



THE ARMSTRONG X-PRESS

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Armstrong contributions Bolden thanks Armstrong employees for dedication

By Jay Levine

X-Press editor

NASA Administrator Charlie Bolden told Armstrong employees the value they add is part of why he believes the agency has a bright future.

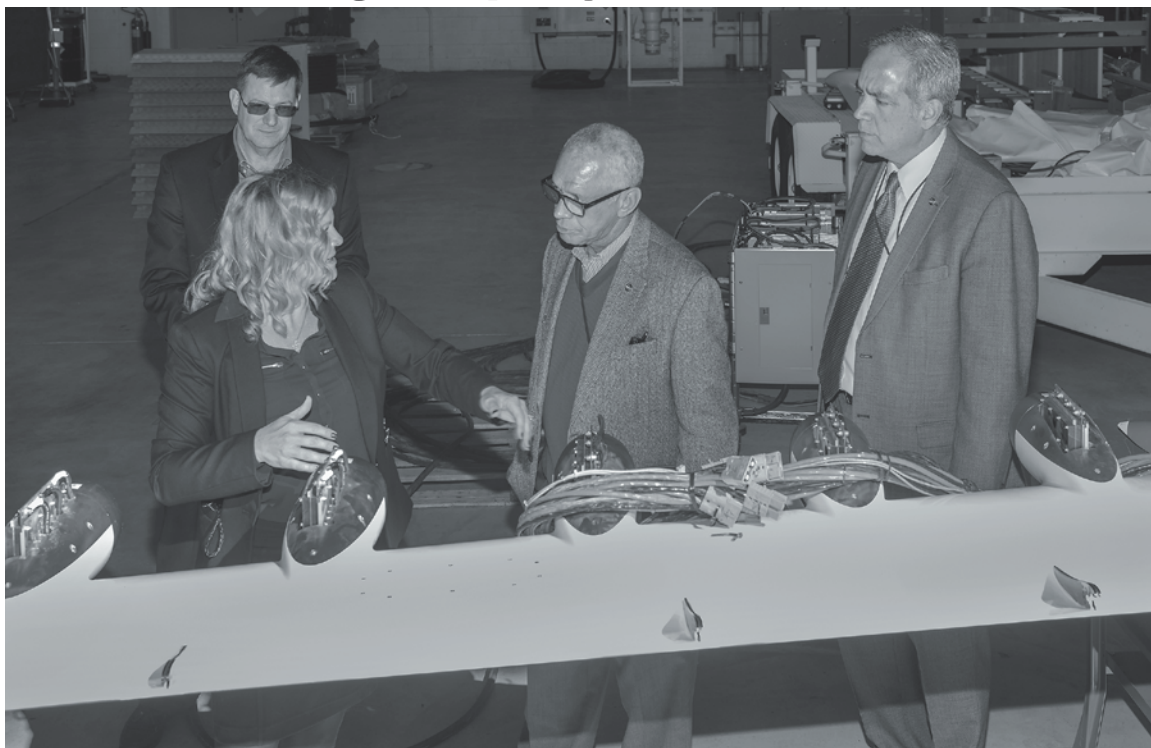
In introducing Bolden to employees at a town hall Nov. 29, Center Director David McBride thanked the administrator for helping solidify space exploration, refocus and reinvigorate aeronautics and help make NASA one of the best places to work in the federal government.

“We really have been blessed to have a pilot at the helm of NASA,” McBride said. “He is someone who really appreciates the dangers and risks associated with the work you do well and do safely.”

What Armstrong and its employees provide is important for NASA, the nation and the world, said Bolden, who is set to retire in January.

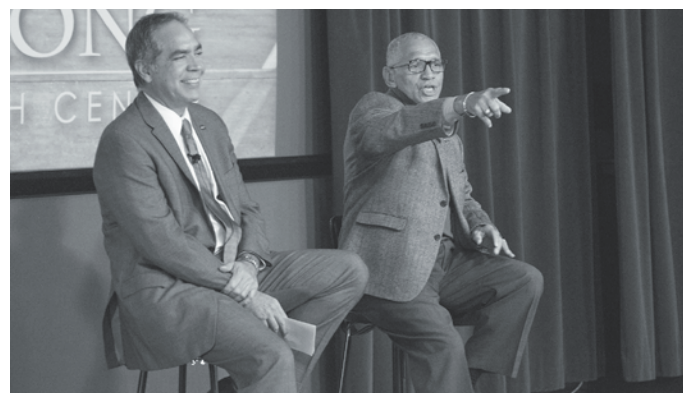
“This is an unbelievable place and you do unbelievable things,” he added.

Bolden, who landed at Edwards twice as a space shuttle astronaut in addition to his visits as NASA administrator, recognized Armstrong’s 70th anniversary.



AFRC2016-0359-51

NASA/Ken Ulbrich



AFRC2016-0359-112

NASA/Ken Ulbrich

Above, Armstrong Deputy Aeronautics Research Director Starr Ginn describes an experimental wing used to validate the X-57 distributed electric propulsion high-lift system to NASA Administrator Charlie Bolden. The wing is now being used for a flight simulation to advance flight control research for hybrid power distributed electric propulsion. Armstrong Center Director David McBride, far right, and Associate Director for Programs Dennis Hines accompany Bolden.

At left, Bolden answers employees’ questions.

Bolden, page 11



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NASA/Lori Losey

A NASA F-18 chase plane from Armstrong provided visual contact and video of the conjoined Stargazer aircraft and Pegasus XL rocket. Pilot Troy Asher positioned videographer Lori Losey to capture this image of the mission that was NASA's Image of the Day Dec. 15.

CYGNSS readied for 2017 hurricanes

Hurricane forecasters will soon have a new tool to better understand and forecast storm intensity. A constellation of eight microsattellites, called NASA's Cyclone Global Navigation Satellite System mission, or CYGNSS, received a boost into Earth orbit Dec. 15 aboard an Orbital ATK Pegasus XL rocket.

The unique air-launched vehicle was carried aloft by Orbital's modified L-1011 aircraft Stargazer, which took off from the Skid Strip runway at Cape Canaveral Air Force Station in Florida and deployed the three-stage Pegasus XL rocket at a

predetermined drop point 39,000 feet above the Atlantic Ocean and about 110 nautical miles east-northeast of Daytona Beach.

"The deployments looked great" said John Scherrer, CYGNSS project manager at the Southwest Research Institute and CYGNSS mission manager for the flight.

Prelaunch went smoothly, aided by good weather and healthy vehicles, said NASA Launch Manager Tim Dunn of the agency's Launch Services Program.

The F/A-18 chase aircraft from Armstrong, which carried pilot

Troy Asher and videographer Lori Losey, took to the skies minutes before the Stargazer was airborne.

Only 13 minutes after launch, the first pair of CYGNSS microsattellites deployed, with the rest releasing in pairs every 30 seconds.

"It's a great event when you have a successful spacecraft separation – and with eight microsattellites, you get to multiply that times eight," Dunn said.

"When the first two [observatories] came off, I started feeling good," said CYGNSS Principal Investigator Chris Ruf of

the University of Michigan. "When the last two came off, it felt fantastic. The orbit is right on the money of what we've been modeling."

The team expects to begin receiving science data next week, Ruf said. There will be a one- to two-month commissioning phase in which each microsattellite will be checked out and maneuvered into its final position.

The CYGNSS constellation is expected to be operational in time for the 2017 hurricane season.

"Thanks, Pegasus and NASA, for a smooth ride," Scherrer said.



AFRC2016-0373-7

NASA/Ken Ulbrich

Center Director's Open House is jolly

The Armstrong Hallway Holiday Choir performed at the Center Director's Open House on Dec. 15. The event featured a brief video of the center's successes in 2016 and offered a chance for center employees to take a break, enjoy some treats, talk with colleagues and hear the choir.

News at NASA

Does Ceres have ice?

At first glance, Ceres, the largest body in the main asteroid belt, may not look icy. Images from NASA's Dawn spacecraft revealed a dark, heavily cratered world whose brightest area is made of highly reflective salts – not ice. But newly published studies from Dawn scientists show two distinct lines of evidence for ice at or near the surface of the dwarf planet.

"These studies support the idea that ice separated from rock early in Ceres' history, forming an ice-rich crustal layer, and that ice has remained near the surface over the history of the solar system," said Carol Raymond, deputy principal investigator of the Dawn mission, based at NASA's Jet Propulsion Laboratory, Pasadena.

Water ice on other planetary bodies is important because it is an essential ingredient for life as we know it. "By finding bodies that were water-rich in the distant past, we can discover clues as to where life may have existed in the early solar system," Raymond said.

Ceres' uppermost surface is rich in hydrogen, with higher concentrations at mid-to-high latitudes – consistent with broad expanses of water ice, according to a new study in the journal *Science*.

"On Ceres, ice is not just localized to a few craters. It's everywhere," said Thomas Prettyman, principal investigator of Dawn's gamma ray and neutron detector, based at the Planetary Science Institute, Tucson, Arizona.

Dance, dance, dance

Revelers let loose at the NASA Armstrong Holiday Party held at the Antelope Valley Country Club Dec. 10. The event featured dinner, dancing, games, a raffle and photo booth.



NASA/Ken Ulbrich

Vroom! Vroom!

The NASA Armstrong Children's Holiday Party at Mulligan's Family Fun Center Dec. 1 offered a number of activities. Armstrong's Brian Soukup watches his son Evan Soukup playing a motorcycle racing video game. The other two kids are Evan's brother Nolan to his right, and Nolan's friend Landon Nelson to his left.



NASA/Lauren Hughes

X-57 simulator prepares pilots

By Matt Kamlet

Armstrong Public Affairs

When it comes to NASA X-planes, no amount of preparation, training or precaution is too great. These experimental aircraft, which have historically pushed the boundaries of aeronautics, feature exploratory designs and systems with which even the most experienced pilots have little actual practice.

For pilots to be as safe as possible in piloted X-plane flight demonstrations, that experience must be gained through practice – well before the actual aircraft is flyable.

Armstrong test pilots and engineers are “flying” a simulator designed to the innovative specifications of the X-57 Maxwell, which will be NASA’s first piloted X-plane in two decades. X-57 will be the first NASA X-plane to feature a fully distributed electric propulsion system, which researchers will use to demonstrate an increase in cruise energy efficiency, as well as reductions in carbon emission and aircraft noise.

The interactive simulator is designed specifically to prepare pilots for the X-57’s future flight testing phase.

Flight control engineers and technicians at Armstrong have designed the X-57 simulator to provide a virtual flight experience according to what the X-plane



AFRC2016-0357-1

NASA/Lauren Hughes

X-57 principal investigator Sean Clarke flies the X-57 simulator to examine ideal maneuvers and reaction times for flight.

will actually feel like when it flies, which will be as early as 2018. This familiarizes the pilots and engineers with the system, making them more adept with reaction times and maneuvers, and helping the team develop emergency procedures.

Sean Clarke, principal investigator for the X-57, says collecting and analyzing data from the simulator is an effort and responsibility distributed throughout the entire X-57 team.

“Two of our test pilots have been flying it actively, and the controls group here at Armstrong is critical in getting the simulator working in

this interactive way,” said Clarke. “The chief engineer, Matt Redifer, and I are down here regularly, looking at the performance and making sure that the fidelity is high enough that we’re getting good data from it.”

Since the X-57’s configuration will undergo several design transitions throughout the timeline of the project, the team will update the simulator according to the specifications of each phase. A later configuration of the X-plane will include the integration of a high-performance wing with motors out on the

wingtips. Pilots will familiarize themselves with that configuration when the flight test phase of that modification approaches.

Among the simulations the team has designed into the program are multiple failure modes that are considered the most common for this aircraft architecture. As the test pilots are exposed to the programmed failure modes, the X-57 team is able to evaluate the performance of the aircraft, as well as the reaction time that is required. This helps the team develop emergency procedures specific to the experimental aircraft.

By flying the simulator during the phases of the project in which the aircraft is still being integrated with an electric system, Clarke said the team gains the benefit of being ready to fly as soon as the aircraft is flight worthy.

“This is a critical activity, so that the pilots get experience with our experimental wing, and experimental motors before we actually put them on the airplane,” said Clarke. “That way, we are optimizing the time in the flight test phase of the project so that the aircraft is not tied up with the pilots learning the performance at that time.”

The aircraft, a baseline Tecnam P2006T, is currently undergoing conversion at Scaled Composites in Mojave. The aircraft’s two inboard engines are being modified to feature an electric system, and could undergo taxi tests in early 2018.

ER-2 calibrating GOES-16 instruments for NOAA

By Kate Squires

Armstrong Public Affairs

The National Oceanic and Atmospheric Administration’s (NOAA) newest weather satellite, Geostationary Operational Environmental Satellite-R-series, or GOES-R, launched into orbit Nov. 19. Now that it has reached its final designated orbit, GOES-R will be known operationally as GOES-16. Over the next six months, NASA will be working with NOAA to calibrate sensors and validate data transmitted down from the satellite using NASA’s ER-2 high-altitude aircraft.



NASA

NASA’s ER-2 takes off from its base of operations at Armstrong’s Building 703 in Palmdale.

SOFIA 747SP: Mirror, mirror

By Kate Squires

Armstrong Public Affairs

NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) is looking to save both time and money by exchanging "lessons learned" with its sister plane, Pratt and Whitney Canada's (PWC) 747SP flying testbed, a nearly identical plane used to test new aircraft engines. The limited number of Boeing's 747SP and how each aircraft is used poses its own set of challenges to the normal maintenance and operations of the platforms.

During a special visit to NASA Armstrong's Building 703 in Palmdale, PWC's aircraft maintenance team and development offices discussed opportunities with the SOFIA aircraft team to address these challenges by openly sharing information between the programs.

SOFIA Operations Director Michael Toberman says that one of the opportunities includes sharing and procuring parts collectively. This is important because it can be hard to obtain parts on the aging platforms, especially when those parts are needed quickly.

"An example of why parts sharing would benefit us goes back to a recent maintenance issue we had with a bulkhead delamination. When we went to order the part,



AFRC2016-0309-20

NASA/Ken Ulbrich

NASA's SOFIA 747 SP is lined up with its sister aircraft, a Pratt and Whitney Canada's 747SP testbed Oct. 20.

it had a 550-day lead time. We encounter these types of issues, so part-sharing will help us get access to those parts quickly and prevent any further delays in the flight schedule," Toberman said.

Buying parts collectively would also benefit both programs by purchasing items such as tires in high quantity and at a lower cost. Toberman added that there

is much to be learned as the teams go through upgrades and modifications of the aircraft.

"We had SOFIA's cockpit upgraded, and we had some challenges that took time to resolve," said Toberman. Pratt and Whitney Canada also had its cockpit updated at the same facility and the work took less time as a result of the lessons learned

from work done on SOFIA. It's experiences like these where we can really benefit from sharing knowledge with one another."

The PWC team also explored opportunities for NASA to use its testbed for future propulsion projects, and are planning to host regular user group meetings to continue the discussion of how the programs can aid each other.

ER-2... from page 4

In November the ER-2 flew test flights to calibrate and validate two new instruments, called the Geostationary Coastal and Air Pollution Event Airborne Simulator (GCAS) and the Fly's Eye Geostationary Lightning Mapper, GLM, Simulator (FEGS).

GCAS will observe nitrogen dioxide created by lightning, while FEGS will observe and map lightning strikes. Data collected will be used to support the GLM sensors on board GOES-R. GLM will collect information such as

the frequency, location and extent of lightning discharges to identify intensifying thunderstorms and tropical cyclones.

"FEGS is designed to see lightning in thunderstorms within the GLM field of view to test and validate that GLM is seeing the lightning it should see," said Hugh Christian, the University of Alabama Huntsville lightning group lead.

FEGS includes 30 photometers – instruments that measure the intensity of light – set to several specific wavelengths of light, plus a

wide-spectrum camera. Twenty-five of the sensor instruments are tuned to see light emitted by neutral oxygen when it is heated by lightning, which is the same wavelength of light that the GLM instrument will detect.

In addition to FEGS and GCAS, the instrument package aboard the ER-2 will include sensors to detect gamma ray flashes caused by lightning, and to measure the change in the Earth's electric field from before the lightning process begins until it ends.

Other instruments will measure the atmosphere's conductivity to help scientists calculate the electrical current a storm is generating.

Formal ER-2 science flights will take place between March and May of 2017 in two phases. During phase one flights will be operated from the aircraft's normal base of operations at Armstrong's Building 703 in Palmdale. Phase two flights will be based out of Warner Robins Air Force Base in Georgia, where thunderstorm conditions can be more easily found and observed.

Mercury 7 astronaut Glenn passes

Former astronaut and U.S. Sen. John Glenn died Dec. 8.

Glenn, who served four terms as a U.S. senator from Ohio, was one of NASA's original seven Mercury astronauts. His flight on Friendship 7 Feb. 20, 1962, showed the world that America was a serious contender in the space race with the Soviet Union. It also made Glenn an instant hero.

His mission of almost nine days on the space shuttle orbiter Discovery, launched Oct. 29, 1998, when he was 77, made him the oldest human to venture into space. On Discovery he participated in a series of tests on the aging process. The aging population was one focus of his work as a U.S. senator.

Glenn was described as "humble, funny and generous" by Trevor Brown, dean of the John Glenn School of Public Affairs at Ohio State University, in a statement joined by the Glenn family. "Even after leaving public life, he loved to meet with citizens, school children in particular. He enjoyed music and had a weakness for chocolate."

Glenn was the first American to orbit the Earth, but while Glenn's flight on Friendship 7 was a national triumph, problems arose that could have spelled disaster. The first was a failure of the automatic control system.

A scheduled 30-minute test to determine whether Glenn could fly the capsule manually became a matter of life and death when the automatic system went out at the end of the first orbit.

"I went to manual control and continued in that mode during the second and third orbits, and during re-entry," Glenn recalled later. He had been confident he could do it.

"The malfunction just forced me to prove very rapidly what had been planned over a longer period of time."

Another problem seemed even more serious – telemetry indicated



NASA

Glenn climbs into the Friendship 7 capsule for his historic flight Feb. 20, 1962.

the spacecraft's heat shield was loose. It seemed possible that Glenn and the spacecraft would be incinerated on re-entry.

Glenn left the retrorocket pack in place to steady the heat shield during re-entry. "It made for a very spectacular re-entry from where I was sitting," he said. Big chunks of the burning material came flying by the window.

He wasn't sure whether the flaming debris was the rocket pack or the heat shield breaking up. "Fortunately," he told an interviewer, "it was the rocket pack – or I wouldn't be answering these questions."

Glenn entered the Naval Aviation Cadet Program in March 1942. He graduated and was commissioned in the Marine Corps in 1943. After advanced training, he joined Marine Fighter Squadron 155 and

Glenn page 12



NASA

Then-Senator Glenn joined the STS-95 Discovery crew in 1998, becoming the oldest person to fly in space at 77.

By Jay Levine

X-Press editor

It can be hard trying to solve the challenges of tomorrow while confined by four sides of a cubicle and without co-workers to compare notes.

For people needing a little more space – and the possibility of collaboration with their peers – the newly opened Ken Iliff Knowledge Center in Building 4800 offers such opportunities.

The center is a combination research library, meeting room with high-tech communication capabilities and provides areas where people can work, collaborate or just share a cup of coffee.

Olivia Carte, Aamod Samuel, former Armstrong employee Joel Lozano and facilities personnel, with support from the executive leadership and Armstrong Aeronautics officials, worked for the establishment of the facility. The center also will eventually include a maker space, an area where 3-D models and experimental ideas can take shape.

It started with Carte, Samuel and Lozano's participation in the early career leadership training program called the Foundations of Influence, Relationships, Success and Teamwork (FIRST) leadership training, or FIRST. They decided to develop the knowledge center as their project and they found willing participants in facilities, including Gemma Flores, who helped with design and implementation, Center Director David McBride and Deputy Director Patrick Stoliker.

Once the team started asking questions, they found a number of people and resources to enable the project. For example, Starr Ginn, who is the Aeronautics Research Mission Directorate Convergent Aeronautics Solution liaison, was key to securing the funds to boost collaboration among the aeronautics centers. Facilities stepped up to help with the design and construction and McBride and Stoliker were supportive.

Flores showed the team examples of innovative spaces and lessons learned from creating such spaces in

Space to stretch

Center intended to encourage collaboration and innovation



AFRC2016-0322-02

NASA/Lauren Hughes

Aamod Samuel, Olivia Carte and Armstrong Deputy Director Pat Stoliker cut the ribbon on the new Ken Iliff Knowledge Center.



AFRC2016-0322-05

NASA/Lauren Hughes

Attendees of the knowledge center grand opening saw the range of offerings in the new space intended to foster collaboration and innovation.

other areas of the center, such as the innovation room in the Facilities Support Center. Working on the

design, coordinating the funding and incorporating a number of concepts created challenges at the

start, team members said. However, those obstacles were overcome and the knowledge center is well received.

One way the team wanted to make the room more open and inviting was the addition of glass doors and two large sections of window on the wall facing the hall. The thinking was people walking by could see colleagues and would walk in and talk to them, Samuel said.

“We want to emphasize not just the technical,” he said. “We want people to have lunch and get together.”

The major rehab included a sink and kitchen area with free coffee.

“Grab a coffee here and get out of your cubicle and it will influence how you think,” he said. “It’s also a place where people can come together and build something.”

The room also will be a staging area for Exchange Events, video conferencing, and checking out a book from the research library, as well as friendly debates to get



Ken Iliff

people talking to each other. There’s plenty of room for that in the 2,642-square-foot center.

“We wanted to encourage people to see each other in person, rather than just through emails and telephone calls,” Carte said.

When the group was working on the concept in June 2015, the research library had ideas and preliminary sketches, but no funding for them. It turned out to be a fit for the Iliff Center to include the research library and offer a one-stop shop for a number of tools for people to use in collaboration.

Carte, Samuel and Lozano visited a variety of companies and NASA centers to determine how to create a different atmosphere for the Iliff Center from the rest of the center. The early reviews are good.

“When I came out of college,

Knowledge center page 10



AFRC2016-0329-08

NASA/Ken Ulbrich

Christian Gelzer accepts a Pride in NASA Award from Center Deputy Director Patrick Stoliker.



AFRC2016-0329-09

NASA/Ken Ulbrich

Kathleen Walter receives a Pride in NASA Award from Stoliker.

2016 peer awards presented

NASA Armstrong Center Director Award

For dedicated persistence and technical passion in the development and fielding of the Automatic Ground Collision Avoidance System (AutoGCAS). The system is truly saving lives today and will continue to save lives going forward.

Mark Skoog

Pride in NASA (PIN) Awards

Given in recognition of an employee's example, set through their words and deeds, of what pride is within NASA Armstrong.

**Christian Gelzer
Kathleen Walter**

Best NASA Technical Report/ Best Paper

Given in recognition to NASA technical series reports, conference papers, journal articles or other formal NASA reports based on research primarily performed at Armstrong.

Albion H. Bowers

Engineer/Scientist/Pilot

Recognizes an employee who



AFRC2016-0329-12

NASA/Ken Ulbrich

Mark Skoog, left, accepts the NASA Armstrong Center Director's Award from Stoliker.

applies fundamental principles, develops and tests new technologies or performs other outstanding contributions in their field.

Roger Todd Renfro

Henry Arnaiz Mentor Award

Recognizes an employee who demonstrates outstanding

performance in mentoring new and established employees.

Phillip J. Hamory

Steven B. Davis Co-op/ Student Award

Recognizes a student participating in NASA Armstrong's sponsored student

program who shows exceptional initiative, cooperation, excellence and exemplary performance during their term at the center.

**Lenny H. Gartenberg
Anthony Olguin**

Jim Ferguson Safety Award

Recognizes an employee who has made Armstrong a safer place to work through their primary, collateral, or significant voluntary efforts.

Dean A. LeBret

Supervisor/Manager/Leader

Recognizes outstanding leadership and/or management qualities that deliver exceptional results.

Mark C. Davis

Technician/Mechanic

Recognizes an employee who exhibits technical expertise, significant performance, enthusiasm, determination and dedication to NASA Armstrong in a technical support area.

Terrance L. Dilworth

Recognized, page 9

Recognized... from page 8

Mission Support:

Administrative Professional

Recognizes employees who perform exemplary professional administrative work.

Sandra S. Evans

Mission Support:

Administrative

Recognizes significant contributions in administrative or secretarial support.

Sue Brewer-Lewis

Mission Support: IT Support

Recognizes significant information technology support contributions by an employee who is enthusiastic, creative, quick and successful at creating solutions for customers.

Frigard J. Hormozi

Mission Support: Financial/ Resources Support

Recognizes an employee performing exemplary financial or resources management work.

Joshua Martin

Mission Support: Other Support Services

Recognizes an employee performing exemplary support services in an enthusiastic manner.

Michael J. Agnew

Facilities Personnel

Recognizes an employee performing exemplary support services in an enthusiastic manner.

Rita Carrete

Rising Star

Recognizes an employee who makes critical contributions to NASA Armstrong's mission at an early stage in their career.

Francisco Pena

Mission Impossible

Recognizes an employee who succeeds using innovation and hard work despite difficult or challenging circumstances.

Michael J. Relja

Can-Do Attitude

Recognizes employees who regularly "get the job done" with a positive attitude.

Paul M. Dees



AFRC2016-0329-27

NASA/Ken Ulbrich

Scott Silver accepts a Group Achievement Award for the DC-8 ATom-1 mission from Stoliker.

Unsung Hero

Recognizes employees who make critical contributions to the NASA Armstrong Mission in a behind-the-scenes role.

Leah Carreno

successfully achieve common goals.
DC-8 ATom-1 Team

Create Your Own Award

"A-Cubed: Awesome Amazing Athena"

Rebecca Flick

Teamwork

Recognizes a high-performing team that collaborates to

Flavin leads effort to return Panda to his home

A stray, disheveled and hungry dog roamed on the lakebed near the former shuttle area this fall. That could have been the end of the story if not for Armstrong employees who went above and beyond to ensure a happy ending for the gentle giant named Panda.

Jennifer Flavin and her colleagues and Armstrong security officers coaxed the dog to them, cleaned him up and fed him. Flavin took the additional step to see if the dog had an identification chip, which the Edwards Air Force Base veterinarian determined he had.

It was through the chip that Flavin was able to contact Panda's human family and learned of the circumstances that resulted in the dog's odyssey. A few days before Panda was found, his owners were in a roll-over accident about a mile from Boron on their way home to Northern California from a vacation. In the chaos of the event that included the family's truck and trailer rolling over multiple times, they thought they would never see their beloved companion again.

Flavin contacted the owners and told them that Panda was alive and well. Flavin said she could hear the joy in their voices when she told them the news. She then arranged to drive Panda to a rendezvous halfway between here and Northern California to reunite the family.

Flavin's peer award acknowledged that Flavin is a super dog lover and presented her with special dog tags with Panda's picture on them.



Submitted photo

Jennifer Flavin, center, Lauran Johnson-Hunt and Dale McCoy helped take care of and return Panda home.



AFRC2016-0325-46

NASA/Lauren Hughes

Stephanie Andrade and Kimberly Bestul are Wacky Waving Wiggly Arm Men.



AFRC2016-0325-34, AFRC2016-0325-51



NASA/Lauren Hughes

From left are Kaitlyn Summey as SOFIA and Diana Marin as Sugar Skull.

Armstrong favorite doesn't disappoint

It was a scary good time at the Armstrong Annual Halloween Chili Cook-off, Bake Sale and Costume Contest Oct. 31.

The Armstrong Employee Exchange Council and volunteers at Armstrong's main campus and B-703 in Palmdale were key to the event that raised more than \$1,200. The winners are detailed below.

Chili Cook-off winners:

Judges' Choice

First place
Chili-Chili-Bang-Bang (main campus)
Brian Bennett and Jill Boetsch with support from Code H
Unmanned Drone Chili (B-703)
Stacy Jenkins and Lexie Gliwa

Second place
Propulsion to Mars
Kay & Associates

Third place
Code S Chili
Code S
People's Choice
First place
Code S Chili (main campus)
Code S
Phaethon Chili (B703)
Zaheer Ali

Second place
Chili-Chili-Bang-Bang
Brian Bennett and Jill Boetsch with support from Code H



AFRC2016-0325-15

NASA/Lauren Hughes

Participants enjoyed the annual Halloween events including a chili cook-off.

Costume contest winners:

Most original costume
Kaitlyn Summey as SOFIA

Scariest costume
Diana Marin as Sugar Skull

Funniest costume
Stephanie Andrade and Kimberly Bestul as Wacky Waving Wiggly Arm Men

Knowledge center... from page 7

one of the first things I looked for here was a social space where people would get together, have a cup of coffee, read a magazine and talk to their colleagues about what they did this weekend, or the technical work they are doing," said McBride. "It gives us a great place to socialize, to get together, to share ideas and communicate. I encourage everyone

to use the facility." It's not uncommon to see Stoliker checking his email in the morning at the Iliff Center. "I'm excited," he said. "This is a physical manifestation of a collaborative space. The way it is done is nice and open. I like the furniture. The way it turned out has met or exceeded my expectations.

Facilities and all the people who contributed created a really neat space. It is a place where people can interact freely. I like to sort email, have coffee and talk with anyone who wants to see me." Iliff was a pioneer in hypersonic research who died Jan. 4, 2016. He was key in X-15 rocket plane and lifting body flight research,

but his methodology on parameter estimation is one of the most significant analytical advances in flight research and testing, and his codes are used by virtually all flight test organizations. The codes are also used for identification of other dynamic systems, including submarines and economic and biomedical models.

Bolden... from page 1

“The first group to come out here supported the U.S. Air Force supersonic flights and exceeding what was believed to be a sound barrier,” he said. “We have been here ever since asking and answering new questions about atmospheric flight, space flight, Earth science and pursuing other NASA missions.”

Uncertainty is inherent in transitioning to a new leadership, Bolden said, but it is important for everyone to remain focused on the missions ahead and to tell the stories about the work accomplished here.

“Armstrong employees have worked diligently to make flight safer for everyone and develop new methods of controlling aircraft that are incorporated into aircraft today,” Bolden said. “Many of you here are helping us to advance technology by using aircraft to study autonomy and to transform aviation by improving safety and efficiency of future vehicles to include the development of an automatic ground collision avoidance system. Not only has this system worked, and it has been recognized recently with a NASA Honor Award, but more importantly it has saved lives.”

In addition, the Earth monitoring missions Armstrong supports also have provided a treasure trove of data.

“This center has also advanced science through flight by using aircraft to monitor our ever-changing planet,” he added. “For example the just completed IceBridge mission that continues to study changes in glaciers and the Korea and United States Air Quality Study, which examined how air quality affects human health.”

NASA Deputy Administration Dava Newman told Bolden about her flight earlier this year on the NASA 747 Stratospheric Observatory for Infrared Astronomy, which she also documented in a blog. The flying observatory has thrilled the world with discoveries about the solar system and the universe.

“SOFIA was able to observe Pluto’s atmosphere by traveling

in its shadow,” Bolden said. “The shadow was moving across the Pacific Ocean at 50,000 mph. SOFIA’s unique capability as a high-flying observatory allowed it to be at the right place at the right moment where Pluto’s shadow crossed the Earth. That is mind boggling.”

Newman also relayed to Bolden her experiences flying an IceBridge mission on NASA’s DC-8. Bolden challenged employees to go out into the community and share experiences supporting the center’s unique work from hurricane hunting to NASA’s newest X-plane called the X-57 Maxwell. “Talk about what you do.”

Maxwell is a part of a larger new Aviation Horizons Initiative, a major aeronautics effort supported at Armstrong. Center engineers are also working to design and develop tools to test and validate new propulsion technologies for aircraft such as the all-electric X-57. The aircraft is designed to increase efficiency, operate quieter and have zero carbon emissions.

The Aviation Horizons Initiative has other elements that will involve Armstrong.

“The return of X-planes will also include a supersonic aircraft incorporating years of NASA’s sonic boom research to quiet the noise created from traveling faster than the speed of sound,” Bolden said. “A low boom flight demonstrator has been proposed that could open up the door for future supersonic commercial travel over land instead of taking five or six hours to go from New York to Los Angeles, it will take maybe two or three.”

U.S. law currently prohibits supersonic aircraft to fly over land due to the sound the sonic booms create, but Armstrong is helping us to change all of that.

Armstrong is also leading the multi-center effort to integrate unmanned aircraft systems integration into the National Airspace System, which will allow these vehicles into the national airspace alongside commercial



AFRC2016-0359-120

NASA/Ken Ulbrich

NASA Administrator Charlie Bolden, a former pilot and astronaut who flew on four shuttle missions, used the simulator cockpit to land the X-57.

aircraft, Bolden said.

Additionally, replacing the wings on a G-III aircraft with advanced flexible trailing edge wing flaps, in a joint effort with the Air Force, aiming to determine if this wing design can both improve airplane aerodynamic efficiency and reduce airport noise for takeoffs and landings, he explained. Current work is focusing on landing gear innovations.

Armstrong has a long history of testing space vehicles such as the approach and landing research flights for the space shuttle. Soon, Sierra Nevada’s Dreamchaser will return for an additional approach and landing flight. Dreamchaser could provide critical cargo transportation for our astronauts to the International Space Station and commercial space is a vital component of our journey to Mars, Bolden said.

Another area of Armstrong support is the Orion AA-2 abort test scheduled for launch in 2019. The flight is a follow on to the successful pad abort PA-1 test to validate a key component of astronaut safety in 2010 that was managed by Armstrong for NASA’s Johnson Space Center.

Bolden also praised the center’s management of the Flight Opportunities program,

which matures technology, enables exploration and supports commercial space industry by using its available vehicles to fly payloads.

“Two technologies to benefit from this program are the Made in Space 3-D printer, which there are two of them on the International Space Station, and the Gecko Grippers that can stick on command in the harsh environment of space and are also on the ISS,” Bolden said.

Bolden recognized the center’s success and the employees who make it happen.

“I want to thank all of you for the great work you have done to advance aviation, science and our journey to Mars,” Bolden said. “Stay focused and safe on the missions that we have and make sure that not only do we plan them well, but execute them with the type of excellence that has become tradition here at Armstrong.”

In a decade, Bolden said he is optimistic that the first Americans will walk on Mars, passengers will fly quiet supersonic aircraft around the world in six hours and NASA resources will continue to lead to the discovery of new planets.

“We’ve done incredible things, but there is still more to do and we need every single one of you to be on deck when we do that,” Bolden concluded.

Glenn... from page 6

spent a year flying F-4U fighters in the Marshall Islands. He flew 59 combat missions during World War II. After the war, he was a member of Marine Fighter Squadron 218 on the North China patrol and served on Guam.

In Korea he flew 63 missions with Marine Fighter Squadron 311. As an exchange pilot with the Air Force Glenn flew 27 missions in the F-86 Sabre. In the last nine days of fighting in Korea, Glenn shot down three MiGs in combat along the Yalu River.

Glenn attended Test Pilot School at the Naval Air Test Center, Patuxent River, Maryland. After graduation, he was project officer on a number of aircraft. He was

assigned to the Fighter Design Branch of the Navy Bureau of Aeronautics (now Bureau of Naval Weapons) in Washington from November 1956 to April 1959.

In July 1957, while he was project officer of the F-8U Crusader, he set a transcontinental speed record from Los Angeles to New York – three hours and 23 minutes. It was the first transcontinental flight to average supersonic speed.

Glenn accumulated nearly 9,000 hours of flying time, about 3,000 of it in jets.

After his selection as a Mercury astronaut, Glenn was assigned to the NASA Space Task Group at Langley, Virginia, in April 1959. The Space Task Group was moved

to Houston and became part of the NASA Manned Spacecraft Center (now Johnson Space Center in Houston) in 1962. Before his four-hour, 55-minute flight in the Friendship 7 capsule, Glenn had served as backup pilot for astronauts Alan Shepard, the first American in space who flew May 5, 1961, and to Virgil "Gus" Grissom, who followed Shepard on his own suborbital flight.

When astronauts were assigned to provide pilot input for the design and development of spacecraft, Glenn specialized in cockpit layout and control functioning, including some of the early designs for the Apollo Project.

Glenn was awarded the Distinguished Flying Cross six times and holds the Air Medal with 18 Clusters for his service during World War II and Korea, the Navy Unit Commendation for service in Korea, the Asiatic-Pacific Campaign Medal, the American Campaign Medal, the World War II Victory Medal and the China Service Medal.

Glenn also earned the National Defense Service Medal, the Korean Service Medal, the United Nations Service Medal, the Korean Presidential Unit Citation, the Navy's Astronaut Wings, the Marine Corps' Astronaut Medal, the NASA Distinguished Service Medal, and the Congressional Space Medal of Honor.

Five former Dryden (Armstrong) employees pass

Art Nash

Art Nash, a former Dryden employee for nearly 30 years, died Oct. 27. He was 79.

Nash started work at the center in 1975 as a technician, worked for nearly two decades in the Logistics Office and concluded his career in 2005 in the Strategic Communications Office.

He was active in his Lancaster church and in a number of community organizations and was a member of the Black Advisory Group at Dryden.

Nash was described by people who knew him as a family man, debonair, a gentleman and a man with a smile that would light up a room.

Kenneth E. Hodge

Kenneth E. Hodge, a former Dryden aeronautical engineer, passed Nov. 10. He was 88.

Hodge worked as an aeronautical engineer with Grumman and Lockheed and was the chairman of the X-15 First Flight 30th Anniversary Celebration.

Glen Crampton

Glen Crampton, a former Dryden engineer, passed Nov. 10. He was 71. He spent the majority of his career as an engineer at General Electric, but after a brief retirement spent many years at Dryden.

Coworkers nicknamed him "crash" because he was always getting banged up from his dirt bike hobby.

Salmon Perea

Salmon Perea, a former Dryden employee, died July 11. He was 68.

Francis Joseph

Francis Joseph, a former Dryden crew chief, died Dec. 11. He was 83.

Joseph served in the U.S. Air Force and was stationed at Edwards Air Force Base for four years. He worked on experimental aircraft at Dryden for 33 years. When he retired Oct. 1, 1994, he was the crew chief for the F-16 Advanced Fighter Technology Integration, or AFTI, program, which was a joint NASA-Air Force-Navy program to test possible future aircraft systems.

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