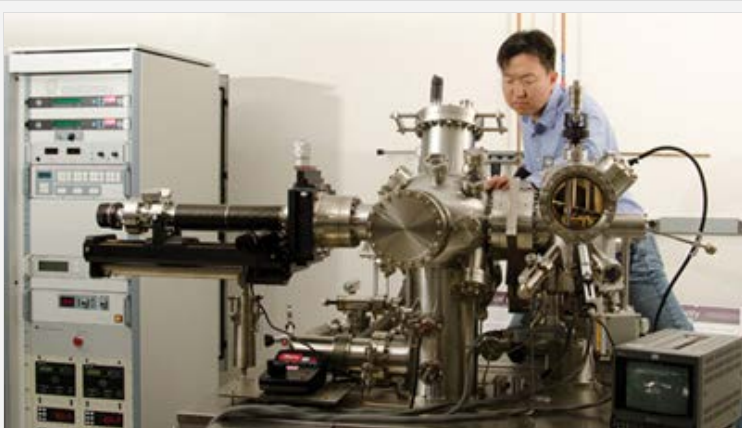
The Optical Measurements Lab enhances Aerospace's capabilities in the areas of optical thin film, optical element, and optical system characterization. Light-matter interactions are exploited to learn about the device under test.

The Electronic Materials and Devices Nanoanalysis Lab provides a centralized location for measurement of the physical and chemical properties of electronic materials and devices at the nanoscale. It includes new areas for electron and ion-beam microscopy.

The new Fluid Mechanics Lab provides facilities for investigation of spacecraft and launch-vehicle technologies and anomalies related to fluid mechanics and cryogenics. It also includes a shaker facility for evaluation of shock and vibration issues.

The Materials Nanoanalysis Lab provides a centralized location for the measurement of physical and chemical properties of spacecraft material interfaces at the nanometer scale.

The future Propulsion Research Facility will provide a safe environment for chemical propulsion research, with infrastructure for developing, studying, and evaluating high-energy rocket systems and combustible materials.



Dr. Hyun Kim using an ultra high vacuum atomic force microscope to evaluate surface properties of nanocomposite materials in the Materials Nanoanalysis Lab. (Photo: Eric Hamburg)

Construction Quandries

Do you know what goes into the design and construction of a laboratory — and an occupied laboratory at that?

The design, construction, and laboratory staff had to all work together to tackle some interesting challenges, such as...

- Designing and building a room to isolate noise-generating equipment from adjacent sound- and vibration-sensitive equipment
- Installing new liquid and gaseous nitrogen, compressed air, cooling water, and electrical systems while maintaining existing lab operations
- Finding a location to install massive air conditioning and dehumidification equipment for a high heat load battery lab and a one-percent humidity dry room
- Replacing a leaky roof while maintaining clean room operations below

And you thought remodeling your kitchen was hard!

Patents – Q3 FY13

July 16, 2013

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

Henry Helvajian, William Hansen, and Lee Steffaney; “Acoustic Devices Embedded in Photostructrable Ceramics;” U.S. Patent No. 8,410,660; issued April 2.
Sidney Yuan and David Curran; “Variable Phase Shift Devices for Pulse Tube Coolers;” U.S. Patent No. 8,408,014; issued April 2.
Matthew Ferringer, Ronald Clifton, and Timothy Thompson; “Systems and Methods for a Core Management System for Parallel Processing of an Evolutionary Algorithm;” U.S. Patent No. 8,433,662; issued April 30.
Rajendra Kumar; “Receiver for Detecting Signals in the Presence of High Power Interference;” U.S. Patent No. 8,433,008; issued April 30.
Nathan Wells and James Camparo; “Systems and Methods for Stabilizing Laser Frequency Based on an Isoclinic Point in the Absorption Spectrum of a Gas;” U.S. Patent No. 8,442,083; issued May 14.
Todd Rose; “Time-Domain Gated Filter for RF Communication Systems;” U.S. Patent No. 8,443,024; issued May 14.
Stephen La Lumondiere, Terence Yeoh, Martin Leung, Neil Ives, William Lotshaw, and Steven Moss; “Refraction Assisted Illumination;” U.S. Patent No. 8,450,688; issued May 28.
Felix Sasso and Walter Chung; “High Frequency, Hexapod Six Degree-of-Freedom Shaker;” U.S. Patent No. 8,453,512; issued June 4.
Henry Helvajian; “Method of Making an Embedded Electromagnetic Device;” U.S. Patent No. 8,479,375; issued June 9.
Stephen La Lumondiere, Terence Yeoh, Martin Leung, and Neil Ives; “Refraction Assisted Illumination for Imaging;” U.S. Patent No. 8,461,532; issued June 11.
Robert Dybdal, Samuel Curry, Flavio Lorenzelli, and Don Hinshilwood; “Systems and Methods for Increasing Communications Bandwidth Using Non-Orthogonal Polarizations;” U.S. Patent No. 8,462,879; issued June 11.
C. Christopher Reed and Richard Briet; “System and Methods for Detecting Defects;” U.S. Patent No. 8,466,687; issued June 18.

Patents – Q2 FY13

July 16, 2013

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

Kasemsan Siri; “Current Sharing Power System;” U.S. Patent No. 8,351,229; issued Jan. 8.
Adam Bushmaker; “Systems, Methods, and Apparatus for Generating Terahertz Electromagnetic Radiation;” U.S. Patent No. 8,357,919; issued Jan. 22.
Henry Helvajian, William Hansen, and Lee Steffaney; “Photostructured Electronic Devices and Methods for Making Same;” U.S. Patent No. 8,369,070; issued Feb. 5.
Thomas Grycewicz; “Imaging Geometries for Scanning Optical Detectors with Overlapping Fields of Regard and Methods for Providing and Utilizing Same;” U.S. Patent No. 8,368,744; issued Feb. 5.
Meg Abraham and David Taylor; “Systems and Methods for Preparing Freestanding Films Using Laser-Assisted Chemical Etch, and Freestanding Films Formed Using Same;” U.S. Patent No. 8,368,155; issued Feb. 5.
C. Christopher Reed and Richard Briet; “Computer-Implemented Systems and Methods for Detecting Electrostatic Discharges and Determining Their Origination Locations;” U.S. Patent No. 8,370,091; issued Feb. 5.
Gouri Radhakrishnan and Paul Adams; “Method for Growth of High Quality Graphene Films;” U.S. Patent No. 8,388,924; issued March 5.
Sidney Yuan, Ed Fong, and David Curran; “Phase Shift Devices for Pulse Tube Coolers;” U.S. Patent No. 8,397,520; issued March 19.

Patents – Q1 FY13

July 16, 2013

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

Robert Cole and Gouri Radhakrishnan; “Ultra-Stable Refractory High-Power Thin Film Resistors for Space Applications;”

U.S. Patent No. 8,284,012; issued Oct. 9, 2012.

Matthew Ferringer and Timothy Thompson; "Systems and Methods for Generating Random Feasible Solutions for an Evolutionary Process;" U.S. Patent No. 8,285,653; issued Oct. 9, 2012.

Nielson Schulenburg, David Warren, Donald Rudy, Michael Martino, Mark Chatelain, and Michael Rocha; "Nadir Emissive Hyperspectral Measurement Operation (NEHMO);" U.S. Patent No. 8,304,730; issued Nov. 6, 2012.

Thomas Grycewicz; "Methods for Estimating Peak Location on a Sampled Surface with Improved Accuracy and Applications to Image Correlation and Registration;" U.S. Patent No. 8,306,274; issued Nov. 6, 2012.

David Ksienski, Walter Bloss, Eric Hall, and James McKay; "Heptagonal Antenna Array;" U.S. Patent No. 8,314,748; issued Nov. 20, 2012.

Jon Osborn; "Plasmon Stabilized Laser Diodes;" U.S. Patent No. 8,325,776; issued Dec. 4, 2012.

Siegfried Janson; "Propulsion Systems and Methods Utilizing Smart Propellant;" U.S. Patent No. 8,336,826; issued Dec. 25, 2012.

July Obituaries

July 01, 2013

Sincere sympathy is extended to the families of:

David Cohn, member of the technical staff, hired April 24, 1961, retired Nov. 1, 1982, died May 31.

Robert Leyva, office support, hired Feb. 16, 1971, retired Sept. 1, 2001, died June 2.

Eugene Ruge, project engineer, hired Feb. 26, 1979, retired Nov. 1, 1998, died May 17.

Janice Sulser, office support, hired Oct. 26, 1981, retired Aug. 1, 2008, died June 1.

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

July Anniversaries

July 01, 2013

45 YEARS

Engineering and Technology Group: Ramunas Skrinska

40 YEARS

Engineering and Technology Group: Miguel De Virgilio

35 YEARS

Engineering and Technology Group: Patricia Bertrand, Melodie Evans, Robert Frueholz, Ronald Hovden, Nancy Kern

Executive Offices: Larcine Gantner

Operations and Support Group: Wendell Barrett

Space Systems Group: Fred Ovidia, Colleen Yinger

30 YEARS

Engineering and Technology Group: Robert Cole, James Gillis, Carolyn Lee-Wagner, Donna Nystrom

Executive Offices: Margaret Van Dyke

Space Systems Group: Andrea Amram, Christine Stevens

25 YEARS

Engineering and Technology Group: Robert Fraser, Steven Hansel

Operations and Support Group: James Ford

20 YEARS

Civil and Commercial Operations: John Goble

Engineering and Technology Group: Todd Gonser, Bernard Yoo

National Systems Group: Edward Olson

Operations and Support Group: Ronna Arnold, John Tunell

Space Systems Group: Brian Lucky

15 YEARS

Civil and Commercial Operations: John Haas, Gary Kroll

Engineering and Technology Group: Donna Wheelock, Bryan Wong

Operations and Support Group: Kimberly Britzman, Sam Watanabe

10 YEARS

Engineering and Technology Group: William Binegar, Terrance Cooney, John McVey, Travis Patrick, Andrew Tretten

National Systems Group: William Free, Lester Picot

Operations and Support Group: Elizabeth Alluin-Ray, Sherry Rose

Space Systems Group: Sheila Bunch, Heidi Graziano, Paul Humel, Larry Rensing

5 YEARS

Civil and Commercial Operations: Eugene Legg, Justin Yoshida

Engineering and Technology Group: John Arcos, Miles Brodie, James Eckstein, Krikor Geysimonyan, Ingrid Hallgrimson, Daniel Leninsky, Amy Peter, Sunit Ranu

National Systems Group: Thomas Chrien

Operations and Support Group: Kate Lee

Space Systems Group: David Cavazos

Systems Planning, Engineering, and Quality: Bernie Carpenter, Nathan Titus