

March 12, 1999

## National Engineers Week --volunteers needed

"Hi, I am an engineer. I work for NASA." These words cause students and teachers alike to sit up and take notice, eager to hear what will be said. But perhaps what is being said is less important than who is saying it. When children of all ages look up and see a NASA engineer standing before them, one of their key questions is, "Does the person look like them, their teachers, their neighbors, their parents or their grandparents?" In fact, maybe the speaker isn't "standing" at all but is confined to a wheelchair.

It is important for Ames to put a public



photo by Tom Trower

Ed Stanton speaks at Crittenden Middle School using a demonstration space suit provided by code DX during last year's event.

face on its engineering personnel. What these students see are ordinary people who do extraordinary things. They are NASA engineers who create the technological future of America. And it is essential that students realize that these NASA engineers look just like themselves.

Each year NASA and Ames have the opportunity to focus our outreach program on the inspiration our engineers provide to our children, the "future creators." In that spirit, Ames again will send out its finest to regional schools to let every student know that she or he is valued, and that they can be an important part of creating the tech-

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## Students and teachers work out the bugs at Ames' JASON project

More than 14,000 Bay Area students attended the 1999 JASON Project X: "Rainforests – A Wet and Wild Adventure"

at Ames, March 1–12. Youngsters from grades 3 to 10 talked via live satellite during 54 broadcasts to scientists and other students exploring the Peruvian jungle during a comparative study of tropical, temperate and fossil rainforests.

"I liked to learn about all the stuff in the rainforest show," said 10-year-old Jenny from St. Theresa Elementary School, Oakland. "The insects were the most interesting; there were so many different kinds of them."

"It's terrific," said parent Stefan Jucek, who was escorting students from Encinal Middle School, San Jose. "I work at TCL, and I was interested in the live broadcasts. They are as good as I've ever seen."

"Students examined the Peruvian rainforest during the broadcasts," said Lisa Marie Gonzales, the Ames JASON Project manager. "Last fall other students explored a temperate rainforest in the Olympic National Park, WA, and a fossilized rainforest in Colorado; information about those expeditions is archived on the JASON website at <http://www.jasonproject.org>."

"I liked the TV show, the masks for the tribes of Peru and also petting the snake," said Erika, 10, another St. Teresa student who was in Hangar 1, taking advantage of hands-on activities there called, "JASON Village." Youngsters were taking turns winding a ball python around their necks at one station in the hangar.

"He feels gross – real squishy," said 10-year-old Shalin, of Encinal Middle School. "He's smooth," said R.J., 11, from Marshall Lane Elementary School, Saratoga. "He felt like leather, and he didn't squeeze me."

"Besides playing games like Rainforest Jeopardy, students made bugs and butterflies, examined real reptiles, looked into



photo by Tom Trower

Hundreds of students file into the Ames Auditorium to view the live interactive broadcast.

active ant colonies; and some students even ate bugs. It's a day they won't soon forget," said Ames education officer Thomas Clausen.

What did the children like best? "I liked the bugs; they're cool, as long as they're not spiders," Victoria, 10, a student at Fammatre Elementary School, San Jose, said.

"I liked the helicopter over there," said 9-year-old Brian of Fammatre, while he pointed at a chopper in Hangar 1. "The tarantula was my favorite," Josh, 8, also of

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see related story on page 3

6 weeks to Certification

Ames ISO Web-site address:  
<http://dqa.arc.nasa.gov/iso9000>

# Ames begins testing replica of historic 1903 Wright Flyer

Ames is conducting a wind tunnel test of a full-scale replica of the historic 1903 Wright Flyer this month to learn more about its stability, control and handling characteristics.

During the two-week test, March 1-14, project engineers are studying the replica's stability, control and handling at speeds up to 30 mph. Tests are being conducted in the 40-foot by 80-foot test section of the National Full-Scale Aerodynamics Complex (NFAC). Test results will be used to compile a historically accurate aerodynamic database of the Wright Flyer.

"I can't think of anything as exciting as using modern technology to test an aerodynamic replica of the biplane that Orville and Wilbur Wright flew for the first time in 1903 at Kitty Hawk," said Pete Zell, Ames' wind tunnel test manager. "NASA is here as a resource for the public and to inspire young people. This project seeks to educate and inspire youth," Zell said.

"Testing the Wright Flyer gives us a chance to relive history," said Craig Hange, Ames' wind tunnel test engineer. "By understanding the flying characteristics of the Wright Flyer, we gain a better understanding of the Wright brothers' science and engineering skills, as well as an appreciation of the process that led to the development of the airplanes we fly today."

A team of volunteers from the Los Angeles section of the American Institute of Aeronautics and Astronautics (AIAA) built the replica using precise data from the original airplane provided by the Smithsonian. The replica features a 40-foot, 4-inch wingspan reinforced with piano wire, cotton wing coverings, spruce propellers and a double rudder. Although it will replicate the 1903 Wright Flyer in design, size, appearance and aerodynamics, some changes have been made to strengthen the airplane for the wind tunnel tests.

Upon completion of the tests, the replica will be transported to Los Angeles, where it will be permanently displayed in the lobby of the Federal Aviation Administration's (FAA) Western Pacific Regional Office in Hawthorne, CA. The lobby will be renamed the FAA Flight Deck Museum and include a variety of other exhibits depicting the history of aviation.

Using the wind tunnel test data, a second Wright Flyer will be built by the AIAA volunteers and flown on Dec. 17, 2003, commemorating the 100th anniversary flight of Orville and Wilbur Wright at Kitty Hawk, NC. During a re-creation of the Wright brothers' first flight, the aircraft will fly low and travel at only 30 mph, the same speed flown by the Wright brothers, whose first flight traveled only 120 feet during its 12 seconds in the air. Fred Culick, 63, of

Altadena, CA, a private pilot and an aeronautics professor at the California Institute of Technology, Pasadena, CA, will be the first to fly the airplane.

Orville and Wilbur Wright were responsible for a host of aviation inventions, including wing warping, which provides lateral control and allows an airplane to bank

years planning and assembling the replica.

The replica underwent special tests as a prerequisite for entering the wind tunnel at Ames. During static testing, more than three times the flight load (or more than 3,000 pounds) was applied successfully. The replica also underwent tests of its propeller system at Able Corp. in Yorba Linda, CA. In the Ames wind tunnel, the replica will be powered by a NASA electric motor.

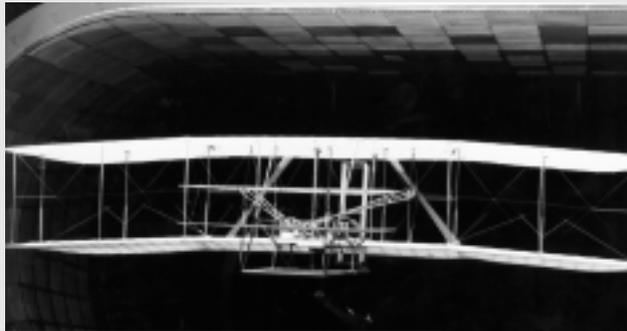
The replica has about \$100,000 worth of donated materials from companies such as Northrop Corp./Aircraft Division, Torrance, CA, which also provided the project a home base for 15 years; International Die Casting, Gardena, CA; McDonnell Douglas, Long Beach, CA; Rockwell International, Downey, CA; and TRW Redondo Beach, CA.

Biographies, live Internet webcasts, K-12 lesson plans and more test

information are available at the NASA Quest website located at: <http://quest.arc.nasa.gov/aero/wright/>

The Wright Flyer story has received substantial coverage in the local and national news media. So far, nearly 60 television stations across the country have broadcast the story. Good Morning America broadcast a live report from inside the 40-foot by 80-foot wind tunnel on Tuesday, March 2; the story also ran on the Associated Press national newswire. USA Today published a photo of the Wright Flyer and credited Ames photographer Tom Trower. The San Jose Mercury also published a photo and a story about the Wright Flyer on the front page of its Peninsula section. Numerous Bay Area and national television stations and print news media attended the Wright Flyer Media Day on March 3, including CNN, CNET-TV, ABC News Discovery Channel, Discovery Channel Canada, and local television Channels 2, 4, 5, 7, and 11, Channels 3 and 10 from Sacramento. The Associated Press and United Press International wire services and Agency France photo agency also sent reporters to cover the story. Several television stations, including Channel 2, 4, 5, 7, and 11, broadcast live reports from inside the wind tunnel during their morning news programs. An additional 12 television stations across the country, including CBS Network News, broadcast live interviews from the wind tunnel that same afternoon.

BY MICHAEL MEWHINNEY



photos by Tom Trower

Wright Flyer replica in Ames' 40-foot x 80-foot wind tunnel.

left or right. They also invented the forward stabilizer, which controls the airplane's up and down movement, and the moveable rear rudder, which enables the pilot to turn the aircraft.

"The work of the Wright Brothers founded the science and technology of aeronautics, and their accomplishments form one of the grandest chapters in history," said Jack Cherne, TRW engineer and chairman of the Wright Flyer Project. The project is composed of volunteers from the Los Angeles section of the AIAA. In contrast to the Wright brothers, who took less than a year to build their biplane, AIAA volunteers spent their Saturdays for the past 18

## Center Briefs

### **NASA/Boeing X-36 team honored**

The NASA/Boeing X-36 project has been named by Aviation Week & Space Technology magazine as a winner of its 42nd annual Aerospace Laurels award, honoring individuals and teams who made substantial contributions to the global field of aerospace in 1998.

Mark Sumich and Rod Bailey of NASA Ames, and John Hoef, Dave Manley, Bill Harris, Curt Maris, Jim Urnes, Jr., Gary Jennings, Larry Walker, Terry Weber, Kevin Citurs, Greg Compton and Dave Zilz of Boeing Phantom Works were honored for conducting "a highly productive unmanned X-36 flight research program at about 10 percent of the cost of a manned vehicle test project."

The X-36 provided a wealth of advanced flight controls and tailless/yaw-vectored aircraft data that can be applied to future unmanned combat air vehicle design. Honorees were nominated by Aviation Week editors in the categories of Commercial Air Transport, Aeronautics/Propulsion, Government/Military, Space, Electronics and Operations.

### **NEAR Spacecraft reveals major features of Eros**

Measurements taken by NASA's Near Earth Asteroid Rendezvous (NEAR) spacecraft have provided scientists with new information about the Asteroid 433 Eros.

NEAR's science instruments observed about two-thirds of the asteroid during a December fly-by.

The spacecraft is on course to rendezvous with Eros to begin its planned year-long orbital mission starting in mid-February 2000.

### **Space shuttle development conference set for June**

What new technologies and new missions are in store for the Space Shuttle of the future? NASA and Space Shuttle prime contractor United Space Alliance will hold a national conference in June to identify candidate emerging technologies and system concepts for next-generation upgrades to the Space Shuttle. The conference will feature new technology demonstrations, advanced system concepts and design proposals for Space Shuttle avionics, propulsion, power, ground systems and major element configurations.

Next-generation missions for the Shuttle will be presented and discussed, including research, technology testing, satellite retrieval and refueling, and vehicle assembly in orbit.

## Establishing a root cause

Ames has developed an ongoing internal audit program to implement the requirements of ISO 9001. Most of you have felt the effect of an internal audit as new requirements identified for processes, documentation, information, records and inspections filter down to every level of the Ames ISO Quality System. Auditors have gone through many work areas asking questions, requiring us to show how we do our jobs and asking how we know what to do, or if we have a description of our job or process.

Did your mind just go blank? That's not an unusual reaction. Sometimes we are lost and have to be directed to look for a procedure or work instruction. Other times, we access our code's website with a show of self-confidence and download the latest revision of a procedure. Now there is a chance the auditor will recall a particular activity we showed him moments before, only to point out that it differs from the procedure requirements.

The internal audit system has produced Corrective Action Requests (CARs) at a great rate. CARs have also been written by individuals to document existing problems, and by failure review boards. CARs also have emerged from the nonconformance control program. Each CAR must be addressed, with action taken to close the CAR. Identifying what action to take has become a real problem for some people. Ames requires that a root cause be identified for each CAR. Performing a root cause analysis can help to identify the true cause of the problem. When we can address the root or true cause of a discrepancy, we have a good chance of making a correction that will eliminate re-occurrence of the problem.

What is a root cause analysis? Simply defined, it means to identify the cause and effect leading to the problem. There is a bit of confusion about what is required in establishing a root cause for a discrepancy on a CAR. Doing a root cause analysis can help to define the cause, show ways to resolve the discrepancy and might be much simpler than you think.

Remember going to Disneyland and riding through the microscope exhibit? We moved deep into a snowflake, exploring the water molecule, atoms and parts of atoms. Had we continued to the kindergarten physics level of the atom, we might have seen some of the theoretical particles making up each photon, neutron, and electron.

Root cause analysis is one of the options open to a manager seeking to address and close a CAR. This analysis is the process of

finding what you consider to be the most common denominator causing the problem. The responsible manager named on the CAR is required to establish this root cause, by whatever method is most likely to yield the best result. In situations where the root cause may not be obvious, a root cause analysis can help.

The first step in doing a root cause analysis is to understand the characteristics. The microscope exhibit showed us the characteristics of a snowflake, and took us on a path to examine smaller and smaller bits of it. During a root cause analysis, we identify the effect or problem. A CAR usually identifies this problem for us, and sometimes even defines the requirement that has not been addressed.

After identification of the problem, we look for the causes. Each effect identified has at least two causes. One type of cause is an action, or a momentary cause that brings conditions together. Another type of cause is a condition which is in existence at the time the action takes place. The types of causes are tightly woven and must exist at the same time, in the same place and will ultimately bring about an effect (and possibly not the desired one).

A simple example of the two types of causes — action and condition — can be found in the "fire triangle" with which we are all familiar. Three "conditions" are necessary to create a fire: heat, combustible material and oxygen. We provide the action when we strike the spark, creating the fire event. If these conditions and action coincide in our home fireplace, the fire is controlled. The result is warmth, comfort and a sense of satisfaction.

However, let us examine an almost identical set of conditions and actions. The circumstances have changed although the conditions have not. The weather has been dry and hot, the grass reflects the lack of water by having turned that color that makes California the "Golden State," and there's plenty of other fuel in the form of dry leaves, trash on the roadside, even living trees. We swim through an ocean of oxygen, the second necessary condition for a fire. An action, in the form of an undoused flame from a campfire, discarded lit match or cigarette, completes the set of circumstances. We all know this scenario. There is a possibility that the highly undesirable effect will be a forest fire.

Root cause analysis can be used to pinpoint the reason (cause) for the issuance of a CAR. The cause provides a way for a responsible manager not only to define the problem, but to develop a plan of preventive action. The manager can go further

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# JASON X

## Students and teachers work out the bugs at Ames' JASON project

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Fammatre, said. "It just crawled on the girl's hand." I liked "all the hands-on things. We didn't just have to sit around listening. And I learned a lot more by doing things," said Danielle, an 11-year-old from St. Theresa. "I liked the teleconference most," said Daniel Bulaevsky, 12, of Jordan Middle School, Palo Alto. "It was really exciting to talk to the other people and learn about the rainforest."

During "virtual expeditions," students explored the Amazon Center for Environmental Education and Research (ACEER) in Peru, the Hoh temperate rainforest in Olympic National Park, WA, and Castle Rock, CO, site of a 63-million-year-old fossil rainforest.

JASON satellite broadcasts featured a team of researchers and student and teacher "Argonauts" during the 2-week expedition in the Peruvian Amazon. They climbed to a height of more than 100 feet to explore the layers of forest and observed its inhabitants along a quarter-mile-long canopy walkway. On the ground, students looked inside an ant colony to see life under the forest floor. They also learned how native people use natural resources for food, shelter and medicine.

Parent Mark Hurty, who was escorting students from Jordan Middle School, said, "I

think JASON is a great thing. I especially liked the teleconference; the kids get a more comprehensive view of what the issues are surrounding the rainforests."

Not the traditional textbook style of learning, the JASON Project uses advanced technologies to interest students in science and technology. Through a satellite telepresence system, the project linked the Peruvian Amazon live to students at 35 sites including



*Sixty computer terminals welcomed students at The BIG Web, courtesy of Apple, Bechtel, and Silicon Graphics.*



*5th and 6th grade students "Build a Bug" in Hangar 1 at JASON Village.*



*photos by Tom Trower*

Ames. About 3,000,000 students participated worldwide.

Fifth grade teacher Zane Wolters of Marshall Lane School, Campbell School District, said, "JASON is fantastic, very well organized. The volunteers are very knowledgeable, helpful and friendly. What I really like is the technology. One example is the JASON website. We can access it from the schoolroom. Another thing is that the live broadcasts allowed students to watch the rainforest activities and do things live. Fantastic."

Founded by international explorer and RMS Titanic-discoverer Dr. Robert Ballard, the JASON Project is internationally renowned for its ability to incorporate cutting-edge technologies, a multi-disciplinary curriculum, professional training for teachers and Internet communica-

tions into a comprehensive learning program.

"It's amazing," said parent Lori Shapiro who was helping teachers from Jordan Middle School. "It's fantastic, concluded another parent, Richard Knutson, whose daughter goes to St. Theresa Elementary. "It's a great chance for kids to do things and learn."

BY JOHN BLUCK

## Swimming classes set

Come on in--the water's great! The swimming pool is located at Building 109 near the corner of McCord and Bailey Avenue.

The NASA Exchange is pleased to announce continuing swimming classes for all levels of students. Everyone is welcome - retirees, students, friends. Instructions include floating (front and back), flutter kicking, crawl stroke, back stroke, side-stroke, side breathing and whip kick with breast stroke. Maximum number of students per class is 10.

The swimming pool facility, including the outside gazebo area with BBQs, may be rented for special events such as birthday parties, retirements, and other social occasions for \$200 per event. Call now to make your reservations for a party this summer.

For more information, contact Jodi Neal at ext. 3-8025 or 796-1056. Visit the NASA Ames Exchange web site at <http://amesexchange.arc.nasa.gov/AmesExchange/index.html>

## 1999 NASA software of the year award--nomination call

Lee Holcomb, NASA's Chief Information Officer and Daniel Mulville, NASA's Chief Engineer and Chair of NASA's Inventions and Contributions Board (ICB), are calling for submissions for the 1999 NASA Software of the Year award to give recognition to software developed and owned by NASA.

Ames nominations are being coordinated by Betsy Robinson, Commercial Outreach Lead, in the Ames Commercial Technology Office.

Last year, the competition resulted in two first place winners with each being awarded \$50,000. The award, which will include a plaque, a certificate signed by the NASA Administrator and a monetary award of up to \$100,000 will be presented to the author(s) of software. In order to be eligible for this award, the submission materials must demonstrate that: (1) NASA owns the intellectual property; (2) it has been supported, adopted, sponsored or used by

NASA; (3) it is significant to the NASA mission; (4) a Software Release Request (CTO-06 form) has been approved for a release other than for a beta release or a developmental release.

A NASA Form 1329 (ICB Award Evaluation Questionnaire) must be completed for each entry. Copies of the software, sample applications and data, and descriptive documentation of the package should be included, in addition to evidence demonstrating the impact, ease of use, and degree of innovation and suitability of the entry.

Contact Betsy Robinson at ext. 4-3360 or email at: brobinson@mail.arc.nasa.gov in the Ames Commercial Technology Office for copies of the required forms and for additional information. Entries and supporting material must be submitted to Betsy Robinson, M.S. 202A-3 (Building 202A, Room 211C) by Monday, April 12.

## National Engineers Week--volunteers needed

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nological future.

This year, National Engineers Week – “The NASA Experience,” will run through April 15, providing a unique opportunity for Ames employees to visit local schools to share talents and experiences with young people. There are many engineers who participate in National Engineers Week, but only NASA engineers can provide the extra excitement and inspiration of America’s aerospace program to tomorrow’s engineers.

This is a call to service. You, the talented and dedicated Ames engineers, contractors and civil servants alike, can take just a small amount of time to reach out to students in our communities and make a difference.

The team in the Office of External Affairs coordinating Ames’ National Engineers Week participation will assist you in making this activity pleasant and fun. Each classroom presentation typically averages 50 minutes, with an additional 30-60 minutes needed for commute time. Hand-outs, props and other support materials are made available.

Contact Brenda Collins at ext. 4-3540 to schedule your participation with a local school. She can also provide more information about this program, training, hand-out materials, props and so on.

In previous years, many Ames people have participated in this program. And Ames’ organization codes and their managements take great pride in their codes’ overall participation. Both the “giving” and the competitive spirits are alive and well at Ames. As an extra incentive to organization codes to support National Engineers Week – “The NASA Experience,” the code achieving the highest participation by its employees will again be recognized by Center management and in the Astrogram.

The bottom line is this: “You make a difference!” Showing up is 80% of what it takes. We urge you to please, show up for the kids. Show up for your own satisfaction. Show up for the future!

BY DONALD JAMES



*The competition--robots compete during 2 minute matches.*



*Students making repairs to robots between matches.*

*photos by Dominic Hart*



*Woodside High School*

27 high schools from as close as Palo Alto to as far away as El Paso Texas came to compete in the NASA Ames sponsored FIRST (For Inspiration and Recognition of Science and Technology) Western Regional Competition. Students were given a kit of assorted parts and an objective for building a robot in six weeks time, that would do battle against other schools in “King of the Hill” type competition.

# Black and Women's History Months

## Black legacy and leadership

Empowerment leads to action. Action results in change, and change is our goal as we strive for equity and diversity at NASA Ames Research Center.

We have a legacy of African American



photo by Tom Trower

Dr. Marquita Byrd speaking at the luncheon.

leaders who paved the way for change. Our ancestors refused to follow the law of the land. They took risks and faced death to free

those people who were in bondage and to change what was unfair to people of color.

The challenge presented to us at the African American Advisory Group (AAAG) 1999 Heritage Month luncheon by our inspirational speaker Dr. Marquita Byrd served to remind us that we are still responsible for providing justice and fair treatment for all human beings. We have not arrived; we can not lose sight of our goal. We must continue to authorize each other to move forward in our path to justice for all. We should be inclusive, realizing that this is not just a black problem. We must see ourselves as citizens who have a shared duty to serve in whatever capacity we can to resolve differences and change attitudes.

We will not give up, but we will maintain a strong hope for the future. We need to have compassion for all because we are all victims of a racist society. Finally, we must stand and be counted as individuals



photo by Tom Trower

Attendees at the luncheon singing 'Lift Every Voice and Sing.'

who understand that working together we will survive, but divided we will all perish. As those thoughts echoed in our minds, we closed singing 'Lift Every Voice and Sing' which is the Black National Anthem.

BY PATRICIA POWELL

## Women's history month--a profile and perspective

The contributions of women to the history of Ames are numerous. Even more important, those contributions are critical to this Center's vision of its future. That vision, which includes Ames' role as the NASA Center for Excellence in Informational Technology, can only be fully achieved

the administration of contracts with universities. She hopes that, through her efforts, she is helping others advance on a growth path designed for success.

"I feel that it is very important to value everyone's contributions," Munroe said. "A close friend of mine gave me a pin for Christmas that stated, 'it takes the best in each of us to bring out the best in all of us.' One contribution I can share with others is recognizing that I didn't get to where I am alone."

Munroe has attended several career and technology fairs representing NASA in addition to speaking in several elementary school classrooms, attempting to prompt others on the importance of focusing on their future. She is adamant on the topic of self improvement, both for one's own benefit and for that of society as a whole. Munroe will soon be working on a master's degree in science systems management that she plans to use in furthering her involvement with critical decisions that effect women and all people.

Women's history is a collective history to which we each have in some form or fashion been exposed. The theme for Women's History Month this year is "Putting your Stamp on America."

Since this nation's founding days, women have placed their mark on America's history. In the early days, Deborah Sampson fought as a soldier in the Revolutionary War, and Fannie Lou Hamer faced violence



photo by Tom Trower

Tianna Shaw

and endured intimidation to become leader of the Civil Rights movement. More recently, environmentalist Rachel Carson changed our way of looking at the world, and physicist Chien-Shuing Wu changed our way of looking at the universe. At Ames, Patricia Cowings was the first female scientist trained to be an astronaut; Nancy Dorigi is helping human factors researchers turn their ideas into experiments by writing computer programs to test theories, and Tianna Shaw is helping to lead in the design of a control system for the human-powered centrifuge.

Women's History Month is a celebration of women from all educational levels and backgrounds. While the history of the women's movement is as diverse as the range of individuals that comprise its structure, Women's History Month is a celebration of inclusiveness, the recognition that we each benefit from one another.

BY URSULA HAWKINS



photo by Tom Trower

Christine Munroe

through the participation and nurturing of the diverse population of employees that constitutes Ames' workforce.

Recently, I asked Christine Munroe of Ames' Acquisition division what it means to her to "put her stamp on America?" It means, she responded, "being able to share a part of myself with other people." An assistant Den leader for her son's Boy Scout troop, Munroe is a contract specialist and has been at Ames for 13 years. She has focused the bulk of her efforts assisting in

# Events & Classifieds

## Calendar

**Jetstream Toastmasters**, Mondays, 12 noon to 1 p.m., N-269/Rm. 179. Guests welcome. POC: Jenny Kahn at ext. 4-6987 or Karen Matsuoka at ext. 4-6184.

**Model HO/HON3 Railroad Train Club at Moffett Field** invites train buffs to visit and join the club in Bldg. 126, across from the south end of Hanger One. The club is in particular need of low voltage electricians and scenery builders & maintainers. Work nights are usually on Friday nights from 7:30 p.m. to 9:30 p.m. Play time is Sunday from 2 p.m. to 4 p.m. For more info, call John Donovan at (408) 735-4954 (work) or (408) 281-2899 (home).

**Ames Bowling League** meets at Palo Alto Bowl every Tuesday at 6 p.m. The league is in need of substitute bowlers. POC: Mina Cappuccio at ext. 4-1313.

**Ames Child Care Center Board of Directors Meeting**, Wednesdays, 12 noon to 1 p.m., N-213/Rm. 204. POC: Debbie Wood at ext. 4-0256.

**Ames Ballroom Dance Club**. Tuesdays: Cha Cha 3/16-3/23, Merengue 3/30. Beg. 5:15-5:45; B/I 5:45-6:15; Int. 6:15-6:45. Moffett Training and Conference Center, Bldg. 3/Showroom. POC: Stu Hopkins at ahopkins@mail.arc.nasa.gov. ABDCC Website: <http://arcapps.arc.nasa.gov/Info/BallroomDance/Welcome.Htm>

**Ames Multicultural Leadership Council Meeting**, Mar 17, 11:30 a.m. to 1 p.m., Galileo Rm/Ames Cafe. POC: David Morse at ext. 4-4724 or Sheila Johnson at ext. 4-5054.

**NFFE Local 997 Union General Meeting**, Mar 17, 11:30 a.m. to 12:30 p.m., Bldg. 19/Rm. 2017. Guests welcome. POC: Marianne Mosher at ext. 4-4055.

**Ames Asian American Pacific Islander Advisory Group Meeting**, Mar 18, 11:30 a.m. to 1 p.m., N-241/Rm. B2. POC: Daryl Wong at ext. 4-6889 or Brett Vu at ext. 4-0911.

**Ames Amateur Radio Club**, Mar 18, 12 noon, N-260/Conf. Rm. POC: Mike Herrick, K6EAA at ext. 4-5477.

**Native American Advisory Committee Mtg**, Mar 23, 12 noon to 1 p.m., Ames Cafe. POC: Mike Liu, ext. 4-1132.

**Hispanic Advisory Committee for Employees**, April 1, 11:45 a.m. to 12:30 p.m., N-239/Rm. 177. POC: Carlos Torrez at ext. 4-5797.

**Environmental, Health & Safety Monthly Information Forum**, April 1, 8:30 a.m. to 9:30 a.m., Bldg. 19/Rm. 1078. POC: Linda Vrabel at ext. 4-0924.

**Ames African American Advisory Group Meeting**, April 1, 11:30 a.m. to 12:30 p.m., N-241/Rm. 237. POC: Mary Buford Howard at ext. 4-5095.

**Ames Contractor Council Meeting**, April 7, 11 a.m., N-200/Comm. Rm. POC: Greg Marshall at ext. 4-4673.

**Computer Museum History Lecture**, April 8, 7 p.m., Edwin Catmull, Executive Vice President and Chief Technology Officer, Pixar Animation Studios. "To 'A Bug's Life' and Beyond!" Café Ozone, Building 40, Silicon Graphics, Inc., Mountain View, CA. POC: Dag Spicer, at ext. 4-2578 or email at: [spicer@tcm.org](mailto:spicer@tcm.org)

**Professional Administrative Council (PAC) Meeting**, April 8, 10:30 a.m. to 11:30 a.m., Location TBD. POC: Janette Rocha, ext. 4-3371.

**Ames Sailing Club Meeting**, April 8, 11:30 a.m. to 1 p.m., N-262/Rm. 100. POC: Greg Sherwood, ext. 4-0429. Web site: <http://sail.arc.nasa.gov>

**Nat'l Association of Retired Federal Employees, S.J. Chapter #50 Meeting**, Apr 9, at the Elk's Club, 44 W. Alma Avenue, San Jose. Social hour: 10:30 a.m. Prog. & bus. mtg. follow lunch at 11:30 a.m. POCs: Mr. Rod Peery, Pres., (650) 967-9418 or NARFE 1-800-627-3394.

**Southbay FEW Chapter Mtg**, Apr 13, 11:30 a.m. to 1p.m., N-241/Rm B1. POC: Christine Munroe, ext. 4-4695.

## Ames Classifieds

Ads for the next issue should be sent to [astrogram@mail.arc.nasa.gov](mailto:astrogram@mail.arc.nasa.gov) by the Monday following publication of the present issue and must be resubmitted for each issue. Ads must involve personal needs or items; no commercial/third-party ads and will run on space-available basis only. First-time ads are given priority. Ads must include home phone numbers; however, Ames extensions will be accepted for carpool and lost and found ads only.

### Housing

Room for rent, available now. Walking distance from Castro. Share bath/kitchen/garden/laundry facilities. Near Hwy 101/237/85/ Cent. Exp. Rent: \$550 mo. Call (650) 969-3932 or email at: [solemate@best.com](mailto:solemate@best.com)

Temp. or part-time use. Ideal for commuter or intern. Semi-private. Share bath/kitchen/phone/laundry. Near Hwy 101/237/85. Weekly: \$100 (+ one mo.). Call (650) 969-3932 or e-mail at: [solemate@best.com](mailto:solemate@best.com)

2 bd/1ba condo in Palo Alto. 2nd floor condo unit in 4-plex bldg. Garage w/driveway, W/D, fireplace, storage, deck. New paint w/new floors. \$2,000/mo. + sec. dep, no pets, N/S. Call (650) 321-9008.

Part-time or full-time roommate needed to share expenses. 2 bd/1ba apt. S/vale off Mary Ave. near El Camino. Rent negotiable for part-time rentee. Available April 1. Call Barrie Anne (408) 736-8961.

### Transportation

'86 Pontiac Grand Am, 4 dr, 4 cyl, auto, air, cruise control, cassette stereo, new battery, clean interior, 135k mls, gd cond, registered until Jan. 2000. \$2,100. Chuck (650) 938-6634

'89 VW Jetta GL 4 dr, 5-speed manual, dk grey, 98Kmi., A/C, CD w/150W stereo, new tires. complete maintenance records, runs great, very clean. \$2,400. Call (408) 295-2160.

'89 Isuzu Amigo XS, 2WD, 5 speed manual, A/C, AM/FM cassette, big wheels/good tires, low 74K mls., Good cond, \$5,600 (blue book \$5,900). Mike (650) 712-1690 eves.

'90 Audi 90. rare Quattro 20 valve. 5 sp man with all wheel drive. Leather, A/C, P/W, P/L, P/Sun, cruise, ABS(4Whl), AM/FM/Cas, alloy wheels. Exc cond. \$8,750. Stu Hopkins. Call (408) 257-1147.

'94 Escort LX wagon, automatic, exceptional cond, A/C, power windows, mirrors & locks, AM/FM/cassette, alloy wheels, looks sharp, 32 mpg hiway, 68K mls-very reliable, reduced to \$6,450. Call (831) 425-7705.

'97 Ford Mustang G.T., A.C., 17,500K miles, automatic, alarm, CD player, factory warranty, power everything, ABS, alloy rims, dual air bags, take over payments only \$17,500. E-mail: [kbnbella@aol.com](mailto:kbnbella@aol.com) or call (408) 374-3667.

### Miscellaneous

Looking for a loving home for a kitten. Call (408) 264-1516.

Great dog, free to good home! 1 yr old female german shep/chow mix. Spayed. Obedience trained, knows many commands. House and crate trained. Great with kids. Beautiful, intelligent dog needs loving family. Has all shots and treatments. Comes with all supplies, and occasional pet sitting. Call (408) 749-9643.

Dr. Richard Peynman's "Six Not-So-Easy Pieces," includes book and six unused CD lectures, all boxes, brand new. Orig \$49.95; sell for \$40. Call (408) 243-5382.

Used PC equipment needed at St. Joseph The Worker Center, a local, non-profit agency that helps day laborers. Equipment will be used to set up language lab to help workers with English skills. Donate your used PC (Pentium or later), monitor, printer or components to the center. Call Frank McQuillan at (650) 967-4086.

Player piano, unique upright piano - rebuilt from antique (turn of the century) solid Tiger Oak with new keys, strings and dampers. No space in new home for it. \$800 or B/O. Call (650) 321-9008.

Child Craft crib w/mattress & toddler bed conversion, \$120. Office partition gray/blue 72"L x 60"H, \$30. Child carrier, Kelty, backpack style, \$25. Child car seat Gerry Guard Model 690, \$20. Large wooden rocking chair, \$25. Email at: [TMHightower@prodigy.net](mailto:TMHightower@prodigy.net) or Call (408) 446-4896.

Maytag washer, exc. cond, \$275. Sears Kenmore dryer, gd cond, \$75. Call (650) 738-2967.

Upholstered sofa and chair: contemporary, ivory, \$300. Call (408) 295-2160.

My computer/electronics leftovers: [www.geocities.com/SiliconValley/Foothills/1384](http://www.geocities.com/SiliconValley/Foothills/1384). Call (408) 295-2160.

Fireplace insert-woodburning, Convactor Zero brand, glass door, gd cond. Makes warm fire w/less wood. \$500 or B/O. Shelley (408) 225-7495 after 7:30.

Cardio Glide (like Health Rider) like new, 3 yrs old, but used only 2 hours. Orig. price \$275. Sell for \$150. Sylvia (408) 243-3223.

Desktop computer, Pentium II-400, 64 megs ram, 20 megs video ram, 2 video cards, 8 gig HD, 32x cdrom, network card, 56k modem, 2x CDR, 17" monitor, ultimate multimedia system. \$1,600 or B/O. Mike (408) 257-3175.

## Reminder!

Position description forms for the Foot-hill-De Anza internship program are due by May 11 to Mary Conway at the Internship Office, T23B or email her at: [mconway@mail.arc.nasa.gov](mailto:mconway@mail.arc.nasa.gov). She can also be reached at ext. 4-5560.

Whirlpool Gold heavy-duty washer (used only 1 month) \$300. Bedroom suite, brand-new, will sell together or in separate pieces: Queen bed (never used) mattress, box spring (Basset DreamMaker), headboard, & frame \$400; two nightstands \$50 ea. Call (650) 637 8902.

White bedroom set including queen bed two stands, dresser and mirror \$295. Call (408) 733-1906.

Macintosh Performa 6400/200 upgraded to 56MB RAM 2.4GB hard drive, 28.8K built-in modem audio/video input board mouse, keyboard, software, documentation and cables included. Asking \$800 or B/O. Scott (408) 379-4142.

Sears Kenmore gas slide-in range oven, \$250. Evenflo phases high chair, \$50. Call (408) 733-1906.

SnugTop Hi-Liner camper shell w/liner & interior light for shtbed Toyota pickup. \$500. Call (408) 253-4307 eves.

'20s-'30 hump roll top desk. Needs refinishing w/ chair. \$500. Krause's hide a bed couch, gd cond, 5 yrs. old. Neutral color w/oak trim. \$400. Call (408) 267-3673.

Exercise bike, Schwinn Airdyno with reading stand, barely used: \$300 B/O. Call Rocelia (408) 246-8432.

RC Gas Truck Team Associated GT10 w/remote. Like New! \$300 or B/O. Mike (408) 251-0730.

GE electric stove/oven combo, 30"W/25"D. Blk front, works great, pick-up in Campbell, \$150. Brn/gold/rust color oriental rug in gd cond. Wool. Approx. 8 x 10, pick-up in Campbell. \$200. Mary (650) 961-9629.

### Vacation rental

Lake Tahoe-Squaw Valley Townhse, 3bd/2ba, view of slopes, close to lifts. Wkend \$400, midwk \$150 nite. Includes linens, firewd, cleaning service. Call (650) 968-4155, [DBMcKellar@aol.com](mailto:DBMcKellar@aol.com)

Vacation rental, 1 week at Embassy Vacation Resort, Poipu Beach, Kauai, Hawaii, on ocean 2bd/2ba, full kitchen, laundry, free breakfast and afternoon social hour. You pick week, check-in Thurs.-Mon. \$1,400. Ron (925) 606-0515.

# Ames Activities

## Establishing a root cause

*continued from page 3*

into all branches of the analysis, determining whether they have finally reached the actual conditions and actions that caused the problem, or whether an even more detailed examination is necessary. The manager can stop when he determines that the root cause of the problem has been found.

Once the root cause analysis is done, the responsible manager can develop a course of action, correct the problem and put in place some guidelines to assure the problem will not recur. There may be a need for a new procedure, correction to an old procedure, or simply training the group in the steps outlined in existing procedures.

Still uncertain? Training for root cause analysis is available. Questions about training or root cause analysis should be addressed to your ISO Advisor; or questions may be sent to Richard Chase at: rchase@mail.arc.nasa.gov

BY RICK SERRANO



## Secretaries' workshop scheduled

The Secretaries' Day Workshop will take place this year at the Moffett Training and Conference Center, Bldg. 3, Ballroom on April 21, 7:30 a.m. to 12:00 p.m.

This event is open to all secretaries and administrative support personnel (contractor secretaries will be admit-

## Rescue training held at Ames



photo by Tom Trower

The Moffett Field Fire Department hosted Aircraft Rescue and Firefighting (ARFF) training for itself and neighboring fire departments last month using a unique aircraft mock-up built by the Canadian company, Pro Safe.

The activity was another component of the department's commitment to ensuring the safety of the community it serves.

## Astrogram deadlines

All Ames employees are invited to submit articles relating to Ames projects and activities for publication in the *Astrogram*. When submitting stories or ads for publication, submit your material, along with any questions, in MS word by e-mail to [astrogram@mail.arc.nasa.gov](mailto:astrogram@mail.arc.nasa.gov) on or before the deadline.

DEADLINE	PUBLICATION
MON, MAR 15	FRI, MAR 26
MON, MAR 29	FRI, APR 9
MON, APR 12	FRI, APR 23
MON APR 26	FRI, MAY 7
MON, MAY 10	FRI, MAY 21
MON, MAY 24	FRI, JUN 4
MON, JUN 7	FRI, JUN 18
MON, JUN 21	FRI, JUL 2
MON, JUL 5	FRI, JUL 16
MON, JUL 19	FRI, JUL 30
MON, AUG 2	FRI, AUG 13
MON, AUG 16	FRI, AUG 27
MON, AUG 30	FRI, SEP 10
MON, SEP 13	FRI, SEP 24

ted on a space available basis). All attendees must fill out a training application form(ARC 301) no later than April 9.

This is a no-cost workshop. The theme this year is "Positive Changes in the Year 2000." Contact Gail James at ext. 4-5472 for more information.

## THE AMES *Astrogram*

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Managing Editor.....David Morse  
Editor.....Astrid Terlep

## THE AMES *Astrogram*

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