

October 2014 - A Quarterly Publication

## Ames Open House draws more than 120,000 guests -- Celebrating the research center's 75th anniversary



NASA photos by Eric James



For the first time since 1997, NASA's Ames opened its gates Oct. 18, 2014 and shared its world-class space and aeronautics research campus with surrounding communities. An estimated 120,000 visitors attended the event, which featured exhibits highlighting Ames' space missions, a two-mile self-guided walking tour past facilities including huge wind tunnels and Ames' simulated Martian landscape, opportunities to visit with Ames engineers and scientists and family-friendly talks with Ames researchers. The event began with opening remarks by Ames Center Director S. Pete Worden, (middle right photo) and California Congresswoman Anna Eshoo, California District 19, (top right photo). Participants learned more about Ames' major contributions to the International Space Station, the Curiosity Mars rover, the Lunar Atmosphere and Dust Environment Explorer (LADEE) orbiter, the Stratospheric Observatory for Infrared Astronomy (SOFIA) research aircraft and the planet-hunting Kepler mission, and saw demonstrations of technologies invented at Ames in the center's 75-year history.

see additional Open House photos on pages 10 - 15



## Visitors learn about Ames payloads aboard SpaceX-4

On Sept. 21, 2014, NASA's Ames launched four life science payloads into space aboard NASA's next commercial cargo resupply flight on the Space Exploration

Technologies (SpaceX) Dragon spacecraft to the International Space Station. The company's fourth commercial resupply mission to the space station delivered several tons

of supplies, including new science experiments and technology research.

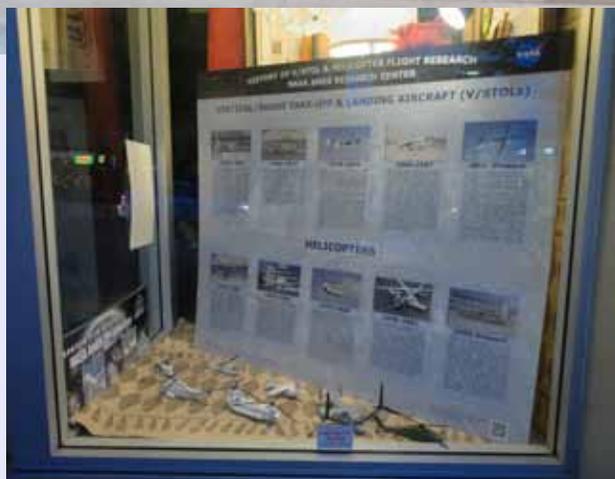
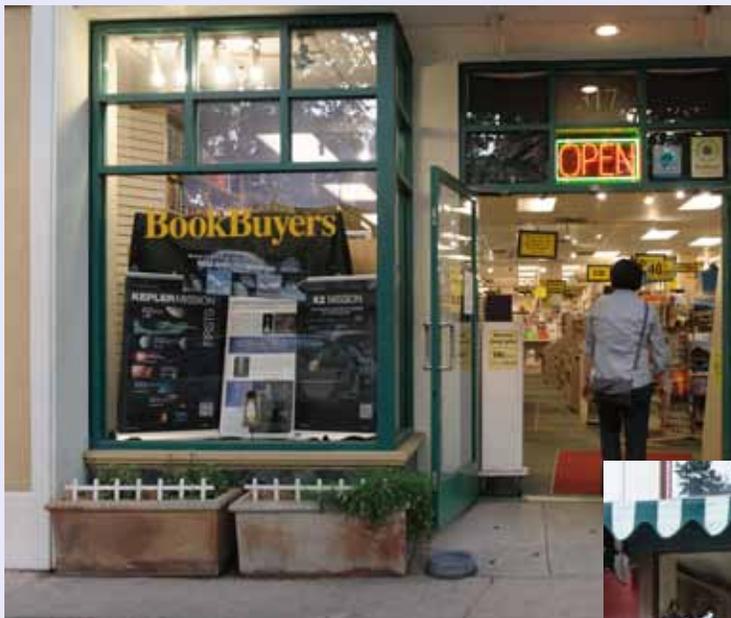
Members of the public were invited Sept. 19, (which was the original launch date but then postponed to Sept. 21 due to inclement weather conditions) to the Ames Visitor Center for the initial scheduled live, televised SpaceX launch. Guests however weren't disappointed as they heard from a panel of space biosciences researchers who discussed the four life science research missions that Ames sent to the space station. These included a microbiology study of yeast, a fruit fly study designed and built by students, a plant biology investigation and the maiden voyage of NASA's new rodent research system.



NASA photos by Eric James

## Mountain View, Sunnyvale showcase Ames' history

Ames celebrated its 75th anniversary this year with a 17-piece "Living Museum." The facility, in partnership with the cities of Mountain View and Sunnyvale, displayed 17 exhibits in these two cities during July 2014 to showcase engineering and scientific endeavors from the past and present at Ames Research Center. More than 300,000 people viewed the displays. Exhibits included a robotic aircraft exhibit and CheMin, a chemistry and mineralogy instrument that was used on the Mars rover 'Curiosity' to analyze soil samples and look for signs of life.



NASA photos by Dominic Hart

# Ames' CBAERO is co-winner of 2014 NASA Software of Year Award

BY KATHRYN SMYTH

CBAERO: Configuration-Based Aerodynamics from NASA Ames was selected as a co-winner of the prestigious 2014 NASA Software of the Year Award competition sponsored by the NASA Chief Engineer, the NASA Chief Information Officer, and the NASA Office of Safety and Mission Assurance.

As a Center, we have enjoyed great success in previous NASA Software of the Year competitions. This award adds to our proud legacy. Former Ames winners include:

- Incompressible Navier-Stokes Flow Solver in Three Dimensions (INS3D) (1994);
- Flow Analysis Software Toolkit (FAST) (1995);
- Center TRACON Automation System (1998);
- Remote Agent (with JPL, 1999), Cart3D (2002);
- Future Air Traffic Management Concepts Evaluation Tool (FACET) (2006);
- Data Parallel Line Relaxation Code (DPLR) (2007);
- World Wind Java (2009);
- Kepler Science Operations Center (SOC) (2010); and
- NASA App (with JPL, 2012)

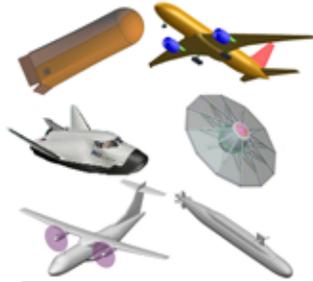
The CBAERO team is comprised of research scientist David J. Kinney (NASA/ARC) and aerospace engineer Loc C. Huynh (Space and Technology Corporation). Their outstanding work has made a significant and lasting contribution to Ames' technology development portfolio and to NASA's leadership in providing a game-changing rapid engineering tool for accurate flight-proven designs.

CBAERO enables smart, robust and fast vehicle analysis and design of aircraft, suborbital and space vehicles. The analyses from CBAERO are based on the true vehicle configuration, not an approximation. CBAERO is used to select and size the thermal protection system of a vehicle, to determine the loads on a vehicle's structure, and to define the safe reentry of an aerospace vehicle. It predicts the aerodynamic forces and the aerothermal heating on aerospace vehicles entering any planetary body with an atmosphere. It can be used

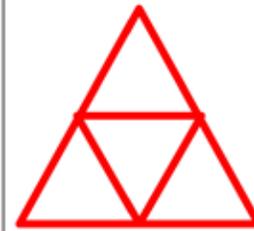
## CBAERO Innovations



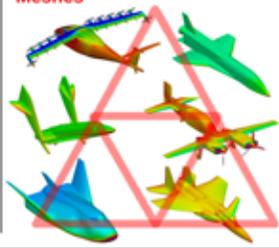
Exact, and Detailed Geometry



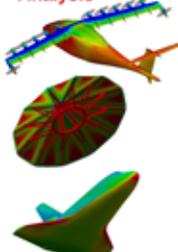
Unstructured, Triangulated Meshes



New Analysis Methods for Unstructured, Triangulated Meshes



Single, Integrated Analysis



Desktop to Super Computer Analyses



High Fidelity Anchoring



DPLR, LAURA, CART3D...

Validated Support Utilities



10x Faster, Higher Fidelity



in all stages of design from conceptual to final design. CBAERO can run on desktops as well as supercomputers. Analyses are ten times faster than traditional methods and are of higher fidelity.

CBAERO was transferred to U.S. industry, academia and government agencies. More than 50 Software Usage Agreements have been executed to facilitate the use of CBAERO by major U.S. manufactures of aircraft, helicopters and aerospace vehicles, including Lockheed Martin, Pratt and Whitney, Blue Origin, LLC, ATK, Draper Laboratory, Torch Technologies, Inc., Space Exploration Technologies Corp (SpaceX) and Aerojet/Rocketdyne. Federal government agencies, such as the Army, Air Force, Navy and DARPA, all use CBAERO.

CBAERO also is being used at six universities as a core computational capability that provides students and faculty the opportunity to investigate challenging aerothermodynamics topics and obtain physical insights that help them develop professionally. At NASA, CBAERO is used to predict the convective and radiative heating environments for the NASA Crew Exploration Vehicle (CEV) and supports the NASA Commercial Orbital Transportation Services (COTS) program from its early inception. It is currently used in

the development of the government-provided aerothermal database for the NASA Multi-Purpose Crew Vehicle (ORION). CBAERO had a part in the development of commercial and government launch vehicles, and spacecraft, including: SpaceX Dragon and Falcon 9, Sierra Nevada Dream Chaser, Virgin Galactic and Scaled Composites Space Ship, Aerospace Corporation military vehicles, and Orbital Sciences aerospace vehicles.

CBAERO shares the honor of winning the 2014 NASA Software of the Year Award with co-winner TASC: Tool for Analysis of Surface Cracks from Marshall Space Flight Center. TASC is a computer program with a graphical user interface (GUI) that was created using the commercial math analysis software, Matlab. The program allows a novice user, such as a laboratory technician, without nonlinear fracture mechanics modeling experience to obtain a fast and reliable fracture toughness solution. Congratulations to MSFC!

There will be a special awards ceremony for our CBAERO innovators and recipients of other technology-related awards here at Ames in mid-January 2015.

## Lunar Mission wins 2014 popular Mechanics Breakthrough Award

BY RACHEL HOOVER

NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) mission has received the Popular Mechanics 2014 Breakthrough Award for innovation in science and technology. The 10th annual Breakthrough Awards recognize innovators, engineers and scientists responsible for changing our world.

The award acknowledges LADEE's modular flexible construction and laser data transfer capability, which can send and receive data more than six times faster than the quickest space-based radio signals.

"We're proud of the LADEE mission's accomplishments and this recognition," said Ames Center Director S. Pete Worden, which designed, developed, built, integrated, tested and controlled the spacecraft. "LADEE may have been the first Ames-built spacecraft, but after the Kepler mission's win in 2009 and the Lunar Crater Observation and Sensing Satellite (LCROSS) mission's win in 2010, it's the third Ames mission to be honored with this award."

LADEE launched in September 2013, from the Mid-Atlantic Regional Spaceport at NASA's Wallops Flight Facility on Wallops Island, Virginia. The car-sized lunar orbiter gathered detailed information on the structure and composition of our moon's thin atmosphere and data to determine whether dust is being lofted into the lunar sky. A thorough understanding of these characteristics of our nearest celestial neighbor will help researchers understand other bodies in the solar system, such as large asteroids, Mercury, and the moons of outer planets.

The first Ames-built spacecraft enjoyed many other firsts throughout its mission. The occasion of its launch was the first flight of a converted U.S. Air Force Minotaur V rocket, an excess ballistic missile converted into a space launch vehicle and operated by Orbital Sciences Corp. of Dulles, Virginia. It also was the first launch beyond Earth orbit from the agency's Virginia launch facility.

Hosted aboard LADEE for its ride to lunar orbit was the Lunar Laser Communication Demonstration (LLCD) terminal. From a distance of almost a quarter-of-a-million miles,

LLCD demonstrated record-breaking upload and download speeds. The cooperative mission with a team from NASA's Goddard Space Flight Center and MIT's Lincoln Laboratory revealed the possibility of expanding broadband capabilities in future space communications development.

planned. LADEE was designed for a relatively short mission, as the science goals only required 100 days of data collection.

"From beginning to end, LADEE was a testament of unparalleled teamwork and unique innovation," said Joan Salute, LADEE program



LADEE was built using an Ames-developed Modular Common Spacecraft Bus architecture -- a general purpose spacecraft design that allows NASA to develop, assemble and test multiple spacecraft modules at the same time. The LADEE bus structure was a lightweight carbon composite weighing 547.2 pounds unfueled and 844.4 pounds when fully fueled.

"This mission put the innovative common bus design to the test and proved the spacecraft could perform well beyond our most conservative estimates," said Butler Hine, LADEE project manager at Ames. "This same common bus can be used on future missions to explore other destinations, including voyages to orbit and land on the moon, low-Earth orbit, near-Earth objects and objects in deep space."

The successful mission was concluded April 18 when ground controllers at Ames confirmed the spacecraft impacted the surface of the moon, as

executive at NASA Headquarters in Washington." The mission established a new technology paradigm, opening a new chapter for spacecraft design and construction."

NASA's Science Mission Directorate in Washington funded the LADEE mission. Ames managed the overall mission. NASA's Goddard Space Flight Center in Greenbelt, Maryland, managed the science instruments, technology demonstration payload and science operations center, and provided overall mission support. Wallops was responsible for launch vehicle integration, launch services and operations. NASA's Marshall Space Flight Center in Huntsville, Alabama, managed LADEE within the Lunar Quest Program Office.

For more information about the LADEE mission, visit: <http://www.nasa.gov/ladee>

## Ames' Elisa Quintana receives Lupe Ontiveros Dream Award

The Los Angeles Theatre Center hosted its Eighth Annual Gala, Oct. 4, 2014, in the downtown Los Angeles' Historic Core. Honorees were rec-

tion and the presentation of awards to the distinguished honorees.

The Lupe Ontiveros Dream Award was initiated last year to recognize

women with trailblazing careers who have made contributions to the Latino community. Prize-winning performer and founding member of the Latino Theater Company, Ms. Ontiveros, who died in 2012, became an actor after 18 years as a social worker. Often portraying women

who work, she stated, "I'm proud to represent those hands that labor in this country."

This year's recipient is Dr. Elisa Quintana, a research scientist with the

SETI Institute and NASA Ames where she works on the Kepler Mission to help search for and characterize extrasolar planets. Most recently, she led a team of astronomers to confirm Kepler-186f, the first Earth-sized planet found to orbit within the habitable zone of another star. Her research also includes creating computer models to study the formation, dynamical stability and habitability of rocky planets within and beyond our solar system.

"What was incredible was talking to so many people that were so proud that there was a Latina "rocket scientist." These people - mostly LA political figures and artists/actors - are so passionate about promoting our culture and supporting Latinas that push boundaries. One attendee told me I was the most marketable and essential person out of all the honorees, it made me realize how important outreach is to many people and I'm inspired to be more proactive in promoting science to our youth," stated Quintana.



photo by Brenda Hernandez

Dr. Elisa Quintana, a research scientist with the SETI Institute and works on the Kepler Mission at Ames, accepts the Lupe Ontiveros Dream Award at the recent Los Angeles Theatre Center Eighth Annual Gala.

ognized for their support of the Los Angeles Theatre Center's (LATC) mission of uniting people and cultures through artistic excellence. The gala included dinner, dancing, a silent auc-

## Livacich receives award for exemplary leadership

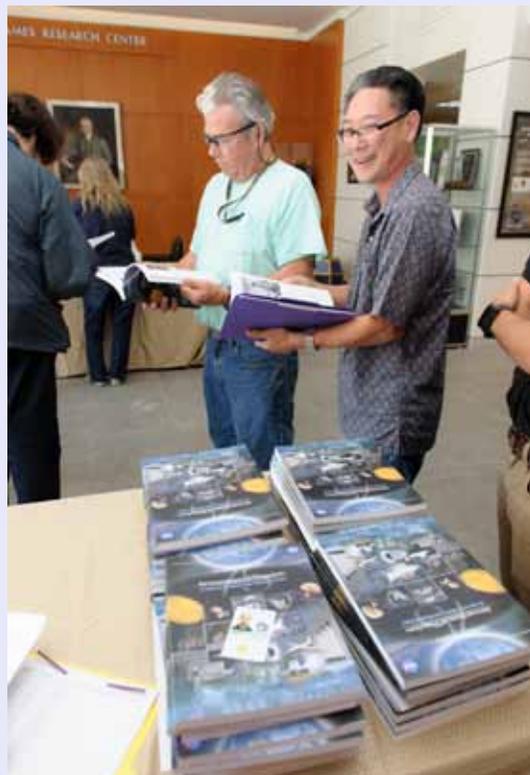
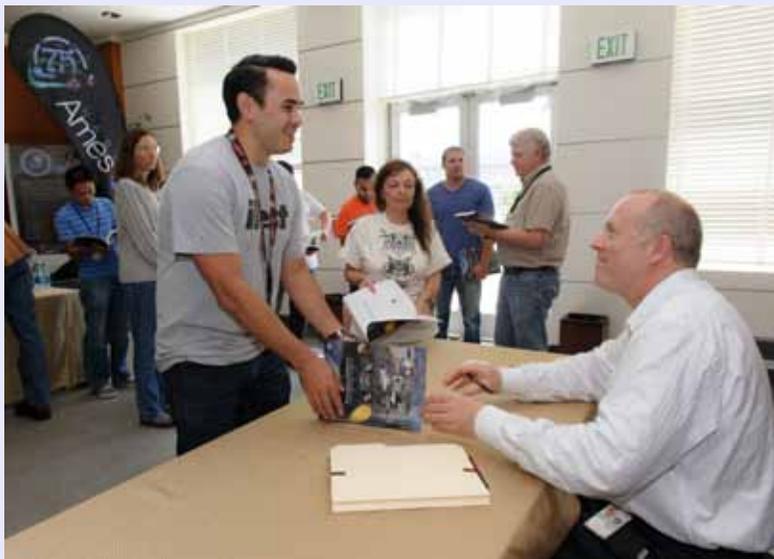


photo by Tony Damian

John Livacich (left) was recently recognized with an award signed by Lewis Braxton III, deputy center director, for his exemplary leadership of the Ames Safety Committee. Through Livacich's leadership as chairperson of the Ames Safety Committee, the Center and NASA have both benefited from his innovative and proactive approach to safety. Jerome Ridge, (right), alternate chair for the Ames Safety Committee presented Livacich with the award Sept. 18, 2014. The Ames Safety Committee provides Ames employees (Civil Servants and Contractors) an open forum in which to raise safety and health concerns.

## Glenn Bugos signs “Atmosphere of Freedom: 75 Years”

As part of this year’s 75th Anniversary Celebration, all Ames employees received a copy of the most recent edition of the Center history book, “Atmosphere of Freedom: 75 Years at the NASA Ames Research Center” (NASA SP-2014-4314), authored by Glenn Bugos (seated here right signing the book), of the NASA Ames History Office. Those who would prefer an electronic version to read on their devices can download a PDF at <http://history.arc.nasa.gov>.



NASA photos by Dominic Hart

## Worden discusses questions about life and are we alone

NASA photo by Eric James



"Of Mars and Starships" was presented by Ames Center Director Dr. S. Pete Worden in July as part of the Director's Colloquium Summer Series.

Some of humanity's most extraordinary endeavors lie in scientifically and philosophically probing where we come from and if we are alone. The pursuit to find evidence of life in the

universe is of paramount importance, as is determining where our civilization is going next. As humanity is on a pathway to become an interplanetary species, NASA Ames is conducting research that will enable such endeavors. Worden illuminated on these pursuits.

Is there life elsewhere in our solar system? Where, and how, should we look for it? Will we bring life to the rest of our solar system? If so, where will we bring it, how will we get it there, and what kind of life will it be? What about the possibility of life in other star systems? Could we detect it? Could we become it? Could we create it? What technologies do we have in hand that addresses these matters, and what technologies must still be created? We will discuss these questions, and in particular we will discuss what NASA, and especially NASA Ames, is working on to answer them.

## 75th Ames Anniversary family reunion picnic held

NASA photo by Eric James



Employees, retirees and their families attended the 75th Anniversary Family Reunion Picnic Aug. 7. This was a very special event, hosted by the Ames Exchange. Employees were encouraged to bring a photo of a memory here at Ames to post along the "Capture a Memory" poster wall created by the Ames History Office. The poster wall will highlight the history of Ames over the last 75 years and everyone will have the opportunity to capture special moments along the wall. Photos for the 75th Anniversary Photo Mosaic were also taken during the picnic. Employees also had the opportunity to sign their name on the Ames 75th Anniversary Banner that will be displayed at the Open House in October.

NASA photo by JP Wiens



NASA photo by Paul Langston

NASA photo by JP Wiens



NASA photo by Paul Langston

## Ames Combined Federal Campaign for 2014 Kicks Off

The official Ames Combined Federal Campaign (CFC) Training/ Kick-off meeting was held Oct. 7 in the Svvertson Auditorium, with a greeting



NASA photo by Eric James  
Ames Deputy Center Director Lewis Braxton III gives an opening welcome to the 2014 Ames Combined Federal Campaign captains and keyworkers during the kickoff meeting held early October 2014.

to the CFC keyworkers and captains given by Ames Deputy Center Director, Lewis Braxton, III (left). This year's theme is "My Story... My Choice... My Pledge."

There are more than 3,000 charities to choose from, including the American Red Cross, to the Council on Aging Services for Seniors, to the Family Builders for Adoption, to Habitat for Humanity. In 1984, CFC participation at Ames was at 80 percent. Last year, it was at 23 percent and the goal wasn't reached. It's surmised that this may be due to delayed planning as a result of the furlough.

This year, we would like to reach our dollar goal and reverse the downward trend of the participation rate. Any amount, even \$1 a pay period, will make a difference in achieving both goals.

NorCal (Northern California) CFC is comprised of 40 counties, with more than 75,000 military and civilian personnel. Ames has been the biggest giver, even though it's not as large as an agency as say the Veteran's Administration is.

The goal this year is \$270,000, which was last year's goal, but only 83 percent of that goal was met.

The CFC coordinators will be at various events at the center October through Nov. 21, the length of this year's campaign. Also, various CFC charity organization tables will be set up in the cafeteria.

If you would like to make a donation via CFC to one charity or more, you can do so via one of three ways.

1) For civil servants, payroll deduction through Employee Express at <https://www.employeeexpress.gov> (Click on the "Combined Federal Campaign" link on the left side);

2) Credit card donation (civil servants and contractors) through CFC/Nexus: [http://www.cfcnexus.org/\\_cfcnorcal/](http://www.cfcnexus.org/_cfcnorcal/) Or you can access the CFC web site at <http://cfc.arc.nasa.gov/>

3) Cash/Check donation (civil servants and contractors) using the hardcopy pledge form you can obtain from your division's CFC captain or keyworker.

As Ronald Reagan once stated, "We can't help everyone, but everyone can help someone." If possible, let's make a difference. If possible, please contribute to the CFC, and let us make a difference.



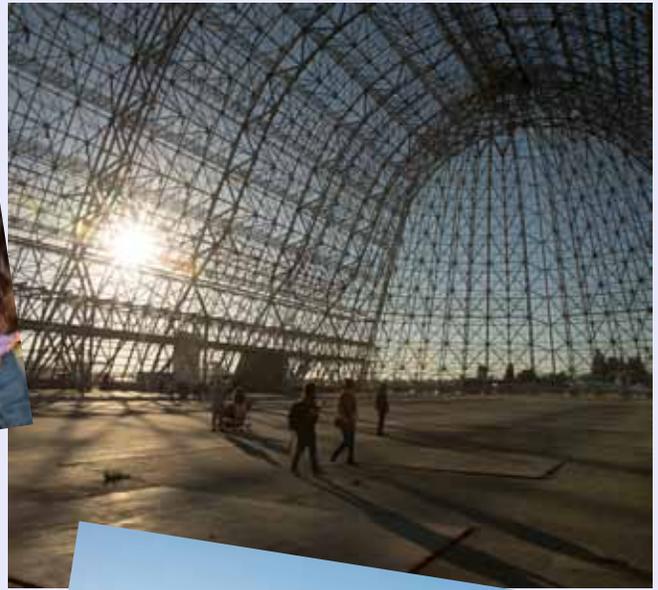
## Korean War veteran returns to Moffett

Lucy Silva Luciano, 85, retired Navy WAVES (Women Accepted for Volunteer Emergency Service) servicewoman visited the Moffett Field Historical Society Museum on Aug. 7, 2014. In this photo, she holds a portrait of herself during her visit, which is on permanent display at the museum, and stands next to a typical WAVES uniform. Luciano joined the Navy during the Korean War in 1951 and was stationed at Moffett Field from 1952-1955, where she met and married Joe Luciano, a VR-3 Squadron Link operator. The couple married in the Moffett Chapel. As a flight attendant for the WAVES, Luciano flew all over the world.

NASA photo by Dominic Hart

# Ames Open House draws more than 120,000 guests

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NASA photos by Eric James



NASA photos by Eric James

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# Ames Open House draws more than 120,000 guests

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NASA photos by Dominic Hart



NASA photos by Dominic Hart

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# Ames Open House draws more than 120,000 guests

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NASA photos by Dominic Hart



NASA photos by Dominic Hart

## Ombuds Offices services available to Ames employees

The Ames Ombuds Office provides all civil servants, contractors and students at the center with a supplemental, confidential and informal channel of communication to raise significant issues and concerns that they perceive could impact safety, organizational performance or mission success.

The Ombuds is accountable for conducting informal inquiries, raising issues of concern to appropriate officials and redirecting matters not under the Ombuds' realm to the appropriate office or organization with an existing administrative system; for example, the Inspector General, the Office of Equal Opportunity and Diversity, Ames Federal Employees Union, Procurement Ombuds, Chief Counsel and Human Resources.

The Ombuds' power rests on their reputation for confidentiality, fairness, objectivity, tact and respectful concern for the welfare of all individuals of the NASA community and for the well-being of the agency.

John (Jack) Boyd continues to



John (Jack) Boyd, Ames Omsbud

serve as Ames Ombuds. Jim Arnold serves as the alternate Ames Ombuds. They can meet you at a location of your choice. You also can work with an Ombuds at another center.

The Ombuds office is located in Building 200, room 205, Mail Stop 200-1A. Boyd can be reached at



Jim Arnold, alternate Ames Omsbud

ext. 4-5222 or at email: john.w.boyd@nasa.gov, and Arnold can be reached at ext. 4-5265 or james.o.arnold@nasa.gov.

The Ombuds website is <http://insideames.arc.nasa.gov/life-ombuds-office.php>

## WIN sponsors Breast Cancer Awareness Run



*In early October, the Women's Influence Network (WIN) sponsored a Breast Cancer Awareness 2 mile Fun Run/Walk, on DeFrance Avenue, at Ames. Events such as this help build awareness about breast cancer and the fight against this life threatening disease and help celebrate survivorship and honor those who unfortunately lost their battle.*

NASA photo by Dominic Hart

# Blingin' Chili Cook-Off competition draws in the crowds

The Ames Exchange held its 17th annual Chili Cook-Off Oct. 9. The theme for this year's event was: "Blingin' 75th." Each chili taster was given the chance to cast his or her vote for the 'People's Choice award.' A select panel of judges made awards in other categories. Trophies were presented to the winning team in each category. In conjunction with the Chili cook off, was the Ames Car and Motorcycle show, classic cars, hot rods and specialty cars.

NASA photo by Eric James



NASA photo by Eric James



NASA photo by Dominic Hart



NASA photo by Dominic Hart



NASA photo by Dominic Hart



NASA photo by Jean Paul Wiens



NASA photo by Jean Paul Wiens



NASA photo by Dominic Hart

## Zhu discusses Google's self-driving car's capabilities



*Jiajun Zhu of Google, presented a technical seminar in August, entitled "Self-Driving Cars." According to Zhu, these cars have the potential to transform mobility: they will make transportation safer, give freedom to millions of people who can't drive, and give people back their time. A dedicated team at Google has spent the last five years moving self-driving vehicles closer to a reality. New algorithms, increased processing power, innovative sensors and massive amounts of data enable our vehicles to see further, understand more and handle a wide variety of challenging driving scenarios. The vehicles have driven more than a half million miles on highways, suburban and urban streets. Zhu discussed Google's overall approach to solving the driving problem, the capabilities of the car, the company's progress so far and the remaining challenges to be resolved. Zhu is one of the founding engineers of the Google's self-driving car program. He designed and developed most of its perception system in the early years of the program and is currently the technical lead of the perception and the simulation teams.*

NASA photo by Eric James

## ACC holds successful golf tournament at Moffett Golf Club



*The Contractor Council Golf Tournament was held at the Moffett Field Golf Course in early September. The purpose of this event was to help further develop the camaraderie between the members of the Ames contractor community and their government customers.*

NASA photos by Dominic Hart

## Hispanic Heritage month celebrated with food and dance

On Sept. 17, the Hispanic Advisory Committee for Employees (HACE) kicked off Hispanic Heritage Month (Sept. 15 - Oct. 15, 2014) by celebrating the legacy and traditions of the Hispanic culture with live salsa music, dancing and delicious food, in the patio area of Building 3.



NASA photos by Eric James



## Ames fire department performs proficiency training onsite



The fire department at NASA Ames performed proficiency training on the Moffett Federal Airfield in early October. The training involved the use of a propane-fueled, aircraft fire-fighting trainer contracted from Kellogg Community College of Battle Creek, Michigan. The aircraft trainer provided the department with an opportunity to practice its response to a wide variety of realistic aircraft fire-fighting situations. The trainer is capable of simulating fires that include flaming-liquid spills, engine fires, interior cabin fires, wheel-brake fires and fires in aircraft auxiliary power units. Additionally, mutual-aid fire departments from around Santa Clara County were invited to participate in these training sessions to increase readiness for potential aircraft incidents.

NASA photos by Eric James



## Ames/Moffett members team up to restore aviation history

BY JERRY CLARK

Members of the NASA Ames Fire Department, Disaster Assistance and Rescue Team (DART) and Moffett Field Historical Society teamed up in a project in June of this year to restore and display a piece of aviation history. They came together for a unique mission: to reassemble the Lockheed-Martin U2 Dragonlady for public display after several years of restoration work by the Moffett Historical Society volunteers. Although this may not have seemed like a daunting task, there were technical issues that needed to be overcome, such as how to lift wings that together spanned almost 80 feet. For this aspect of the project, the team utilized a combination of forklifts, pallets and huge air bags designed for search and rescue operations. Slow and steady was the rule of the day, but after some trial and error, both wings were successfully reattached.

Our U2, with NASA Tail Number N708 (56-6681) has a very rich history as well. She was first delivered to the Central Intelligence Agency at Groom Lake, Nevada, on March 5, 1956, under contract SP-1913 for an approximate cost of \$1,000,000.00. It was deployed with Detachment "A" in late April of the same year, serving at Lakenheath England, Wiesbaden and Giebelstadt in West Germany. With the closure of Detachment "A", it returned to the United States in November 1957, and was then transferred to the Strategic Air Command and in particular, the 4028th Strategic Reconnaissance Weather Squadron of the 4080th Strategic Reconnaissance Wing based at Laughlin Air Force Base, Texas. However, it was retained by Lockheed as a test/development aircraft until January, 1959.

It was then returned to the Central Intelligence Agency in mid 1963 and was converted by January 1964, to the "G" model configuration for operations from U.S. Navy Aircraft Carriers. 56-6681 was then ferried to Taoyuan AB around June 1964 and flown by Lockheed pilot, Bob Schumacher, as well



*Top photo: the NASA Ames Fire Department, DART team and Moffett Field Historical Society members teamed up to help restore the Lockheed Martin U2 Dragonlady. Middle photo: photo of the original USAF markings of the U2. Bottom photo: The U2 flying over the Golden Gate Bridge while it was still actively flying test missions out of Moffett Field.*

NASA photos

as the Chinese and CIA pilots on hand in a test program to cure a flameout problem that had developed after a new fuel control had been installed in all the aircraft a few months earlier.

56-6681 was not used on any operations during this trip and was returned to the US after a few weeks. She was then placed into "flyable storage" at Edwards North Base from 1969 until the spring of 1971, when it was then transferred to NASA and

based at Ames Research Center, Moffett Field in California. It was operational at that location from June 1971, flying numerous high-altitude test missions until retired in August 1987, with 10,000 hours on its airframe. After several years of dedicated research and restoration, the Dragonlady is once again proudly on display at the base of historic Hangar One in the Moffett Field Museum aircraft park.

# Historic thermal imaging UAV test flight performed at Ames

BY STANLEY HERWITZ

Working in collaboration with Xtreme Aerial Concepts, the UAV (Unmanned Vehicle) Collaborative prepared a plan for performing an aerial day/night thermal imaging survey of a representative rooftop at NASA Ames recently using a low-flying UAV. The long-range objective is to demonstrate the usefulness of

UAVs for monitoring the energy use efficiency of man-made structures and guiding the prioritization of future repair work. The UAV of choice was the Vision-II JetCopter (Fig. 1), with its demonstrated payload carrying capacity of >50 lbs. and its flight stability for ensuring nadir views whilst in hover mode, as demonstrated during its deployment to the Florida Keys (May 2013) and its more recently completed deployment to San Bernabe Vineyard in California (August 28, 2014).

The “Thermal Imaging UAV Project” was proposed as a follow-on to the historic 2012 flights of the electric-powered Vision-I UAV over and around Hangar One at Moffett Field. The Hangar One UAV flights were historic in terms of being conducted in the National Airspace System in close proximity to a large man-made structure with FAA and NASA/ARC Range Safety approval. The Vision-I UAV showcased the acquisition of high-definition video and still frame digital imagery from a small low-flying unmanned rotorcraft.

On Sunday, Sept. 14, 2014, a late afternoon checkout flight was first conducted at 6:00 p.m. and a series of high-resolution digital images of the roof of Bldg. 255 as well as panoramic views of NASA Ames were acquired from a flight height of 300 ft AGL (Fig. 2). The nighttime flight commenced at 8:00pm and thermal images of the roof of Bldg. 255 were acquired from a flight height of 300 ft AGL. The flight sequence was historic, with the Vision-II JetCopter UAV becoming the first

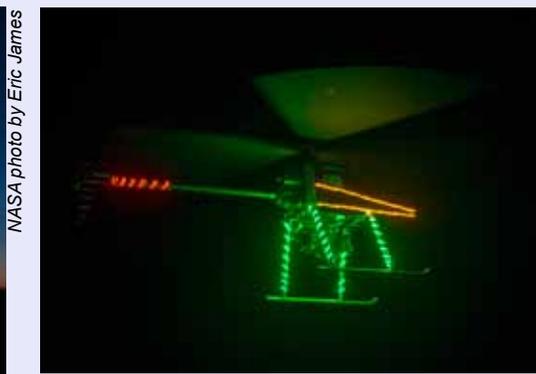


Figure 1: Vision-II JetCopter UAV: (a) (left) during pre-flight preparation; and (b) (right) in flight en route to Building 255 at NASA Ames (Sept 18, 2014).



Figure 2 Late afternoon view of NASA Ames obtained from the Vision-II JetCopter UAV Sept. 14, 2014

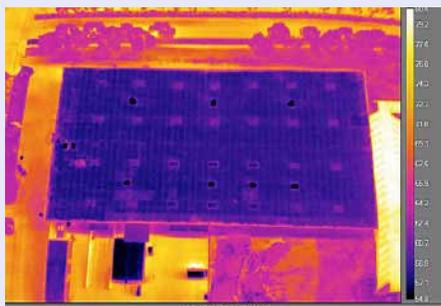


Figure 3: Nighttime thermal image of Building 255 (left photo) shown in relation to a daytime digital image (right photo). Both images were obtain from the Vision-11 JetCopter UAV Sept. 14, 2014.

“Category-2” UAV to fly over a building at Ames at night with FAA approval. Both the daytime and nighttime images (Fig. 3) are being be evaluated

in terms of their usability in locating roofing problem areas and assessing rooftop heat loss.

## Chahl discusses aerial applications drawn from insects

Javaan Chahl of the University of South Australia, spoke at Ames in September, about dragonflies and drones. This talk presented tested mechanisms that Chahl has developed for aerial applications that draw on insect neurophysiology and behavior. His program for setting expectations from four winged flapping flight was outlined, including some insect behavioral results demonstrating the unexpected criteria to which insect flight control systems appear to be subject.



NASA photo by Eric James

*Javaan Chahl explains his team's aspiration to integrated the ancient order of protodonata, with biologically inspired flight control and stabilization.*

## In Memoriam

### Physicist James Stallcop passes on

James Richard Stallcop passed away March 21, 2014 of heart failure while sleeping. He graduated from the University of Washington State and attended post graduate school at Stanford University. He had a masters degree in physics. He was a physicist at Ames for more than 30 years, retiring from the center in in 2005. He is survived by his wife, Martina, two children and 2 grandchildren.



*James Richard Stallcop*

### Scientist Leonard McGee dies

Leonard McGee worked in the Dynamics Analysis Branch at Ames and was a scientist who helped develop the Kalman Fliter for the space program in the 1960s, working for Dallas Dennery.

Leornard had several titles but was always a problem solver and loved that type of work more than

office work. He turned down offers that would take him away from what he loved doing.

He retired in 1988 from Ames and he and his wife Shirley moved to Olympia, WA. They had a very happy retirement until 2010 when Leonard came down with dementia and later in 2013 was admitted to

Alpine Way in Shelton, Washington, where they took very good care of him.

Leonard enjoyed Ames and had good memories of helping come up with the Kalman formula to get to the moon and back. Some of his papers are in the Library of Congress.

## Ames ongoing monthly events calendar

**African American Advisory Group (AAAG) Mtg.**, last Tuesday of each month, 12 - 1 p.m., Bldg. N-255, Rm. 101C. POC: AAAG Chair, Aisha Bowe, ext. 4-1016 and AAAG Vice Chair, Porsche Parker, ext. 4-0044.

**Moffett Aikido Club**, Monday and Wednesday evenings, 6:30 p.m., Bldg. 944. Aikido is a non-competitive, defensive martial art known as the "Way of Harmony." POC: Diane Pereda (650) 575-9070 or Robert Dean (650) 787-1007, email: mfaikido@aol.com

**Ames Amateur Radio Club**, third Thursday of each month, noon, N-T28 (across from N-255). POC: George Tucker, at ext. 4-2200.

**Ames Bluegrass Club**, every Tuesday from 11:30 a.m. to 1 p.m. in Bldg. 944. Players of all instruments and all levels are welcome, but we are particularly interested in experienced players willing to help improve the group's musical skills. POC: Bob Haberle at ext. 4-5494 or email: robert.m.haberle@nasa.gov

**Ames Bocce Ball Club**, Ames' newest Exchange-sponsored club is seeking members. POC: Mike Lindsay email: michael.c.lindsay@nasa.gov

**Ames Bowling League**, at Fourth Street Bowl in San Jose. Looking for teams of four for start of season, Sept. 4. Need regular and substitute bowlers. Thursdays starting at 6:15 p.m. For sign up questions: Michael Hom at ext. 4-0302 or Mina Cappuccio at ext. 4-1313.

**Ames Contractor Council Mtg.**, first Wednesday of each month, 11 a.m., Bldg. N-200, Committee Room. POC: Herb Finger at ext. 4-6598.

**Ames Federal Employees Union (AFEU) Mtg.**, third Wednesday of each month, noon, Bldg. N-204, Rm. 101. Guests welcome. Check for schedule changes at: <http://www.afeu.org>. POC: Paul K. Davis, ext. 4-5916.

**Ames Golf Club**, Members have the opportunity to play approximately 13 tournaments per year at a variety of 18-hole golf courses in the Bay and Monterey Area. POC: Barry Sullivan: Barry.T.Sullivan@nasa.gov.

**Ames Green Team** (formerly the Green Ames Working Group) meetings are held the first Tuesday of each month in Bldg. N-237, Rm. 101, from 10 - 11 a.m. Ames Environmental Management Division, ext. 4-5660. Web: <http://environmentalmanagement.arc.nasa.gov/reports/eo-13514.html>

**The Hispanic Advisory Committee for Excellence (HACE) Mtg.**, first Thursday of each month, 11:30 a.m. - 12:30 p.m., Bldg. N-255, Rm. 101C. POC: Jeanette Zamora, jeanette.zamora-ortega-1@nasa.gov.

**Ames Jazz Band Club**, Bldg. 944, 5:30 p.m. - 7 p.m. POC: Ralph Bach, email: ralph.e.bach@nasa.gov

**Jetstream Toastmasters**, Mondays, 12 p.m. - 1 p.m., Bldg. N-269, Rm.179. POC: Tim Steiger, ext. 4-0195, tim.steiger@nasa.gov. Web: <http://jetstream.freetoasthost.com>

**Ames Nimble Knitters Club**, every Monday at 11:30 a.m., Bldg. N-210, Rm. 141. POC: Diane Alexander at ext. 4-3140 or email diane.alexander-1@nasa.gov. All knitters and crocheters are welcome to attend and participate in our charity projects.

**Ames Roller Hockey Club**, meets daily from noon to 1 p.m. at rink on north end of the 80-foot-by-120-foot wind tunnel. Players should have experience skating and must wear protective equipment. POC: James Prunty, james.a.prunty@nasa.gov

**Ames Safety Committee**, third Thursday of each month, 10 a.m. - 11 a.m., Bldg. N-237, Rm. 200. POC: John Livacich, jlivacich@mail.arc.nasa.gov, ext. 4-3243.

**Women's Influence Network (WIN)**, first Wednesday of each month, Bldg. N-232, Rm. 227, noon - 1:00 p.m., POC: Wendy Holforty, wendy.l.holforty@nasa.gov

## Exchange Information

Information about products, services and opportunities provided to the employee and contractor community by the Ames Exchange Council. Visit our web site at: <http://exchange.arc.nasa.gov>

**Beyond Galileo Gift Shop N-235 in the cafeteria**, 8 a.m. - 2 p.m., ext. 4-6873

**Visitor Center Gift Shop (Exploration Center)**, Tues-Fri, 10 a.m. - 4 p.m., Sat. - Sun, 12 - 4 p.m., ext. 4-5412

Remember to purchase your baby shower, birthday and holiday gifts at Ames' two gift shops!

**Mega Bites Cafeteria N-235**, 6 a.m. - 2 p.m., ext. 4-5969/Catering ext. 4-2161

**Barcelona Café, Bldg. 3**, 6:30 a.m. - 2 p.m., ext. 4-4948/Catering ext. 4-4948

See daily menus at: <http://exchange.arc.nasa.gov/cafe/menu.html>

**Moffett Field Golf Club with 'Tee Minus One' Grill and Sports Bar**. Catering available. Call (650) 603-8026. Extended Happy Hour Thursdays, \$5 and \$6 pitchers of beer starting at 4 p.m. - 8:30 p.m.

**RV lots available**. Call to reserve a space at (650) 254-1808.

Civilian/Contractors, \$50/mo; military \$25/mo

**NASA Lodge (Bldg. 19)** (650) 603-7100  
Where to stay when you're too tired to drive home? What about the lodge?! Two types of rooms: Bldg. 19 (43 rooms), rate: \$65/night (\$5 ea add'l adult); Bldg. 583 A&B (150 rooms), rate: \$55/night (\$5 ea. add'l adult); B547 rate \$60/night (for large groups)

**Ames Swim Center (N-109)** (650) 603-8025

The swimming pool is now open. Hours of operation are as follows (lap swim only):

MWF 10 a.m. - 1 p.m.

MWF 3 p.m. - 6 p.m.

TTH 10 a.m. - 1 p.m.

TTH 4 p.m. - 7 p.m.

The pool is heated year round. The pool normally is available for lap swim, pool parties and special events. POC: Ryan Storms, pool manager (650) 603-8025. Memberships: single memberships: \$60/yr. Family memberships: \$80/yr. After purchasing a membership, there is an entrance fee: daily entrance fee - \$3/day or lap pass fee - \$50 for 20 uses. Platinum membership - \$380/yr. (no daily fee). Special events include military training, swim team events, kayak role practice, etc. The cost for special events is \$75/hr, or \$50/hr for military.

**Exchange basketball gym is now open, Bldg. 2** (650) 603-9717

Hours of operation:

M-F 11 a.m. - 1:30 p.m.

M-F 4 p.m. - 7 p.m.

**Chase Park reservations**, call ext. 4-4948

**NACA Park reservations**, call ext. 4-4948

## Ames Cat Network

The Ames Cat Network needs help finding homes for cats trapped at Moffett. They range from feral to abandoned/lost pets. They are tested, altered and inoculated. Call Iris at ext. 4-5824 if you or someone you know are interested in fostering or adopting a cat.

## Ames emergency announcements

To hear the centerwide status recording, call (650) 604-9999 for information announcements and emergency instructions for Ames employees. You also may listen to 1700 KHz AM radio for the same information.

## The Human Factor: A Problem to Control or Source of Resilience



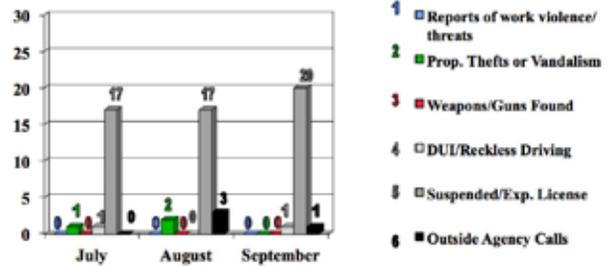
NASA photo by Dominic Hart

Sidney Dekker (PhD Ohio State University, USA, 1996) is professor at Griffith University in Brisbane, Australia and recently spoke at Ames, presenting, "The Human Factor: A Problem to Control or a Source of Resilience." Dekker runs the Safety Science Innovation Lab at Griffith University. He also is professor (Hon.) of psychology at The University of Queensland and professor (Hon.) of Human Factors and Patient Safety at Royal Children's Hospital in Brisbane. You can read more about Dekker at: [sidneydekker.com](http://sidneydekker.com)

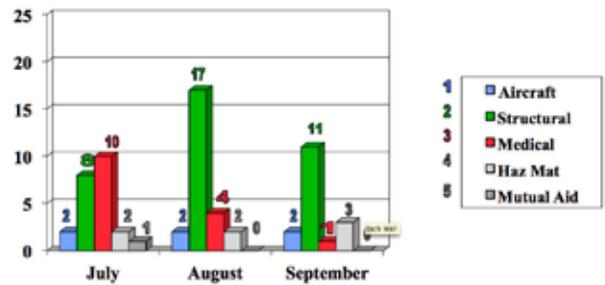
## Protective Services monthly activity

A statistical summary of activities of the Protective Service Division's Security/Law Enforcement and Fire Protection Services units for the three-month period ending September 2014 is shown below.

### Protective Services Office – Activities Security/Law Enforcement Monthly Activity Report



### Protective Services Office – Activities Fire Protection Services



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