

## CEO All Hands Focuses on Growth, Challenges, and Opportunities

by Wendy O'Dea

March 14, 2018

At a companywide All Hands meeting held in Chantilly on Wednesday, March 14, Aerospace President and CEO Steve Isakowitz discussed some of the challenges and opportunities the company currently faces, particularly how to grow and cement Aerospace's reputation as a national company.

Isakowitz and fellow presenter Dr. Wayne Goodman, executive vice president, also highlighted news and mission successes, progress on the four imperatives, and insights gained from a recent visit by Patrick Shanahan, deputy secretary of defense. Shanahan is the most senior-level government official to ever meet with the Aerospace board of trustees.

An informative question-and-answer session was also held with Senior Vice President of the Engineering and Technology Group Chuck Gustafson, discussing ways Aerospace is working to best leverage the changing demands of customers and what it means to grow as a national company.



*Employees were told to bring cell phones to the All Hands in order to participate in an instant poll. (Photo: Walter Sturrock)*

As an experiment, throughout the presentation, employees were asked several questions for an instant poll, with results immediately displayed on a screen in Chantilly. Employees could vote on their cell phones, other mobile devices, or desktop computers.

Isakowitz kicked the meeting off with a hat tip to renowned theoretical physicist Stephen Hawking, who passed away on March 13. Hawking once said "Intelligence is the ability to adapt to change," which is relevant now more than ever given the potential growth at Aerospace.

Shanahan, who served as keynote speaker for the Thought Leadership Series at the most recent board of trustees meeting, spoke about his goals, including the desire to build more lethal, resilient, agile, and affordable capabilities.

"He challenged Aerospace in very direct language," Isakowitz said, "noting that there is a real threat to space that impacts the nation's defense. He believes that FFRDCs are here to solve the hard, national problems, and he tasked us to lead the way in finding solutions." Shanahan asked for solutions to be presented by summer, and Isakowitz said that Aerospace will meet that request because this is what shaping the future and leading looks like.

The board also hosted Betty Sapp, director of the company's largest national security customer, and Congressman Jim Bridenstine, Oklahoma representative and the current nominee for NASA administrator, who were also focused on growth and innovation.

"This is a clarion call to bring out the best in us," Isakowitz said. "As one of our board members noted, it's a once-in-a-generation opportunity to shape the Department of Defense's space program."

### GROWING AS A NATIONAL COMPANY

Isakowitz discussed how Aerospace will grow to meet the demands of customers, specifically in numbers. In FY17 the company hired more people than ever before (400) and expects to exceed that in FY18. Intern hiring will also increase by nearly 20 percent, and Isakowitz said STE is likely to increase considerably as well.



Steve Isakowitz leads the Chantilly audience in the Pledge of Allegiance. (Photo: Robin Cormier)

"We're hearing directly from our customers about the additional support they need," Isakowitz stated. He encouraged employees to think of Aerospace at a national level to support customers across the entire space enterprise.

To provide insight on how Aerospace is approaching this growth opportunity, Isakowitz spoke with Gustafson about what it means to be a national company, how to launch a regional office — or expand an existing one — and what this growth may look like for employees.

"We're positioning ETG to help achieve an expanded national presence," Gustafson said. "This means that ETG will have closer ties to more programs and customers, more locations with technical subject matter experts, more career opportunities, and better retention." [Click here](#) for more information on the ETG initiative.

## LAUNCH AND OPERATIONS SUCCESSES

Isakowitz highlighted Aerospace's involvement on recent missions and satellite activities over the past quarter:

- The successful launch of a Delta IV on a national security mission (Jan. 12) with all new common avionics from Vandenberg Air Force Base after numerous delays. As part of the Aerospace launch verification process last year, it was discovered that an electrical compatibility issue existed, and Aerospace proposed a solution that ULA implemented prior to launch.
- In late January, the SBIRS GEO-3 Flight 4, aboard an Atlas V, launched

from Cape Canaveral with no significant issues. The Aerospace team was instrumental in the operational planning.

- On March 1, Aerospace monitored the launch of the Geostationary Operational Environment Satellite-S (GOES-S). The Atlas V mission benefitted from the use of Aerospace's new pre-launch polling process, which polls technical experts and managers throughout the company.
- Commissioning, checkout, calibration, and handover of the GOES-16 weather satellite (launched in November 2016) to NOAA operations was completed.
- Aerospace is currently engaging in multiple failure review investigations for various agencies and commercial launch providers.
- The CubeSats teams continued to push frontiers, working on both the ISARA and OCSD-B/C (Optical Communication and Sensor Demonstration) CubeSats.

## NEW PARENTAL LEAVE PROGRAM

Isakowitz announced that a new parental leave program has been approved for all employees. This program will provide four weeks of paid leave for birth, adoption, and foster placement for all employees.

Both parents are eligible for the program for the purpose of baby bonding. Eligible employees will maintain their current benefits and compensation during leave, including the accrual of vacation hours. "Not every company supports parental leave," Isakowitz said. "It's another example of how the Aerospace family is committed to your family."

The Aerospace bargaining unit (APSA) also agreed to a two-year contract that includes health benefits and short-term disability. Discussions are ongoing regarding other outstanding issues, including the retirement plan.

## HERO PINS AND 007 AWARD

Before wrapping up, Isakowitz recognized recent Hero pin and 007 Award pin recipients:

- Shaping the Future—Steve Dunham, for briefing to high-level customers on the Space Warfighting Construct.
- Innovation—Carrie O'Quinn, for her outstanding work on pulling together an industrywide consortium to work on the Launch U standard.
- Growth—Jennifer Noble, Anh Tu, Grant Williams, and Patrick Bauer for their work in developing a new customer relationship at NASA Headquarters in Aeronautics, and leveraging customer relationships from the FAA.
- Velocity—Christina Tan and her WGS team, for shrinking the mission assurance activities from 5 to 10 years to less than a year-and-a-half for the concurrent WGS-8 and WGS-9 campaigns.
- CEO 007— Ted Muelhaupt, Roger Thompson and Andrew Abraham, for creating and delivering their exceptionally clear analysis of the orbital debris environment, its prospective growth due to new large LEO constellations, and the implications for space traffic management (Ted presented this briefing more than 50 times!).

# Crystal City Hosts Media Covering Tiangong Reentry

by **Lindsay Chaney**  
March 29, 2018

Excitement about the reentry of the Chinese space station Tiangong-1 reached a fever pitch this week as projections for the timing of reentry narrowed to early morning on Sunday, April 1, plus or minus 16 hours.

In anticipation of a surge of media interest around the reentry, Aerospace's Center for Reentry and Debris Studies (CORDS) and Center for Space Policy and Strategy (CSPS) teamed up to provide presentations to members of the media at Aerospace's Crystal City office.

Speaking to a crowd of journalists from media outlets such as the New York Times, POLITICO, Defense News, and Al Jazeera English, CSPS's Jamie Morin, Marlon Sorge, and Jim Vedda put the reentry of Tiangong-1 into perspective, looking at large strategic questions about the proliferation of objects in orbit, and the international legal structures in place to address reentry.



*Jamie Morin, director of Aerospace's Center for Space Policy and Strategy, briefs members of the media. (Photo: Robin Cormier)*

The CORDS team of Ted Muelhaupt, Roger Thompson and Andrew Abraham gathered the reporters in Crystal City's Space Traffic Management Lab to present reentry data and projections, as well as the variables that make reentry prediction so difficult. The team was careful to underscore the extreme improbability of individuals being hit by reentering debris, telling the reporters that the chance any one of them would be hit was much smaller than the chance any of them would win the Powerball lottery jackpot.

To keep an eye on where Tiangong is at this very moment, bookmark CORD's [Tiangong Reentry page](#) and be sure to check it on Saturday as the predicted window for reentry opens.

## Close Encounters of the Fiery Kind

by **Lindsay Chaney**  
March 27, 2018

What goes up must come down, which is generally true if the "what" is a space station. However, exactly when and where it will land on Earth is anybody's guess, especially if the space station is China's [Tiangong-1](#). Sent into orbit on September 30, 2011, Tiangong-1, or "Heavenly Palace 1," is China's first space lab, the prototype for China's ambitious space program to launch a permanent, 20-ton space station in 2023. Tiangong-1 weighs 8.5 tons, measures 34 feet by 11 feet, and is the approximate size of a school bus.

Tiangong-1's initial launch was unmanned, but it has a habitable experimental module to house astronauts. Its primary mission was to perform docking and orbital experiments. Over a five-year period, two successful manned missions by taikonauts (Chinese astronauts) took place, which included China's first female astronauts, Liu Yang and Wang Yaping.





For Tiangong-1's return to Earth, China's original plan was to control its descent using thruster burn. However, on March 16, 2016, China reported to the United Nations that Tiangong-1 "ceased functioning" but didn't state why. There has been considerable speculation as to the cause, but only the Chinese know for certain. Tiangong-1 is now on a decaying orbit as its altitude slowly decreases while its falling speed toward Earth rapidly increases. When it reaches Earth's upper atmosphere, the space station will make its uncontrolled reentry.

### When Will Tiangong-1 Fall to Earth?

Tiangong-1's reentry is being closely monitored by The Aerospace Corporation's [Center for Orbital and Debris Reentry Studies](#) (CORDS). Established in 1997, CORDS advises government and commercial businesses about [space debris](#) and collision avoidance. The organization also monitors the reentry and breakup of space hardware. Based on its calculations, CORDS estimates that Tiangong-1 will reenter Earth's atmosphere on April 1, 2018, give or take 36 hours. It is not easy to predict when an object will return from space due to multiple factors, including an object's orientation, location, physical properties, speed, space weather, and the density of the upper atmosphere to consider. "We have been monitoring this data closely and perform reentry calculations on a regular basis to monitor any changes in the space station's orbit or decay rate," said Andrew Abraham, a member of Aerospace's Department of Mission Analysis and Operations team, which is tracking Tiangong-1's journey back to Earth.



Artist's rendition of Tiangong-1. (Illustration: Joseph Hidalgo)

### Will Tiangong-1 Hit Me or My Property?

There's no need for alarm or to run around exclaiming the sky is falling since most of Tiangong-1 will most likely burn up upon reentry due to extreme heat and violent forces. Objects compress air beneath them as they reenter Earth's atmosphere, producing intense heat. These high temperatures and pressure will cause objects to break, melt, and vaporize, so there is little left besides fragments of the object to actually land on Earth.

Large space station parts, especially those that are thermally protected like fuel, oxygen, and water containers may survive, but the odds that they will hurt anyone is extremely slim. In fact, Aerospace calculates the odds of space debris hitting a person to be less than one in 1 trillion; you have a better chance of being struck by lightning. However, if you are lucky enough to experience any part of Tiangong-1's reentry,

report your sighting to Aerospace [here](#).

### Where Will Space Debris Land?

Timing dictates the location of an object's reentry, so predicting where it will fall is difficult. Calculations suggest Tiangong-1 will reenter somewhere between the latitudes of 43 degrees north and 43 degrees south. This area encompasses a widespread portion of Earth, including the northern U.S., the Middle East, northern Spain, parts of France, Portugal, Greece, central Italy, parts of Chile and Argentina, New Zealand, Tasmania, southern Africa, and northern China. Aerospace estimates any surviving pieces from Tiangong-1 would fall within a 200-mile radius and be centered along a point on Earth that it passes over. However, since Earth is mostly covered by water, it is very likely that any space debris from Tiangong-1 will probably fall into a body of water.

If all of this sounds vaguely familiar, this is not the first time the exploits of a falling Tiangong-1 has appeared in the media. In the 2013 Academy Award-winning film "Gravity," Sandra Bullock plays an astronaut who uses the deorbiting Tiangong-1 as a return vehicle to Earth after her space shuttle is damaged by space debris.

While there are no movie stars or astronauts aboard the real-life Tiangong-1, its homecoming is nonetheless still of supreme interest to the space industry and the public. Aerospace agencies and companies worldwide are eagerly watching where the space station, or remnants of it, will land. "We have been making a special case of examining Tiangong-1 because of public and media interest in a reentering space station; not because it is a particularly dangerous reentry," Abraham said.

Stay tuned.

# Tiangong? Not For Long!

by **Gabriel A Spera**  
March 22, 2018

Members of the local news media attended a briefing and live demonstration on Wednesday, March 21, concerning the impending reentry of the Chinese Tiangong-1 space station. Interest in the failing spacecraft has been growing more intense as the date of its reentry approaches. In fact, National Public Radio recently interviewed Aerospace's Bill Ailor about the Tiangong for its popular "[All Things Considered](#)" broadcast.

Ailor, along with Ted Muelhaupt of the Center for Reentry and Debris Studies (CORDS), described Aerospace efforts to track the spacecraft to about a half dozen reporters from *Aviation Week, L.A. Business Journal*, and *The Daily Breeze*. The briefing included a tour of the STARS mission control center, where Ailor recounted the corporation's long history in studying orbital debris and spacecraft reentries. Ailor spoke about the astounding amount of space junk—more than 20,000 pieces large enough to track—and briefly described efforts to characterize it, such as the DebrisSat and the Reentry Breakup Recorder (REBR). Muelhaupt explained the difficulties of predicting the precise time and place of reentry and relative risk to population centers. Relative risk, he noted, is a difficult concept for the general public to understand.

The Tiangong, Muelhaupt said, is roughly the size of a school bus—which is not unusually large, as far as inhabitable spacecraft go. It is not considered unusually hazardous, either. About two years ago, China lost contact with the Tiangong, which meant that an uncontrolled reentry was inevitable. Muelhaupt described the phases of destruction as the spacecraft passes through the atmosphere. He also explained the various cumulative factors that confound any efforts to pinpoint where and when the pieces will fall to Earth, noting that a small variation in a factor such as solar activity can lead to a large discrepancy between prediction and reality.

The briefing concluded with a visit to the 1-meter telescope on top of the E-Pod in the Aerospace Getting Laboratories, which is being used to track the Tiangong. Data from the telescope suggests that the Tiangong may be slowly tumbling.

Aerospace currently predicts the Tiangong to reenter on April 1, give or take a few days. Depending on where and when it happens, observers on Earth may be treated to a brief glimpse of the glowing debris.

Even if Tiangong falls far from any population center (as is most likely, according to Muelhaupt), future spectacles are always possible. "We are on the cusp of a new era in space," Muelhaupt said. "In the next 10 to 20 years, seeing a reentry is going to be a common thing."

An [animated representation](#) of the Tiangong reentry is available on the corporate YouTube channel. Additional information, including regular updates, can be found on the [CORDS website](#).



*Rick Rudy of the Remote Sensing Department discusses the Aerospace telescope and Tiangong-1 with members of the media (Photo: Elisa Haber)*



*Ted Muelhaupt explains the Tiangong-1 reentry to media at the STARS Mission Control Center (Photo: Elisa Haber)*

# CSPS Hosts Inaugural Meeting of New Senior Advisory Council

by Wendy O'Dea  
March 23, 2018

The Center for Space Policy and Strategy (CSPS), established to promote Aerospace's strategic imperatives and push the company forward, recently hosted the inaugural meeting for a new [Senior Advisory Council](#). The two-day meeting was held in Crystal City.

"This council is the product of a board decision to increase the role of the CSPS and Aerospace's role in the D.C. area," said Michael Donley, chairman of the Aerospace board of trustees. "Space enterprise importance is increasing and Congress and the National Space Council are very active, thus driving a full agenda of new policy issues."

The council will work as strategic advisers to CSPS's research agenda and will review individual projects. The seven council members will bring deep insight and experience from across the space enterprise. These members are:

- Vice Adm. Manson Brown, USCG (Ret.), former senior official at the National Oceanic and Atmospheric Administration
- Carissa Bryce Christensen, founder and CEO of Bryce Space and Technology
- The Honorable Madelyn Creedon, formerly second in charge at the National Nuclear Security Administration and former assistant secretary of defense overseeing space policy
- Adm. Cecil Haney, USN (Ret.), former commander of U.S. Strategic Command
- Lt. Gen. Larry James, USAF (Ret.); deputy director of NASA's Jet Propulsion Laboratory and former head of intelligence for the Air Force
- Maj. Gen. Susan Mashiko, USAF (Ret.), former senior intelligence official
- Col. Pamela Melroy, USAF (Ret.); founder and CEO of Melroy & Hollett Technology Partners, member of the National Space Council Users Advisory Group, veteran of three space shuttle missions, and recently appointed as a member of the Users Advisory Group for the National Space Council

"We're honored to have these luminaries supporting CSPS," said Jamie Morin, executive director of the Center. "They were each handpicked to offer insights across the spectrum of space activity."

During its first meeting the council was briefed on the history of CSPS, its recent policy papers, and themes of interest being addressed in the coming year. Among those who presented were Donley, President and CEO Steve Isakowitz, former Deputy Assistant Secretary of Defense for Space Policy Doug Loverro, and the Federal Aviation Administration's Associate Administrator for Commercial Space Transportation George Nield, among others.

## ATAG and AMV Host Inspirational Talk by Fred-Curtis Lewis

March 26, 2018

Fred-Curtis Lewis, U.S. Army veteran and extreme sports participant, was the guest speaker about overcoming obstacles at an event cosponsored by the Aerospace Totally Adaptable Group and Aerospace Military Veterans.

The event was held in El Segundo and available via VTC to several regional locations. Kevin Bell, vice president, Space Program Operations, introduced Lewis.



*Aerospace Senior Attorney Kien Le presents to the CSPS Senior Advisory Council. (Photo by Mark Finkenzaedt)*



Lewis' talk focused on the emotional and physical gains that are won when pushing perceived self-limitations. He reflected on injuries he suffered while serving as a linguist and special forces medical sergeant in the U.S. Army. After receiving a medical discharge due to seizures and migraine headaches, Lewis earned his bachelor of science degree in livestock production from East Kentucky University and operated a 120-acre farm. Unfortunately, he was forced to leave farming due to health issues.

Lewis' life began to change when he moved to Maui and began concentrating on fitness and nutrition to help aid his recovery. He started entering adventure races, obstacle courses, and other challenging events and, eventually, his young daughter encouraged him to enter an extreme sports competition. Although he had doubts about being able to successfully compete, Lewis decided to enter the competition. He said that by pushing his own physical, emotional, and mental boundaries—whether ready or not—his victory was in challenging himself.



*Fred-Curtis Lewis speaks at recent event in El Segundo.  
(Photo: Elisa Haber)*



*Aerospace CEO Steve Isakowitz talks with speaker  
Fred-Curtis Lewis. (Photo: Elisa Haber)*

The ultimate challenge presented itself when Lewis agreed to compete in the televised competition American Ninja Warrior. As someone averse to being in crowds due to post-traumatic stress disorder, the situation was extremely taxing. However, he worked through his uneasiness and completed the challenge.

"Mr. Lewis is truly an inspiration to us all," said Randy Kendall, vice president of Launch Programs, in closing remarks at the speaker event. "When I think of all that he has been through, and his determination to use obstacles as motivation, not excuses, it makes me realize how insignificant my daily challenges are by comparison. It motivates me to up my game."

Lewis is now focusing on a project he cofounded in 2015 called Vetscape, a nonprofit, adventure-oriented organization helping veterans find their next mission and transition into civilian life.

At the conclusion of the Aerospace event, Lewis was presented with a certificate of appreciation and ATAG T-shirt.

## Aerospace Employees Mentor Students at St. Bernard High School

by Wendy O'Dea  
March 05, 2018

Saturday, Feb. 24, marked the fourth year Aerospace has partnered with high school students for the St. Bernard High School Annual STEM Summit. Students meet with Aerospace engineers prior to the summit to develop their projects, which, in 2018, were a balsa bridge and plane design.

At a session leading up to the Aerospace-sponsored summit, Anh Dang, an Aerospace associate systems director, shared with the students a presentation on the history and background of The Aerospace Corporation. The students had previously taken a tour of the El Segundo campus and had expressed an interest in learning more about the company.

Dang's presentation was followed by a shoulder-to-shoulder mentoring session on the design and construction of a balsa wooden bridge, as well as testing and failure analysis of the bridges.

[www.aerospace.org](http://www.aerospace.org)



*Retired Air Force Gen. Kevin Chilton advises STEM Summit  
students as Todd Nygren, Aerospace chief engineer, looks on.  
(Photo: Amy Locker)*



"It was an enjoyable and engaging experience for both students and volunteers alike," Dang said.

The mentoring sessions are designed to prepare the high school students to then mentor incoming middle school students from the surrounding Playa del Rey community on the day of the summit.

"Our high school student mentors worked very hard and were ready to help the middle school students with the projects," said Heather Carmody, STEM department chair at St. Bernard's. "They really enjoyed working with the Aerospace mentors who attended the summit."

Approximately 140 middle school students participated this year, testing and making real-time adjustments with advice from their high school mentors and Aerospace engineers. They were encouraged to think creatively about their design ideas.

Former Aerospace board of trustees member, NASA astronaut, and retired Air Force Gen. Kevin Chilton, who is also an alumnus of the high school, had the original idea for the summit. He has routinely served as the master of ceremonies for the competition portion of the day during which student teams competed to see which balsa bridge withstood the strongest weight, and which planes had the furthest flight and longest air.



Aerospace's Kelly Collett encourages students designing their plane.  
(Photo: Amy Locker)

## March 2018 Obituaries

by **Jessie Ding**  
March 01, 2018

*Sincere sympathy is extended to the families of:*

**Connie Bongiovanni**, office of technical staff, hired Mar. 15, 1982, retired May 1, 2008, died Feb. 17, 2018  
**Steve Callas**, member of technical staff, hired June 20, 1988, retired Nov. 1, 1998, died Feb. 4, 2018  
**Nancy Carcelli**, office of technical staff, hired Jan. 27, 1964, retired Sep. 1, 1995, died Jan. 17, 2018  
**Charles Coulbourn Jr.**, member of technical staff, hired July 12, 1971, retired July 1, 1996, died Feb. 14, 2018  
**Robert L. Feeley**, member of administrative staff, hired Mar. 17, 2003, died Feb. 16, 2018  
**William E. Grahame**, member of technical staff, hired Oct. 7, 1980, retired Oct. 1, 1993, died Feb. 5, 2018  
**Elani M. Hemphill**, office of technical staff, hired May 8, 1972, retired Apr. 1, 2007, died Feb. 9, 2018  
**Brian Henshall**, member of technical staff, hired Nov. 7, 1962, retired Oct. 1, 1983, died Jan. 30, 2018  
**Sam S. Imamoto**, member of technical staff, hired Mar. 29, 1962, retired May 1, 1993, died Jan. 1, 2018  
**Mary Beth Logan**, office of technical staff, hired Oct. 24, 1960, retired July 1, 1987, died Dec. 24, 2017  
**Alan L. Paynter**, member of technical staff, hired Nov. 29, 1960, retired Oct. 1, 1993, died Feb. 13, 2018  
**Darrell A. Schermerhorn**, member of technical staff, hired May 6, 1963, retired Jan. 1, 2006, died Feb. 10, 2018  
**Robert Ueunten**, associate technical support, hired Feb. 26, 1968, retired Oct. 1, 1995, died Jan. 9, 2018  
**Mildred Vunich**, office of technical staff, hired Oct. 24, 1960, retired Dec. 1, 1981, died Jan. 14, 2018

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