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Get Moving: Three Aerospace Employees Embrace the Principles of Wellness

Posted Feb. 28, 2013 · Feature · By Gail Kellner



Elisa Haber

Left to right, Ray Meadows, Judy Gonser, and Ivory Porter have taken simple steps to incorporate wellness into their daily routines.

When it comes to diet and exercise, sometimes we get caught up in what gym to join, how long we should walk, or what diet to follow, rather than moving naturally in our given environment and eating in moderation.

Three Aerospace employees have found simple solutions to this quandary, including taking the stairs instead of the elevator, having back-up exercise plans when the weather interferes with their regimen, and occasionally indulging in their favorite treats without getting off track.

Ivory Porter, facilities services manager, Facilities Directorate, has a powerful message to share about the importance of having regular blood tests. He also wants you to know that physical appearances can be very deceptive.



Ivory Porter. Photo by Elisa Haber

He was feeling confident, healthy, and fit when he went to a new medical group within his HMO plan in January 2012. Upon his initial meeting with the doctor, Porter was greeted with the comment, “Well, you look like you are in great shape!”

His lab results, however, told an entirely different story about his health status. His blood pressure, cholesterol, and blood sugar were all high. “You are headed for a stroke,” his doctor warned, while writing out prescriptions for medications.

First on Porter’s agenda toward “getting well” was the elimination of sugar and other foods made with white flour. He switched to whole wheat instead and said goodbye to sugar. Porter claims that he had a large stock of sugar-loaded soda beverages in various refrigerators at home. He also previously put an incredible amount of sugar in his coffee, as well. He immediately made the switch to Splenda.

The second biggest change he made to his routine was to switch from a regimen of 90 percent weight lifting and 10 percent cardio workout to exactly the opposite. In other words, cardiopulmonary exercise became his focus 90 percent of the time and he added in resistance training only 10 percent of the time.

He and his wife Paulette Porter, associate business administrator, MILSATCOM Division, have always been very active. They take their vanpool straight to the gym on their way home from work each evening, and they recently purchased an exercise bike and a treadmill for home as a back-up.

Porter said he is currently in the best shape of his life, although people frequently ask him if he has been ill due to his slimmed-down appearance. His weight has dropped from 245 to 209 pounds. He is off of the medications that were given to him for blood pressure and cholesterol and he is no longer considered a borderline diabetic.

“I did everything that my doctor told me to do,” Porter said. “Now, I work out with a different mindset; it’s for my health, not just for my physical appearance.”

Judy Gonser, director, Employee Benefits and Labor Relations, practices what she preaches. Her Benefits team is responsible for creating

[WellnessWorks](#) a health and wellness initiative, and since its launch in 2011, Aerospace has earned the distinction of becoming a designated Blue Zones Worksite.



Judy Gonser. Photo by Elisa Haber

On a personal level, Gonser became motivated to start moving a few years ago when she was playing on the floor with her granddaughter and found it challenging to get up. It wasn't until last May, however, when she was at a conference that things really clicked for her.

"I was with our Anthem Blue Cross account executive and she wanted to take a walk every time we had a break," Gonser said. "I discovered that she had purchased a FitBit that keeps track of your steps, miles, and the number of calories that you burn. One day, we walked seven miles!"

When Gonser arrived home, she decided to order a FitBit for herself. She has been walking ever since, with a goal of walking at least 10,000 steps a day. Last year, she was carpooling with her husband who parked in the main campus parking lot and she would walk across the street to D9. When it came to leaving for the evening, she would walk back again, not to mention any of the day's meetings that she had to walk to over on the main campus area.

Gonser said she was very motivated by reading Dan Buettner's book called "The Blue Zones, Lessons for Living Longer from the People Who've Lived the Longest." Specifically, she was motivated by one of the [Blue Zone's Power 9 principles](#), "move naturally."

"That really made a lot of sense to me, so when I no longer carpoled with my husband, I would still come to work 40 minutes earlier than my start time and , park in the AGO parking lot and walk to D9. When we moved to D 10 last August, I was really into the groove of walking my 10,000 steps a day."

Gonser continues to come to work early to park across the street and walk to D10 before work. On most days she manages to walk a couple of miles before she gets into the office each morning. She has increased her daily goal to 12,500 steps (about five miles) and gets her weekend steps in, as well.

"The best part is that I have lost 15 pounds and I feel wonderful," she said. "I can easily keep up with my grandchildren. I've even started going to yoga twice a week and to the gym on days that it's raining so I can get my steps in. Life is good!" she said.

Ray Meadows, division business manager, Launch Systems Division, has been exercising as long as he can remember. He is a frequent visitor to the LAAFB gym, but he is also a firm believer in mixing it up and taking the more vigorous way to get to where he's going.



Ray Meadows. Photo by Elisa Haber

Three times a week, when he is in A1 he makes it a point to take the stairs to the third or fourth floor, and when he is on the base, he always takes the stairs. "I only take the elevator if I'm late!" he said.

Walking, running, and bicycling keeps his blood sugar in check and he truly enjoys the experience. "You have to do something different every day," Meadows said. "When I am exercising, it gives me a different viewpoint. It is a good stress reliever because it puts everything into a positive perspective."

Recently, Meadows lost 28 pounds by running, biking, lifting weights, and eating a healthy diet with lots of fruits, vegetables, and water.

He is an advocate of exercise. He advises others to walk in their neighborhoods for one mile, and then come back. The result: a very healthy two-mile walk. Once that is accomplished, his advice is to set out to increase the distance.

Does he ever indulge? You bet. "You have to splurge once in a while, but then you go back to your healthy eating habits," he said.

How do you stay healthy? Do you walk on your lunch hour, use the Air Force gym, or take yoga classes? Weigh in on our [Facebook page](#), or leave a comment below, and tell us what strides you have made to keep healthy. It might just encourage another employee to get healthier.

How to Tune Up Atomic Clocks in Space

Posted Feb. 25, 2013 · Feature · By Matthew Kivel

A team comprising Dr. Henry Wang, Dylan Caponi, and Gebriel Iyanu is developing an effective, in-lab testing facility for the syntonization of AEHF/Milstar rubidium atomic clocks. Syntonization is the process by which clocks are calibrated to an equal frequency in order to remain synchronized as time-keeping devices.

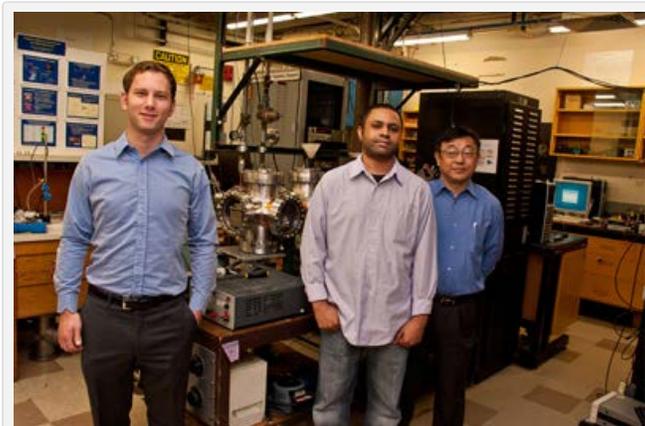


Elisa Haber

Electronic equipment generates frequency tuning commands to syntonize two atomic clocks.

within the satellites begin to diverge from one another in terms of their timekeeping abilities. These individual variations can result from temperature changes, radiation, and simply, lengthy spans of time. For precise communication activity, it is essential that each satellite's atomic clock keep the exact same time as every other clock.

As part of the Photonics Technology Department, Wang, Caponi and Iyanu have built a fully functioning simulation of the atomic clocks' environment and communicative computer systems.



From left to right, Dylan Caponi, Gebriel Iyanu, and Dr. Henry Wang, with their in-lab syntonization equipment. Photo by Elisa Haber

The team utilizes two computers for two different purposes. One computer simulates the on-orbit computers that are found aboard the actual satellites while the other simulates the AEHF/Milstar satellite ground control timekeeping system. These two computers and other supporting instruments are connected to two atomic clocks sealed in a vacuum that simulates the space environment. One of the clocks represents the ground-controlled master clock in the constellation while the other simulates the clocks that will be syntonized to the master clock by the on-orbit computer.

The initial work of the project has been to simulate, discover, and analyze the various ways in which the clocks can deviate from one another as a result of variations in space vehicle temperature. By experimenting with the simulator, the team has learned a great deal about the nature of the clocks and how they react to these various environmental changes. In terms of applicable technology, the team is developing a software program that recognizes the frequency deviations of the clocks, generating a corrective command when the clocks pass a certain threshold of frequency discord — thus remedying the timekeeping imperfections.

“With this unique experimental capability, we can provide technical information from our testing labs to the satellite operators,” said Wang. He sees the project as an active resource designed not only to address problems as they occur, but before they occur. “Operational technicians will have questions and they come to Aerospace,” he said. “We can simulate and test and provide answers to the satellite operators. We will also actively provide technical suggestions and technical information to the operational personnel.”

Top 10 Engineering Schools in America

Posted Feb. 20, 2013 · Feature · By Matthew Kivel

The Aerospace Corporation has a long and distinguished history of recruiting the best and brightest engineering students from top educational institutions across the globe. These colleges and universities have helped to develop and guide the great minds that have produced the innovative work and technical excellence that Aerospace is known for.

In recognition of National Engineers Week, the Orbiter staff has,



Graphic by Joseph Hidalgo

without insistence — or even remote demand — from colleagues or the general public, decided to take on the monumental, semi-unnecessary, but highly-entertaining, task of ranking the top 10 undergraduate engineering schools in the country in relation to The Aerospace Corporation. Don't thank us now— wait till you see the results! Your beloved university might just have cracked our prestigious top 10.

How We Started

At the behest of my esteemed editor and friend Lindsay Chaney, I was asked to derive a semi-logical scheme for ranking these top engineering programs. Those weren't his exact words, but the meaning was clear. I told him that in order to thoroughly complete this task I would need thousands of dollars, an extensive leave of absence for global travel and tickets for each of the universities' nationally televised football games. He replied that additional money was out of the question, travel would be limited to my daily commute from Echo Park to El Segundo, and the college football tickets — with the exception of Cal Tech, whose cherished Beavers have been undefeated for 36 years — were a no go. So I did what any self-respecting journalist would do — I went to U.S. News & World Report's website and examined their thoroughly detailed top ten rankings for engineering undergraduate schools; which are as follows:

1) MIT 2) Stanford 3) tie Cal Tech 3) tie UC Berkeley 5) tie Georgia Tech 5) tie University of Illinois (Urbana) 7) University of Michigan (Ann Arbor) 8) tie Carnegie Mellon 8) tie Cornell 10) tie Princeton 10) tie Purdue 10) tie University of Texas (Austin)

Now, the journey could have ended there (and some might say it should have), but the U.S. News rankings didn't have anything to do with Aerospace in particular. It seemed appropriate for an Aerospace-specific list to contain proportionally weighted, Aerospace-specific ranking criteria. So, I set out to find additional parameters that would further tailor this top-ten list to Aerospace's unique compositional makeup.

Round 1: 2012 U.S. News &World Report Rankings

Since U.S. News &World Report had clearly spent a lot of time and money statistically ranking its top ten undergrad engineering programs, it seemed only fair to assign the most points to schools that had made it onto this certifiably legitimate list. The number one school (M.I.T) would receive 25 points and the other schools, in descending order, would receive one point less than the one that had preceded it. This would be the first round of scoring and the results are below:

Sub-Total: MIT (25), Stanford (24), Cal Tech (23), UC Berkeley (23), Georgia Tech (21), University of Illinois (Urbana) (21), University of Michigan (19), Carnegie Mellon (18), Cornell (18), Princeton (16), Purdue (16), Texas Austin (16)

Round 2: Undergraduate Engineering Degrees Among Aerospace Employees

After giving U.S. News &World Report its rightful due, I began to examine the collegiate backgrounds of the 4,000+ employees who make up the Aerospace workforce. Removing graduate and non-engineering degrees, a clear distribution was revealed, showcasing the institutions with the most prolific penchant for producing Aerospace employees. As might be expected, these universities skewed heavily toward the West Coast; though the technical institutes and the Big Ten were adequately represented as well. Here is a top-15 list, with the number of current undergrad degree holders at Aerospace in parentheses:

1. UCLA (123)
2. USC (64)
3. CSU Long Beach (60)
4. Cal Poly Pomona (39)
5. Purdue (38)
6. University of Michigan (Ann Arbor) (37)
7. tie M.I.T. (35)
7. tie Georgia Tech (35)
9. UC Berkeley (34)
10. tie University of Illinois (Urbana) (31)
10. tie Penn State (31)
10. tie Virginia Tech (31)
13. Cal Tech (29)
14. U.S. Air Force (25)
15. Cal Poly San Luis Obispo (22)

Go Bruins! UCLA dominated this category, thrashing rival USC by 59 undergraduate degrees (a strikingly similar result to this year's football game ... you'll get 'em next year Trojans). Also, criminally unsung CSU Long Beach picked up some much-needed points based on its 60 former undergrads. The top school (UCLA) was awarded 20 points and the other schools followed in descending order:

Sub Total: UCLA (20), USC (19), CSU Long Beach (18), Cal Poly Pomona (17), Purdue (16), University of Michigan (15), M.I.T. (14), Georgia Tech (14), UC Berkeley (12), University of Illinois (11), Penn State (11), Virginia Tech (11), Cal Tech (8), U.S. Air Force (7), Cal Poly SLO (6).

Round 3: Leading Aerospace Patent Holders

Next, attention was turned to a group of Aerospace's most innovative employees— our patent holders. Numerous scientists and engineers at Aerospace have been issued patents for a variety of different concepts and technical developments. It seemed appropriate for the institutions that produced the most prodigious patent holders to be awarded a flat 5 point bonus. Many of these schools, due to a number of different factors, haven't previously been mentioned in this article. Below is a list of the names of the top Aerospace patent holders, some no longer employees, along with the number of current patents they hold:

1. Robert Dybdal (20) Ohio State
2. Richard Welle (17) Southwest Minnesota State
3. Edward Simburger (16) SF Valley State (CSUN)
4. Hsieh Hou (15) National Taiwan University
- t5. Gary Hawkins (11) Oakland University
- t5. Siegfried Janson (11) Rensselaer Polytechnic
- t5. Jon Osborn (11) USC
6. Kasemsan Siri (10) Chulalongkorn
- t7. Denny D. Pidhayny (9) Wayne State
- t7. Gee L. Lui (9) University of Hawaii
- t8. Henry Helvajian (8) Stanford
- t8. Samuel Curry (8) West Virginia University
- t8. David Ksienski (8) Ohio State
- t8. Charles Wang (8) National Chiao-Tung Univ.
- t8. Samuel Osofsky (8) Harvey Mudd
- t9. Margaret Abraham (7) San Jose State
- t9. Christopher Silva (7) UC Berkeley
- t9. Jack K. Holmes (7) UCLA
- t10. Rajendra Kumar (6) Indian Institute
- t10. Peter D. Fuqua (6) UCLA
- t10. Walter E. Lillo (6) Purdue
- t10. Martin Leung (6) SUNY Buffalo
- t10. Neil A. Ives (6) Redlands University
- t10. Howard Katzman (6) Queens College

The dreaded Ohio State picked up an additional 10 points because of the ceaseless work of Robert Dybdal and David Ksienski. UCLA also racked up an additional 10 points due to standout contributors Jack K. Holmes and Peter D. Fuqua. As mentioned previously, 5 bonus points were allotted to each school for each employee on this patent-holding list:

Sub-Total: Ohio State (10), UCLA (10), Southwest State (5), San Fernando Valley (5), National Taiwan University (5), Oakland University (5), Rensselaer Polytechnic (5), USC (5), Chulalongkorn University (5), Wayne State (5), University of Hawaii (5), Stanford (5), West Virginia University (5), National Chiao-Tung University (5), Harvey Mudd (5), San Jose State (5), UC Berkeley (5), Indian Institute (5), Purdue University (5), SUNY Buffalo (5), Redlands University (5), Queens College (5).

Round 4: Schools of the Corporate Officers

Aerospace's corporate officers are often called upon to represent the organization to the general public. They are a collection of exceptional individuals with charisma, social grace, and an almost superhuman knack for multitasking. But, did you know that these individuals were once dorm-inhabiting, prank-pulling undergraduates? Well, of course they were! And they all received undergraduate degrees in engineering, physics or mathematics — with the notable exceptions of General Counsel Malissia Clinton and Chief Financial Officer Ellen Beatty (well, someone has to run this business.) Clinton and Beatty's schools are listed below, but they do not receive ranking points. For all the officers with STEM degrees, it seems only right to award 5 additional points to the schools that produced these corporate leaders:

- Austin, Dr. Wanda – Franklin and Marshall College (Pa.) – Mathematics
- Beatty, Ellen – University of Illinois (Ill.) – Accountancy
- Chau, Bernard – University of Hawaii (Hawaii) – Electrical Engineering
- Clinton, Malissia – Arizona State University (Ariz.) – Political Science
- De Ponte, Dr. Manuel – Loyola Marymount University (Calif.) – Engineering
- Drennan, Jerry M. "Mike" – U.S. Air Force Academy (Colo.) – Engineering Management
- Fisher, Rand – U.S. Naval Academy (Md.) – Physics
- Goodman, Dr. Wayne – Drexel University (Pa.) – Mechanical Engineering
- Gorney, Dr. David – University of Bridgeport (Conn.) – Physics
- Johnson, Ray – University of California Berkeley (Calif.) – Mechanical Engineering

Kendall, Randolph L. – University of Michigan (Mich.) – Aerospace Engineering
 Krenz, Dr. William C. – University of Southern California (Calif.) – Biomedical Engineering
 Mitchell, Howard J. “Mitch” – U.S. Air Force Academy (Colo.) – Mechanical Engineering
 Razouk, Dr. Rami R. – University of California, Los Angeles (Calif.) – Engineering
 Steele, Catherine - University of California, Los Angeles – Electrical Engineering/System Science
 Zacharius, Dr. Sherrie L. – Tufts University (Mass.) – Chemical Engineering

Dr. Austin throws up a cool 5 points for Franklin and Marshall, though sadly this amount will not pull her beloved school into our top ten. However, Randy Kendall grabs some much-needed bonus points for the University of Michigan. Go Blue! Go Randy! (Disclosure: Orbiter editor Chaney and I are U of M graduates.)

Sub-Total: UCLA (10), U.S. Air Force Academy (10), Franklin and Marshall (5), University of Hawaii (5), Loyola Marymount (5), U.S. Naval Academy (5), Drexel (5), University of Bridgeport (5), UC Berkeley (5), University of Michigan (5), USC (5), Tufts (5).

Round 5: Aerospace University Affiliations and Scholarships

As a final area of consideration, we turn to Aerospace’s educational outreach and scholarship programs. Though not necessarily representative of the workforce here at Aerospace, these schools maintain a strong relationship with our company and thus, receive an additional 1 point for scholarships and/or an appearance on our Corporate University Affiliates Program (CUAP) list:

CUAP Universities

California Institute of Technology
 CSU Los Angeles
 George Mason University
 George Washington University
 Georgia Institute of Technology
 Harvey Mudd College
 Pennsylvania State University
 Stanford University
 UC, Berkeley
 UC, Irvine
 UCLA
 UC, Santa Barbara
 University of Arizona
 University of Maryland
 USC

Aerospace Scholarships

(2) University of Maryland
 (1) University of California, Berkeley

The University of Maryland came out of nowhere here, finally ending its shut out performance with a 3-point effort. Unfortunately, it seems like too little, too late! Berkeley and UCLA continue to rack up points while Stanford nips at their heels. It looks like we’re heading towards quite the epic finale!

Sub-Total: University of Maryland (3), UC Berkeley (2), Cal Tech (1), CSU Los Angeles (1), George Mason (1), George Washington (1), Georgia Tech (1), Harvey Mudd (1), Penn State (1), Stanford (1), UC Irvine (1) UCLA (1), UC Santa Barbara (1), University of Arizona (1), USC (1)

6. Final Scores

With all the points allocated, we go to the judges for our final rankings. Just remember, if your school is not represented here, there’s always next year. Who knows? With a few more patent-holders and a couple of new, freshly graduated Aerospace recruits, your school might crack this exclusive top ten in the future. If you disagree with the weightings or feel some other/additional criteria would be appropriate (perhaps extra points to any school that has sold out every home football game for more than 30 years), please leave a comment below.

Aerospace’s Top 10 Undergraduate Engineering Schools for 2013

1.



UC Berkeley

2.



UCLA

3.



M.I.T. tie

3.



University of Michigan tie

5.



Purdue University

6.



Georgia Tech

7.



University of Illinois tie

7.



Cal Tech tie

9.



Stanford

10.



USC

Final Scores:

Totals: UC Berkeley (47), UCLA (41), MIT (39), University of Michigan (39), Purdue University (37), Georgia Tech (36), University of Illinois (Urbana) (32), Cal Tech (32), Stanford (30), USC (25), Carnegie Mellon (18), CSU Long Beach (18), Cornell (18), Cal Poly Pomona (17), U.S. Air Force Academy (17), Princeton (16), Penn State (12), Virginia Tech (11), University of Hawaii (10), Ohio State (10), Harvey Mudd (6), Cal Poly SLO (6), Franklin and Marshall (5), Loyola Marymount (5), U.S. Naval Academy (5), Drexel (5), University of Bridgeport (5), Tufts (5), Southwest State (5), San Jose St. (5), SUNY Buffalo (5), Redlands University (5), Queens College (5), San Fernando Valley (5), NTL Chiao-T (5), Oakland University (5), Wayne State (5), University of Maryland (3), CSU Los Angeles (1), George Mason (1), George Washington (1), UC Irvine (1), UC Santa Barbara (1), University of Arizona (1)

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One of the New Faces of Engineering



Eric Hamburg

Rachel Morford was selected by the Society of Women Engineers for its "New Faces of Engineering" award.

"I do what I do to make a difference," she said. "I might not always be able to talk about it; and you might not be able to see it. But the work I've done has had an impact on the world.

"You don't do things to get awards, but it is nice to be recognized for the work that you do," she added.

Of the numerous recognitions she's received, Morford said the one that made the biggest impact on her was a trustee scholarship to attend the University of Southern California, her alma mater.

"It paid for half my master's degree," she said. "I wouldn't have been able to go to USC without it, and I wouldn't have had all the opportunities since that I've had."

Why engineering?

Morford's path to engineering began as a young girl in Torrance, Calif., looking up at the stars. It helped that both of her parents have degrees in physics and helped fuel her ambitions.

"What drew me to science in the first place was space. I originally wanted to be an astrophysicist because I love space. But then I took an electronics class in junior year of high school."

That one class helped shape her future more than she ever thought it would. By the time she started college, Morford was more interested in material science. She kept an open mind, and started her undergraduate work at USC as an undeclared engineering student.

"It gave me a great overview of all engineering disciplines," she said.

She then tried her hand at chemical engineering, with an emphasis on material science.

Posted Feb. 19, 2013 · Feature · By Heather Golden

This is National Engineers Week, and one of The Aerospace Corporation's engineers has even more cause than usual to celebrate.

Rachel Morford, an electrical engineer and a senior member of the technical staff, was chosen as one of this year's Society of Women Engineers' five New Faces of Engineering.

New Faces award recipients are all under 30 years old, and the intent is to recognize engineers who have been working in the industry for less than 10 years. Another goal is to change the way the general public perceives engineers.

"The idea is to highlight that the stereotype of what engineers look like is not always true," Morford said.

For Morford, it isn't about the awards, though. Her considerable success comes from a hunger to help shape the world around her. She takes what she called "silent satisfaction" in her accomplishments.

“But it was all petroleum focused, and I didn’t really care for the focus on the petroleum industry,” she said. “Then I remembered that I loved the electronics in high school. From there, I just fell into satellite communications as an area of focus in my degree. I was so excited about it.”

Her moment of truth came years later, while brainstorming ideas for her Capstone project. She was tasked with creating a reliable and durable system for the U.S. government to communicate with sites ravaged by natural disasters, like hurricanes.

“This is going to sound really nerdy. There were so many things to consider; I had such a good time,” she said. “Once I figured out to use a dome to protect the antenna, everything just sort of fell into place. It was a perfect moment in time. And I knew I had picked the right field.”

Working within The Aerospace Corporation

Morford, currently one of the corporation’s mission engineers, has been with the corporation for five years. During that time, she’s migrated between responsibilities. Now, she provides technical and programmatic analyses of issues on systems ranging from structures to propulsion and avionics on Atlas V and Delta IV rockets.

“I am responsible for all of the integration aspects; basically making sure everything works well together and all the parts function together the way they were intended to,” she said.

Although her job description has evolved, and in some cases, drastically changed, through the years, one aspect has remained a constant for her.

“I’ve been very lucky; the group I was hired into is the same group I’m in now, although I’ve had different roles within the organization.”

Morford’s resume includes having reviewed more than 400 engineering review board decisions for vehicle hardware, serving on a handful of post-launch investigation teams, assessing flight data and leading laboratory work that helped mitigate risk during missions. Her input also helped lead to the first Delta IV Heavy launch from Vandenberg Air Force Base.

“Engineers solve problems,” she said. “Every day is different. Different challenges come up every day; it is never the same thing twice.”

Morford also makes sure she takes advantage of the unique opportunities her job affords her.

“I signed something that’s going to be attached to a satellite we’ll be launching. It’s really cool that my signature is going to be in space.”

Mentoring the Next Generation

Morford’s passion for engineering is one she tries to share with the world. It is a joy she wants to help others discover.

“That’s part of what Engineers Week is for – bringing awareness of engineering to people who might not know what engineering is,” she said.

She spends much of her free time working on the SWE’s many educational projects, with STEM projects, and as a mentor to women studying engineering. She has been a member of SWE for nine years, since her freshman year of college.

“It’s important that engineers go out and talk to students, and provide that role model saying, ‘Yes, you can do this,’” she said. “We not only have to educate young kids (about engineering); we have to educate their parents that this is an opportunity for them. These kids need encouragement from the adult figures in their lives.”

Morford works with a variety of ages, from kindergarten to college kids. But it is the younger ones, she said, who keep her on her toes.

“It is surprising and energizing to work with younger students, to see what kind of ideas these kids can come up with. Some of them may not recognize that they have a knack for just knowing what’s going to work. They are so excited with what they are learning. They are so much more willing to make mistakes than some of the older students.

“It is a great reminder of how excited I was. They keep me excited about engineering in the same way witnessing rocket launches keeps me excited.”

Morford said she incorporates her relatively young age to help her strike a chord with her audience.

“I’m closer in age (to the college students). They can relate to me a little more.”

Parting thoughts

Morford’s open enthusiasm and dedication for her work, and her willingness to share that passion, is infectious. It is part of the reason she stands out and truly is one of the New Faces of Engineering. But the words she lives by are surprisingly simple.

“You have to be excited about the work that you’re doing, because then people are going to be excited you’re doing it,” she said. “And that’s true no matter what your job is.”

National Engineers Week 2013 is Feb. 17 – 23. For more on EWeek, to learn about “New Faces” from around the entire engineering community, or to see an EWeek 2013 tribute from the U.S. crew of the International Space Station, visit www.eweek.org.

[Click below to view a five-minute video.](#)

CHIRP Award Finds Home at LAAFB



U.S. Air Force photo by Sarah Corrice

Lt. Gen. Ellen Pawlikowski, Space and Missile Systems Center commander, hoists the 2012 Aviation Week Program Excellence Award, presented to her Feb. 1 by the award winners, members of the Commercially Hosted Infrared Payload team.



Full-size model of the CHIRP instrument. Photo by Elisa Haber

Posted Feb. 15, 2013 · Feature

Members of the Commercially Hosted Infrared Payload (CHIRP) team recently presented Lt. Gen. Ellen Pawlikowski, Space and Missile Systems Center commander, with the 2012 Aviation Week Program Excellence Award for display on the Los Angeles Air Force Base.

The CHIRP team, comprising government and industry partners, including The Aerospace Corporation, received the Aviation Week award in December. Aerospace members of the team received the inaugural [Team of the Year Award](#) last month for their efforts in deploying the first Air Force payload hosted on a commercial satellite.

Leadership Series With Dr. Willie Krenz Q2

Posted Feb. 14, 2013 · Article

In this Leadership Series webcast, Chief Information Officer Willie Krenz discusses Go Big and classified IT services.

For more information, check out the latest CIO blog post: [Going Big in Collaboration](#).

Labs Develop New Bonding Experience



Eric Hamburg

Dr. Rafael Zaldivar uses a contact angle analyzer to determine the surface free energy of plasma-treated composites. This technique determines the wettability, adhesion compatibility, and surface cleanliness of the composite as a function of treatment.

Department. “Many of the surface preparation techniques that were developed 30 years ago (such as abrasion) have not evolved with the changes in these material systems. These new composite materials utilize fibers that are much stiffer, however, they tend to have weaker fiber-matrix interfaces which makes their composites less damage tolerant.”

Abrasion, or scraping the surface, is a common manual process to remove contamination and prepare the surface for bonding, but it has the potential to damage the material.

“Over the last several years, we have observed a large number of premature failures or lower than expected strengths in bonded composite joints used in our space structures,” Zaldivar said. “Our failure investigations showed that many were a result of the current surface preparation process that was employed. The process was actually damaging the composite resulting in low strengths and higher variability.”

Zaldivar, Dr. Hyun Kim, and Dr. James Nokes have developed a new method to prepare the surface using a handheld device called an atmospheric plasma system.

The scientists flow an active gas (oxygen, for example) into the atmospheric plasma system, where it is dissociated and ionized. The oxygen comes out in a highly reactive form and reacts with the contaminants on the surface of the material, thus cleaning the surface.



Dhruv Patel performs a lap shear test to determine the mechanical strength of bonded joints that have been prepared using atmospheric plasma treatment. Photo by Eric Hamburg

“Atmospheric plasma treatment allows us to tailor or chemically modify the outermost nanometers of the composite surface being treated, so there is very little potential for damage,” Zaldivar said.

Not only does this method clean the surface without damage, but it creates chemical groups on the surface of the material that actually enhance chemical bonding.

“Our studies have identified the specific chemical groups that need to be incorporated through these treatments to maximize strength gains, while not damaging the composites themselves,” Zaldivar said.

The scientists can flow different gases through the atmospheric plasma system to achieve different results. Different composites also vary in their reaction.

“What makes the treatment of composites especially interesting is that most composites have different resin chemistries ... so performing the same atmospheric plasma treatment may result in significantly different groups being formed,” Zaldivar said. “Knowing how to modify your

variables to generate the chemical groups you need is the real challenge.”

The scientists were up to the challenge, however, as shown by their results. Using their new surface preparation method, the team has achieved a 75 to 180 percent increase in bond strength, and a 100 percent increase in durability over

Posted Feb. 12, 2013 · Feature · By Laura Johnson

Aerospace scientists have developed a new method for treating the surface of composite materials, allowing for more effective adhesive bonding.

Composites, which are combinations of at least two different materials, are strong, stiff, and have a low density. This makes them ideal for use in spacecraft and launch vehicles.

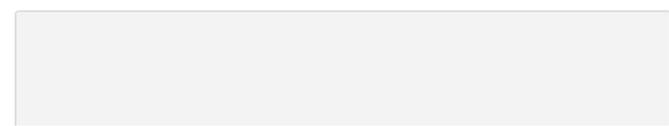
Composites are often joined together to create large structures. They can be joined using a fastener of some kind, but this adds undesirable weight. The preferred method is adhesive bonding, which, in layman’s terms, is basically gluing the two pieces together.

Anyone who has ever glued something knows that it is important for the surface to be clean prior to applying the glue. The surface of composites must also be prepared prior to bonding, but there are problems with current methods.

“Over the last 30 years the reinforcements used for composites continue to improve, which result in stiffer and stronger parts,” said Dr. Rafael Zaldivar, a senior scientist in the Materials Science



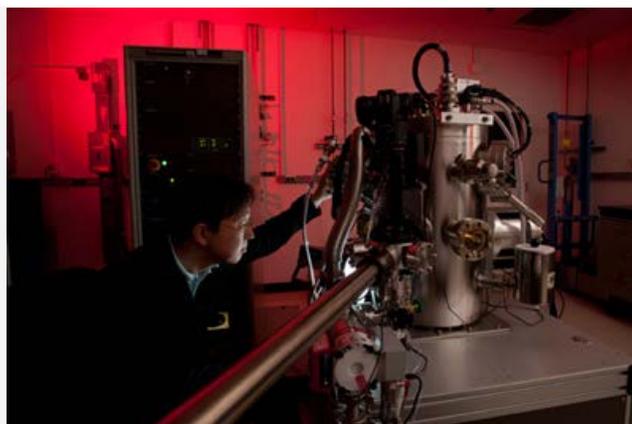
The plasma wand used to treat the composite surfaces. Photo by Eric Hamburg



conventional methods.

Their process, which has a patent pending, could benefit a variety of programs.

“The results of our work can be applied to any program that utilizes composites, be it space or commercial application,” Zaldivar said.



Dr. Hyun Kim uses X-ray photoelectron spectroscopy to determine the surface chemistry of a material before and after treatment. This technique allows the scientists to determine what chemical groups are responsible for wetting and mechanical performance improvements. Photo by Eric Hamburg

Dosimeter Inventors Win Katzman Award



Eric Hamburg

Left to right, 2013 Katzman award winners Dan Mabry, Norman Katz, and William Crain. Not pictured, Dr. Bernard Blake.

Microelectronic Technologies. Teledyne is seeking customers not only among satellite operators to monitor space radiation, but in medical centers where radiation is used in treatment, at nuclear energy plants, and with cargo freight companies to detect illicit product transportation.

Mabry is director of the Space Instrumentation Department; Crain is a senior engineer and Katz is a research engineer in the same department. Blake is a distinguished scientist in the Space Applications Laboratory, which includes the Space Instrumentation Department.

Posted Feb. 11, 2013 · Feature

A team of four Aerospace engineers and scientists won the sixth annual Howard Katzman Innovation Award for their invention of a coin-sized instrument called a dosimeter that monitors radiation.

Plaques were presented to Dan Mabry, William Crain, and Norman Katz on Thursday, Feb. 7, during a ceremony at the Lauritsen Library. The fourth team member, Dr. Bernard Blake, was unable to attend.

The Katzman award, named for Howard Katzman, a senior scientist in the Physical Sciences Laboratories, is given for the Aerospace licensed patent technology that has had the most impact during the previous year.

The micro radiation sensor invented by the Aerospace team was patented in May, 2007, and has been licensed to Teledyne

ABC Honors Three Employees with Herndon Black Image Award

Posted Feb. 5, 2013 · Feature · By Heather Golden

A 31-year Aerospace tradition continued Monday, Feb. 4, as three employees received the Robert H. Herndon Black Image Award during a ceremony in the Titan IV meeting center. The award presentation was also the kickoff event for Aerospace African-American History Month, sponsored by the Aerospace Black Caucus.

Andrea Brangran, Patricia Strong, and Karolyn Young were all officially welcomed as the newest recipients of the Herndon award during a ceremony that included biographical sketches by the nominators of each recipient, acceptance speeches, and closing remarks by Dr. Wanda Austin.



Eric Hamburg

Robert H. Herndon Black Image Award winners for 2013, left to right, Andrea Brangran, Karolyn Young, and Patricia Strong.

Brangran is an executive assistant with the Aerospace Institute; Strong is an executive secretary, Space-Based Infrared System Space Production in the Space-Based Surveillance Division; and Young is the principal director, Space Launch Engineering and Acquisition in the Launch Operations Division. More about the

award recipients will be available soon on the ABC website.

The Herndon award was first given in 1982, in honor of former Aerospace engineer and manager Robert H. Herndon, a role model and mentor to many company employees. His widow, Mary, and granddaughter, Jessica, were guests at Monday's ceremony.

In her closing remarks, Austin noted that Herndon's pioneering role as an African-American engineer helped make it possible for "many of us ... to do things we might not otherwise have been able to do."

Austin commented on the work of Abraham Lincoln and Dr. Martin Luther King Jr. in relation to the national theme of Black History Month, "At the Crossroads of Freedom and Equality: The Emancipation Proclamation and the March on Washington." She also observed that in 2013, "diversity and inclusion are seen as a strategic advantage" for corporations, having moved beyond being simply the fair thing to do.

Up to four Aerospace employees may receive the award each year. Those selected as inductees must exhibit career and professional achievements, leadership and initiative, and company and community volunteer activities.

"The Herndon award acknowledges African-American employees who embody Mr. Herndon's vision and the example he gave through education," said Sonia Henry, one of last year's recipients. "The employees are nominated by their peers and managers, those who know their achievements and feel they are worthy."

To those who knew him best, Herndon was a friend and a guide. Herndon was a pioneer, gaining the respect of his peers and company leadership during a time when racial discrimination was an accepted way of life.



Willard Downs, left, chats with Mary Herndon, center, and her friend, Ruby Smith, after the award ceremony. Photo by Eric Hamburg

"I was a hothead back in the '60s," said Willard Downs, principal engineer with the Computer Applications and Assurance Subdivision in the Computers and Software Division. "He took me under his wing and taught me how to save my job. He said, 'Why do you keep bumping your head against the wall? Do you think you're going to get through there? It would be easier to open the door and walk to the other side.'"

"He was a man of integrity, a very spiritual man and an outstanding singer," Downs said. "He was always cool and calm. You could see the goodness in him. Even close to death, he was helping people. You never forget that. He was beloved."

Downs was the second recipient of the Black Image Award in 1983, followed by Dr. Wanda Austin in 1984.

"In the 26 years I've been here, I've been in awe and blown away by the things these recipients have done and continue to do," said Craig Robertson, ABC president. "I applaud all the people, all their sacrifices. They say they do it all

because they find joy in it."

"All the winners I know have paid it forward," Henry said. "They are the example and they mentor and it becomes natural. They are keeping Mr. Herndon's legacy alive, his vision, his hard work, his excellence, his pursuit of education, not just within the corporation, but outside of the corporation."

Other events on the schedule for Aerospace observance of African-American History Month are keynote speakers Charmaine Jefferson and Javon Johnson of the California African American Museum on Feb. 7; speaker Ken Phillips, curator for the Space Shuttle Endeavor's journey to Los

Angeles on Feb. 13; and a culminating event, “Celebrating African American Culture Through New Orleans Jazz” on Feb. 27.

All speaker events are free. Tickets for the jazz concert are for sale, and are expected to sell out before the event date. For information on purchasing tickets, contact ABC president Craig Robertson at craig.e.robertson@aero.org or ABC vice president Jacqueline Dorsey at jacqueline.d.dorsey@aero.org.

United In Diversity: The Aerospace Black Caucus

Posted Feb. 4, 2013 · Article

February is Aerospace Black Caucus membership month. The ongoing United in Diversity affinity group membership campaign highlights how affinity groups and their members are valued business partners with the corporation.

February Obituaries

Posted Feb. 1, 2013 · In Memoriam

Sincere sympathy is extended to the families of:

- **Samuel Batdorf**, member of the technical staff, hired Nov. 13, 1962, retired July 1, 1977, died Sept. 20, 2012.
- **William Blair**, engineering specialist, hired March 25, 1964, retired June 1, 1987, died Jan. 8.
- **Myron Goldware**, project engineer, hired Feb. 6, 1962, retired Sept. 1, 1987, died Dec. 15, 2012.
- **Timothy Holcomb**, member of the administrative staff, hired Jan. 23, 1961, retired Sept. 1, 1979, died Jan. 6.
- **Barbara McAlister**, IS administrator, hired June 8, 1981, retired Dec. 1, 2000, died Dec. 4, 2012.
- **Robert McClellan**, manager, hired July 19, 1973, retired July 1, 1985, died Jan. 13.
- **James McDonald**, systems director, hired Feb. 20, 1973, retired Oct. 1, 1996, died Jan. 6.
- **Norma Masek**, library assistant, hired May 10, 1961, retired March 1, 1992, died Dec. 29, 2012.
- **Patricia Newman**, administrative secretary, hired July 12, 1999, died Jan. 16.
- **Arthur Schiewe**, executive director, hired Nov. 8, 1960, retired March 1, 1996, died Dec. 25, 2012.
- **Loren Zarembo**, member of the technical staff, hired Nov. 6, 1978, retired April 1, 2007, died July 24, 2012.

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

February Notes

Posted Feb. 1, 2013 · In Appreciation

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

- Michael McQuaig, for the recent passing of his mother-in-law, Mary Jones.
- Joe Uht, for the recent passing of his mother, Betty Uht.
- Karyn Zafran, for the recent passing of her mother, Eleanor Cook.

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

February Anniversaries

Posted Feb. 1, 2013 · Anniversaries

35 YEARS

Engineering and Technology Group: Martin Leung

Executive Offices: Bonnie Harkenrider

Operations and Support Group: Diana Carrasquillo

Systems Planning, Engineering, and Quality: Sharon Hunt

30 YEARS

Civil and Commercial Operations: Peter Choban

Space Systems Group: Patrick Moran

25 YEARS

Engineering and Technology Group: Benjamin Tong

National Systems Group: Tracy Glover

Operations and Support Group: James Bulman, Rosalind Harden

Space Systems Group: Martin Ross

20 YEARS

Engineering and Technology Group: Yogi Krikorian, Rosalind Lewis

National Systems Group: Kenneth McCoy, Jack Yeatts

Space Systems Group: Thomas Tam

15 YEARS

National Systems Group: Thomas Kibalo

10 YEARS

Engineering and Technology Group: James Cowan, Anthony Decker, William Forcey, Jeffrey George, Phillip Hamilton, Simon Liu, Nahum Melamed

National Systems Group: John Koh

Operations and Support Group: Marite Vella

Space Systems Group: Patrick James

Systems Planning, Engineering, and Quality: Linda Kirkpatrick

5 YEARS

Civil and Commercial Operations: James Johansen

Engineering and Technology Group: Ali Golshan, Jesse Johnson, Daniel McDonald, Marybeth Panock, Alan Unell, Floyd White, Richard Yau

National Systems Group: Steven Hogsett, Joseph Weideling

Operations and Support Group: Dennis Hemmen, Paul Poaipuni, Steve Rhee, Steven Rikimaru, Jagdish Soni, Ashleigh Stocks, Karyn Zafran

Space Systems Group: Young Park, Aaron Tout

Systems Planning, Engineering, and Quality: Franklin Hughey, Michael McKnight, Cynthia Schmitt, Michael Slater

End of Archive
