

The Ames Astrogram

Communication for the Information Technology Age

May 2002

O'Keefe seeks to pioneer the future, engage youth

Hoping to inspire a new generation of scientists and explorers to begin "a journey of learning," NASA Administrator Sean O'Keefe has declared education to be a core component of the Agency's mission for the future.

During his first major address since being appointed NASA Administrator, O'Keefe outlined his goals for the Agency and unveiled a new vision and mission for NASA.

"In broad terms, our mandate is to pioneer the future...to push the envelope...to do what has never been done before," O'Keefe said during an April 12 address at the Maxwell School of Citizenship and Public Affairs at Syracuse University in New York. The new administrator earned his graduate degree at Maxwell and later served on the university's public administration faculty.

"Today I am introducing a new strategic framework and vision for NASA," O'Keefe said. "It is a blueprint for the future of exploration; it is a roadmap for achievement that we hope will improve the lives of everyone in this country and everyone on this planet."

To help achieve that goal, O'Keefe unveiled NASA's vision for the future:

- To improve life here
- To extend life to there
- To find life beyond

He also unveiled a new mission for NASA: To understand and protect our home planet; to explore the universe and search for life; and to inspire the next generation of explorers...as only NASA can.

"We want to make science and discovery, exploration and research, cool – exciting for kids to want to learn more and draw upon natural human inquisitiveness," O'Keefe said. "And if we don't motivate our youngest generation now--in kindergarten and through high school--there is little prospect this generation will choose to pursue scientific disciplines later."

To help motivate the nation's youth, O'Keefe announced the launching of a new educator mission specialist program. He also said that Barbara Morgan will be the first educator mission specialist to fly in space, shortly after completion of the core elements of the International Space Station in 2004.

Morgan, who was chosen as the backup candidate for the Teacher in Space program in 1985, trained with Christa McAuliffe and the Challenger shuttle crew at Johnson Space Center in Houston. The Teacher in Space program was discontinued when Challenger exploded on Jan. 28, 1986, killing McAuliffe and her six crewmates.

"The time has come for NASA to complete the mission – to send an educator into space to inspire and teach our young people," O'Keefe said. A Stanford University gradu-

ate, Morgan has been training and working at Johnson Space Center since 1998.

"It is vital that we inspire our young people to learn and to teach," O'Keefe said.



NASA Administrator Sean O'Keefe

"I hope that NASA's new direction in this area – in the person of Barbara Morgan and those who will follow her – will result in a new crop of young, invigorated educators who clearly see the importance of their contribu-

tion to our society. We will recruit teachers to educate students from the unique vantage point of space," he added.

During his address, O'Keefe pledged that NASA's future missions will be "science-driven," and said NASA will seek new ways to explore the galaxy, including the use of nuclear propulsion for space travel. "If we're going to pioneer the future as only NASA can, we're going to need new ways to get us there," he said.

"Conventional rockets and fuel simply aren't practical as we reach further out into the cosmos," O'Keefe observed. "So the nuclear propulsion initiative is the next logical step to overcome this technology limitation. It's a mature technology and its application to space travel has great potential."

Joining the NASA administrator for his address at Maxwell were U.S. Rep. Sherwood L. Boehlert, who oversees the Agency as Chairman of the House Science Committee and U.S. Rep. James T. Walsh, who heads the House subcommittee that supervises NASA's budget. Following his prepared remarks, O'Keefe answered questions from his audience. Later, on April 22 he held a televised "all hands" meeting to share his vision with NASA employees. "These are exciting times," said O'Keefe. "We are on the threshold of discovery and we hope to take you on that journey into the future."

BY MICHAEL MEWHINNEY ▲

President Bush lands at NASA Ames



photo by Tom Trower

Ames' Deputy Director William Berry (center) greets President George W. Bush on the Ames flightline upon his recent visit to the Bay Area. Executive Assistant Jack Boyd (left) and Colonel James T. Williams, Commander, 129th Rescue Wing, California Air National Guard (not shown), also welcomed the president.

Center Briefs

Hubble hunts down 'odd couples' at the fringes of our solar system

NASA's Hubble Space Telescope is hot on the trail of an intriguing new class of solar system objects that might be called a Pluto 'mini-me'—dim and fleeting shapes that travel in pairs in the frigid, mysterious outer realm of the solar system called the Kuiper Belt.

In a recent paper in the journal *Nature*, a team of astronomers led by Christian Veillet of the Canada-France-Hawaii Telescope (CFHT) corporation in Kamuela, Hawaii, reported the most detailed observations yet of the Kuiper Belt object (KBO) 1998 WW31. It was discovered four years ago and found to be a binary last year by the CFHT.

Pluto and its moon Charon and countless icy bodies known as KBOs inhabit a vast region of space called the Kuiper Belt.

This 'junkyard' of material left over from the solar system's formation extends from the orbit of Neptune out to 100 times as far as the Earth is from the sun (about 93 million miles). It is the source of at least half the short-period comets that whiz through our solar system. Only recently have astronomers found that a small percentage of KBOs are actually two objects orbiting around each other and called binaries.

Mars Viking leader James S. Martin Jr. dies

Former NASA manager of the Viking missions to Mars, James S. Martin Jr., died April 14, in Rising Sun, Md., after a long battle with cancer. Martin was 81.

Viking 1 and Viking 2, twin spacecraft launched to Mars in 1975, reached the red planet a year later. The two orbiting spacecraft provided the first global maps of Mars, and when the two Viking landers touched down on the martian surface, they made history by becoming the first successful mission to soft-land on the surface of another planet. Martin led this unprecedented effort and its 750-person nationwide team of NASA, industry and university engineers, scientists and technicians.

Discover a comet while on the Internet with SOHO

A new comet was discovered over the Internet by a Chinese amateur astronomer visiting the Web site for the Solar and Heliospheric Observatory (SOHO) spacecraft.

The comet "C/2002 G3 (SOHO)" was first reported on April 12 by XingMing Zhou of BoLe City, in the Xinjiang province of China. He discovered the comet while watching SOHO real-time images of the sun on the Internet. The comet does not belong to any previously known group.

Safety and Quality Week dates set

This year's Safety and Quality Week celebrations are set for May 20 - 23 at Ames.

The event is an action-packed week recognizing Ames' commitment to assuring mission success through safety, quality and environmental responsibility.

The week-long celebration kick-off will begin at 10:00 a.m., Monday, May 20, in the main auditorium, Building N201. Introductory remarks will be made by Ames Center Director Dr. Henry McDonald, followed by the keynote speaker, John Drebing. All employees are encouraged to attend.

On Tuesday, May 21, in addition to the training classes, the Spring Fun Run and Walk will be held at noon. The starting line will be near the Fitness Center on DeFrance Ave.

On Wednesday, May 22, mandatory safety training for all supervisors will be provided from 9:00 a.m. to 11:00 a.m. in the

N201 auditorium.

Thursday, May 23, is stand-down day. All center employees are encouraged to take time off from their regular duties and attend the day's activities. From 10:00 a.m. to 11:00 a.m. there will be a Voluntary Protection Program (VPP) ceremony in the N201 auditorium, followed by a flag-raising ceremony in front of building N200. The Safety and Quality Street Fair on Durand Road from 11:30 a.m. to 1:00 p.m. will feature health- and safety-related booths, vendors, free chair massages, music, safety cake and punch.

There also will be special safety, health and environmental training classes offered each day of safety week.

For more information, contact Jennifer Chan at ext 4-1314 or email her at: jschan@mail.arc.nasa.gov

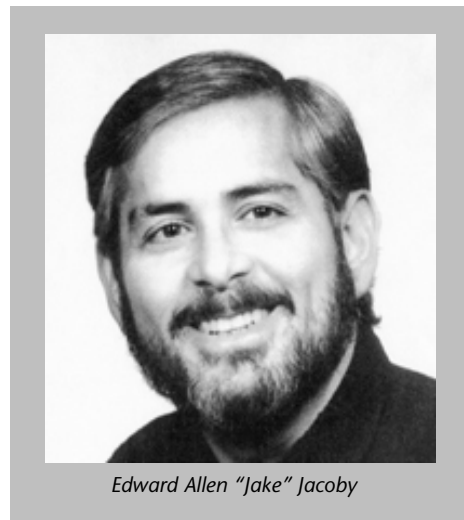
Former employee Edward Jacoby passes on

Edward Allen "Jake" Jacoby died on April 8, at his home in Carlsbad, Calif., after several years of illness. He was 74.

Jacoby worked at Moffett Field over several decades, originally through software subcontracting companies: Electronic Associates, Inc.; Computer Scientist Corp.; and SYRE, which wrote code for the vertical motion simulator in the SimLab.

Jacoby went on to become the branch chief of the Simulation Office when he went to work for NASA. He is remembered for developing "EBOs," or evaluation by objective, to rate the performance of subcontracting companies. Jacoby retired to Big Bear, Calif., in 1990.

Jacoby is survived by his wife of 54 years, Carol Jacoby, two sisters, five children and four grandchildren.



Edward Allen "Jake" Jacoby

FAA representative visits Ames



photo by Dominic Hart

Jerry Whittaker, National Air Traffic Controller's Association (NATCA) representative to the FAA's Free Flight Program Office, views FutureFlight Central's visualization of Los Angeles International Airport during his recent visit to Ames. Whittaker also toured the CVSRF, VMS, Air Traffic Development Center, Airspace Operations Lab, and 40x80x120 windtunnel.

Ames computer scientists contribute to 'invention of the year'

NASA computer scientists were significant contributors to the original NASA/DeBakey miniature heart assist pump, an updated version of which was named winner of NASA's Commercial Invention of the Year Award in March.

Also known as a 'ventricular assist device' (VAD), the pump is currently undergoing human trials with patients awaiting heart transplants. It is based in part on technology

"We worked with the team to make the blood flow more smoothly through the pump; that also removed the stagnant regions," Kiris said. NASA Ames scientists first began assisting the NASA/Baylor team in 1993, and continue to collaborate with them.

In keeping with its mission of transferring space-based technology to the private sector, in 1996 NASA granted exclusive technology rights to MicroMed Technology Inc.

after a period of intense competition.

"Without the support of the NASA supercomputer design experts, the pump would not function as efficiently as it has," said Dallas Anderson, president and CEO of MicroMed.

Within two years of receiving the NASA license for the pump, MicroMed gained interna-

tional quality and electronic standards certifications, got permission to begin clinical trials in Europe and implanted the first device. The first patient, a 56-year-old man, received the DeBakey VAD™ in November 1998, in Berlin. The pump functioned normally and to its design specifications, Anderson said. The device has been implanted for periods of up to one year in individual patients, thus far.

"There are three groups who made this effort successful," Kwak said. "The medical team led by Dr. Michael DeBakey and Dr. George Noon, the systems engineers at Johnson Space Center, and the Ames computational team that used NASA supercomputer know-how to help develop the VAD™."

The Ames Commercial Technology Office administers the NASA Space Act Award Program to give monetary recognition for outstanding research accomplishments by NASA innovators. "Dochan Kwak and Cetin Kiris greatly deserve this recognition for their computational fluid dynamics work that was critical to the final design of the heart pump," said Carolina Blake, chief of the Commercial Technology Office.

The concept for the pump began years ago with talks between DeBakey and one of his heart transplant patients, David Saucier, a NASA Johnson engineer who passed away in 1996.

Six months after his 1984 heart transplant, Saucier was back at work. With fellow NASA employees, as well as DeBakey, Noon and other Baylor staff, Saucier worked evenings and weekends on the initial pump design.

"Since my own transplant, I have spent a lot of time visiting people who are waiting for a donor heart," Saucier said at the time. NASA began funding the project in 1992.

Images of the heart pump can be found at: <http://amesnews.arc.nasa.gov/releases/2002/02images/heart/heart.html>

BY JOHN BLUCK ▲



Particle traces shown inside the inducer-impeller section of Ventricular Assist Device (VAD).

used in space shuttle fuel and oxidizer pumps. NASA computer engineers suggested improvements after simulating blood flow through the pump using a NASA computer that normally models the flow of fuel through rockets.

"Johnson Space Center and DeBakey Heart Center of Baylor College of Medicine asked us to help them because of our experience with simulating fluid flow through rocket engines," said Dochan Kwak, chief of the NASA Ames Advanced Supercomputing Applications Branch. He and colleague Cetin Kiris analyzed blood flow through the battery-powered heart pump, whose blade normally spins as fast as 10,000 rpm. "The speed of fluid flow through a rocket engine is faster than blood flow, but very similar in many ways," Kiris noted.

MicroMed Technology, Inc., Houston, manufactures the pump, now called the DeBakey VAD™. It is intended as a long-term 'bridge' to a heart transplant, or as a long-term device to help patients move toward recovery and a more normal life. In European trials, the VAD was implanted in 115 people with no device failure. U.S. trials will involve 178 implants; 21 have been performed successfully to date.

During initial development of the one-inch by three-inch implantable axial rotary heart pump, engineers noticed two major problems. Friction led to damaged blood cells because the device created high shear flows through pump parts. Further, there were stagnant regions in the pump that caused blood clotting, a major problem with ventricular assist devices.

Following supercomputer simulations, NASA computer scientists were able to reduce red blood cell damage to an amount comfortably below acceptable limits. The improved blood flow pattern also reduced the tendency for blood clots to form.

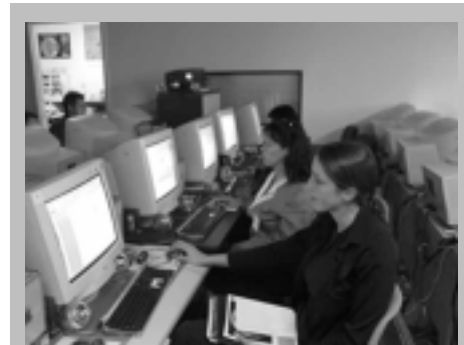
Educational tech night held at Ames

On April 17, over 50 local educators visited the Ames Educator Resource Center (ERC) to attend 'Educational Technology Night,' a two-hour monthly workshop. The sessions are designed to introduce teachers to various educational products created at Ames. Christina O'Guinn, lead for Ames educational technology team, presented Astroventure, an exciting new interactive Web site featuring lessons built around astrobology. Susan Lee of NASA Quest presented the NASA Quest Web site, showing teachers how to connect students to scientists through Web-casts, chats, and forums.

Mark Leon of the Learning Technologies Project awed teachers with a lively explanation of haptic tactile displays and technology just now on the horizon for the field of education.

After each presentation, teachers utilized the ERC's Internet-ready computer lab to explore the various programs on-line. A very positive response was received from attendees, many of whom are anxious to attend next month's Educational Technology Night, featuring different educational, Web-based products.

The next Educational Technology Night will be held on May 22, from 4 p.m. to 6



Teachers at the monthly 'Educational Technology Night' held at the Ames Educator Resource Center.

p.m., and will feature educational Web sites "Robin Whirlybird on her Rotorcraft Adventures" and "Virtual Skies." All educators, both formal and informal, are invited to register for the ERC's free workshops. For more information about upcoming sessions and programs, contact the ERC at ext. 4-3574, or visit the ERC Web-site at: <http://amesnews.arc.nasa.gov/erc/erhome.html>.

BY MELISSA MARADIEGUE ▲

Ames deputy director William E. Berry retires

William E. Berry, Ames deputy director, retired on May 3 after nearly 40 years of government service.

During his NASA career, Berry directed



Deputy Center Director William E. Berry

many significant programs and developments at Ames, including the creation of the NASA Astrobiology Institute, an innovative 'institute without walls.' He also was the driving force behind the development of NASA Research Park, a first-of-its-kind research and development center that will bring together the best of government research, academia and private industry.

"Bill Berry has been an outstanding, dedicated leader," said Ames Director Dr. Henry McDonald. "He has been an exceptional individual and a dedicated civil servant. With enthusiasm and visionary leadership, he has led NASA Ames' transformation from an aeronautical research center to a world leader in information technology, nanotechnology and biotechnology."

As Ames' deputy director since 1997, Berry has had operational responsibility for implementation of Ames' aeronautics, space and information systems research, technology development and project activities. Under Berry's leadership, Ames is transforming former Navy facilities and land at Moffett Field into NASA Research Park, a world-renowned, federally owned research-and-development complex. NRP is moving ahead under a joint economic development plan with other federal agencies, community leaders, major universities and the private and non-profit sectors

Berry also made important contributions to Ames in a variety of areas, including the biosatellite, Mars Viking and Pioneer Venus projects. He led development of on-going, successful Ames life sciences flight experiments on the space shuttle, Russian space station Mir and the International Space Station.

Berry has been a major leader of new NASA science and research enterprises in collaboration with the educational and private industry communities. He oversaw the establishment of the NASA Astrobiology Institute, a partnership between NASA and several academic and research organizations to promote, conduct and lead integrated, multidisciplinary, astrobiology research and to train young researchers. Astrobiology is the study of the origin, evolution, distribution and future of life in the universe.

Berry led fundamental changes in Ames' research approach and has an exceptional record of effective project and program management. He streamlined management of joint programs such as the NASA-Federal Aviation Administration demonstration program for the application of NASA's software technology to the nation's air traffic control system.

With Berry's encouragement and guidance, Ames has built and maintained a diverse, well-trained, highly motivated workforce. Ames has been a pioneer in the use of diversity dialogue groups to improve cooperation and communication among the many ethnic and cultural groups at the center. His latest initiative commits Ames to aid the National Hispanic University in San Jose in receiving full academic accreditation, and to encourage community outreach efforts by the technical staff with faculty and students.

Berry has emphasized the transfer of the technology developed at Ames to the American public and he is deeply committed to encouraging the application of new NASA technologies to everyday uses. Berry oversaw the Ames Technology Commercialization Center, a small-business incubator, located in San José, providing opportunities for start-up companies utilizing NASA technologies to grow and become robust high-technology businesses.

Berry began his federal career as a co-op student at the Johnson Space Center in Houston in 1964. He joined NASA Ames in 1966 after graduating from Drexel University, Philadelphia, with a bachelor's degree in mechanical engineering. Since then, he has served in many key technical and management roles, including chief of the Advanced

Life Support Division and chief of the Life Science Flight Project Office. As director of the Space Research Directorate, he led major project activities in infrared astronomy, life sciences and reusable launch vehicles with a combined budget approaching one billion dollars, as well as world-class research programs in space, Earth and life sciences. He served at NASA Headquarters in 1993-94 as the deputy director of the Life and Biomedical Sciences and Applications Division.

In 2001, President George W. Bush named Berry to the rank of Distinguished Executive in recognition of his efforts to make Ames more effective and to create a new vision for its future. He also was recognized with a NASA Outstanding Leadership Medal in 1998 and a Meritorious Rank in 1996.

Ames will hold a retirement reception for Berry on May 9 in the Moffett Training and Conference Center. See details in box.

BY ANN HUTCHISON ▲

You are invited to a retirement reception for Deputy Center Director Bill Berry on Thursday, May 9, 2002, in the Moffett Training and Conference Center's ballroom, from 3:00 to 5:00 p.m. The informal gathering will feature a selection of hors d'oeuvres, a short program, and plenty of time for all of Bill's friends to wish him well. Cost for the reception is \$15.00, including a gift. Contact Rho Christensen at ext. 4-2476 or you can email her at: rchristensen@mail.arc.nasa.gov for more information.

VPP STAR Tip:

...too many applicants have not really taken on the responsibility to see that contract workers at their sites are properly protected. This aspect of VPP is still at the cutting edge, and many employers find it bewildering that they are expected to screen and oversee their contractors carefully. Even more challenging is the expectation that if the contractors do not ensure safe work, they should be terminated.

....Margaret Richardson, in *Preparing for the Voluntary Protection Programs*, Copyright © 1999 by John Wiley & Sons

Ames hosts successful Astrobiology Science Conference

NASA Ames and the NASA Astrobiology Institute hosted the second biennial Astrobiology Science Conference in Hangar One on April 7-11.



A highlight of the Astrobiology Science Conference included back-to-back talks featuring Dr. William Schopf, UCLA, and Dr. Martin Brasier, Oxford University, discussing their recent papers in Nature on the topic: "When did life first appear on Earth?"

The popular event--featuring over 50 invited talks and oral presentations and five days of poster sessions--attracted nearly 800 astrobiologists from 19 countries. Also present was a large press contingent, including Nature, Science, U.S. News and World Report and the Washington Post, and a strong education/outreach component.

"The conference was amazing. The science organizing committee was able to

bring in our 'dream team' of speakers from disciplines as diverse as cosmology, planetology, virology and conservation biology, and demonstrate how they all contribute to astrobiology," said conference organizer Dr. Lynn Rothschild of Code SGE. "It is clear from the level of excitement of the participants and interest from the international press that the field is coalescing into a dynamic discipline."



photo by Dominic Hart

Astrobiology participant observes posters at recent conference.

Astrobiology is the study of the origin, evolution, distribution and future of life in the universe.

The abstracts will be published in the International Journal of Astrobiology (Cambridge University Press), Origins of Life, the International Journal of Astrobiology, and Astrobiology (as well as others) are soliciting papers.

Ames occupational illness/injury data for February 2002

	Civil Servants	Contractors
Not recordable first aid cases	5	4
Recordable no lost time cases	3	1
Restricted workday cases	0	1
Lost workday cases	0	2

Data above are as of 4/25/02. May be subject to slight adjustment due to late reporting or new information or reclassification.

Computer History Museum event

The Computer History Museum is pleased to announce a Carver Mead lecture --"The History and Future of Electronic Photography." Details are as follows:

Date: Tuesday, May 21
 Time: 6:00 p.m. - Members only and VIP reception
 7:00 p.m. - Lecture
 Location: AMD
 Commons Building
 991 Stewart,
 Sunnyvale

Abstract: Carver Mead, chairman of Foveon, Inc., will share his thoughts about the history and future of electronic photography. Mead's long list of accomplishments includes pioneering contributions in the field of solid-state electronics and VLSI design. He is also a recipient of the prestigious MIT-Lemelson award for innovation. He founded and chairs Foveon, Inc., a company that develops innovative products and technology allowing photographers to fully realize the potential of digital imagery.

Featured library user

Want to know more about the projects of Dr. Charles Bauschlicher, senior computational chemist? Then stop by the Technical Library bulletin board in building N-202 where you can read all about his accomplishments and current research. You can also get a copy of his current paper: "High Coverages of Hydrogen on a (10,0) Carbon Nanotube."

Test subjects needed

- Must be a U.S. citizen or permanent resident
- 18 - 40 years of age

Pays \$8.00 an hour
 Call ext. 4-5118 for details.

Ames well positioned to implement new NASA mission

Ames Research Center is responding well to the fiscal challenges resulting from the International Space Station's "tremendous cost overruns" and is on track to achieve the Agency's goals recently announced by NASA Administrator Sean O'Keefe.

During his annual "State of the Center" address to employees delivered on April 22, Ames Center Director Dr. Henry McDonald sought to alleviate employees concerns over pending budget cuts and rumors of staff reductions.

While conceding that in the eyes of the Bush Administration and Congress, NASA is "in the penalty box," and is "on probation" to complete the space station, McDonald said he remains very optimistic about the future. Ames is well positioned, he declared, to move forward under the Agency's new vision and mission statements unveiled on April 12 by Administrator O'Keefe during his first major address delivered at Syracuse University's Maxwell School.

The NASA vision articulated by the Administrator is "To improve life here, to extend life to there, to find life beyond." The NASA mission that derives from this vision is "To understand and protect our home planet, to explore the universe and search for life, to inspire the next generation of explorers . . . as only NASA can."

"This policy has several important elements for Ames," McDonald said. "First and foremost, it is science driven. It turns out that our entire Science and Astrobiology Directorate and Information Science and Technology Directorate are dedicated to the pursuit of the stated vision and mission," McDonald said. He also pointed out that Ames' Aerospace Directorate is a major participant in the safe air travel element of the new policy. "I find the Administrator's vision and mission to be a reaffirmation of the strategy and programs already being undertaken at Ames," said McDonald.

McDonald predicted that NASA's 2004 budget request would be scrutinized within the context of the Administrator's new vision and mission statements. "Again, I see no problem for Ames," McDonald said.

McDonald suggested that the key to the successful implementation of the Agency's new vision and mission is the high quality of Ames' employees. "These new programs are very people intense and the changing nature of our research programs have made us focus on our people," McDonald said. He assured employees that there are no current plans to diminish the center's civil service workforce. However, he conceded that "that could change in a year from now, or two years from now."

McDonald said Ames is well positioned to comply with the federal government's ef-

orts to implement the Federal Activities Inventory Reform (FAIR) act and the Strategic Resources Review. The legislation, which was adopted by Congress in 1999, requires federal agencies to conduct an inventory of all their civil servant employees to determine if they should be classified as inherently governmental or commercial. He said an inventory of the Ames civil servant staff is being conducted and would be completed by the end of May.

"I believe that, unsettling as this process and the SRR process are to all of us, the net result will be a strong statement as to the need and value of our civil service workforce here at Ames," McDonald said. "Over the years, we have carefully developed a workforce that 'does what only NASA can do' and that provides the Agency with a very special capability which does not exist elsewhere," McDonald added. In addition, he noted that "major new programs supporting missions are being developed by our staff and have been and are being supported by the Agency."

When he first arrived at Ames, McDonald recalled that the center maintained a fleet of aircraft and had a much different set of R&D programs to support its mission as one of the Agency's four aeronautics field centers. While Ames still has to cope with maintaining its large wind tunnels and the other unique national facilities located at the Center, McDonald noted that Ames has succeeded in changing the focus of its research programs to be more compliant and in keeping with the Agency's new direction.

As examples, McDonald cited the Ames' Engineering for Complex Systems program, the Astrobiology Explorer program and the Kepler mission as being "essential programs" for the Agency. He also cited the Stratospheric Observatory for Infrared Astronomy (SOFIA) project as another major NASA research program that is based at Ames.

McDonald lauded the new NASA Research Park project for its efforts to best utilize "this tremendous resource that is the Moffett Field complex." By collaborating with private industry, academia and other government agencies, said McDonald, NASA will be able to fully develop this valuable land located in the heart of Silicon Valley into its most productive use. "We think things are going rather well with NASA Research Park and we're very excited about it," McDonald said. "We think it's a terrific project."

McDonald also touched on another new way of doing business at Ames, the University Affiliated Research Center (UARC), which he predicted would be a great enhancement to NASA Research Park. "An on-site UARC will provide a vehicle to have appropriately qualified staff available to interact with the

civil servant staff in a collaborative research environment," McDonald said.

McDonald concluded his remarks by commending Deputy Center Director William Berry, who is retiring from federal government service on May 3, capping a career that spanned nearly 40 years. McDonald praised Berry as the best deputy he had ever worked with. "He is a gem and we're deeply in his debt," McDonald said.

BY MICHAEL MEWHINNEY ▲

Ames' PSA visits Boston Museum

NASA's Personal Satellite Assistant (PSA), developed at Ames for future use on the International Space Station (ISS), is currently being featured in an exhibit at the Current Science and Technology Center, located at Boston's Museum of Science.

About the size of a softball, the PSA is equipped with a variety of sensors to monitor environmental conditions in a spacecraft, such as the amount of oxygen, carbon dioxide and other gases in the air, the amount of bacteria growth, air temperature and air pressure. The autonomous robot also is



NASA's personal satellite assistant

equipped with a camera for video conferencing, navigation sensors, wireless network connections and its own propulsion system.

"I have used the PSA in a live ISS presentation and plan to do so again on Space Day, May 2, when I talk about robots for the ISS," said Current Science and Technology Center exhibit spokesperson Tania Ruiz.

Located in a security-locked case in the museum's International Space Station mini-exhibit, the PSA will be on display until the end of May.

Robotics competition builds confidence, life skills

As the buzzer sounded, six weeks of research, development and construction came down to two minutes of intense competition on the playing field for hundreds of students and their 130-pound robots.

On March 28-30, the San Jose State Events Center played host to the FIRST (For the Inspiration and Recognition of Science and Technology) Robotics Silicon Valley Regional.

The 2002 competition involved 49 teams from California, Hawaii and states in the northwest region, many supported by NASA grants and mentors. They competed for points, pride and the opportunity to participate in the national finals on April 26-27 at Walt Disney World's EPCOT Center in Orlando, Fla.

In this year's competition, Zone Zeal, four robots in alliances of two scored points by moving three goals and robots in particular scoring zones. Points also were added for balls placed into the goals. Unlike last year, where the ability to negotiate physical barriers and balancing skills were needed for victory, this year's competition emphasized strategy.

In a twist of scoring, teams were awarded only what the losing team scored times three. This scoring system prevented teams from using brute force to score points. Teams had to make sure that their opponents scored as many points as possible as long as it didn't surpass their score. Last second maneuvering of goals or shots into the goals were the keys to scoring the maximum number of points.

As in past years, Ames sponsored and mentored teams performed well at the competition. After 111 qualification and 17 play-off matches, the team from Bellarmine College Preparatory from San Jose, Calif., took top honors. Better known as the Cheezy Poofs, the team also won several awards including the Engineering Inspiration and Web site design awards. Gunn High School from Palo Alto, Calif. was awarded the Regional Director's award.

The first year of competition can be daunting for rookie teams, but two Ames-sponsored teams, Atascadero High School, Atascadero, Calif. and Athenian School from Danville, Calif. took the pressure in stride, winning the Rookie All-Star awards.

"The Athenian is a small school with only about 250 high school students. Competing with much larger and veteran (experienced) schools was unimaginable, but compete they did. They performed well beyond their expectations and winning the Rookie All-Star award was icing on the cake," said John Cavolowsky, Athenian parent and Ames mentor. "We considered these students winners long before the start of the competition."

Other Ames supported award winners were Los Gatos High School, for the General Motors Industrial Design award and Foothill High School, for the Johnson and Johnson

Sportsmanship award.

In collaboration with FIRST, the NASA Robotics Education Project hosted seven regionals and gave technical and logistical support for nine other regional events across the country. The 2002 competitions were the largest ever, with more than 20,000 students on over 600 teams from as far away as Brazil, Canada and the United Kingdom. This year, NASA sponsored 193 student teams.

FIRST was established in 1989 by inventor Dean Kamen to motivate students to

skills. The competition shows students that the technological fields hold many opportunities and that the basic concepts of science, math, engineering and invention are exciting and interesting. FIRST is in its elev-



photos by Jonas Dino

Rookie all-star award winners from the Athenian School in Danville.



Robots battle to place goals into their scoring zones.

enth year of competition.

NASA participation in the FIRST program is supported through the NASA Office of Space Science, Washington, D.C., and is directed by David Lavery, program executive for Solar System Exploration.

The Ames Robotics Education Project Web site can be found at: <http://robotics.nasa.gov> A complete list of award winners for the 2002 First Robotics Silicon Valley regionals can be found at: <http://www2.usfirst.org/2002comp/events/SJ/Awards.html>

BY JONAS DINO ▲

ACAP shuttle extends service to Ellis Street light rail

The Ames Commute Alternatives Program (ACAP) will begin providing commute shuttle service to the Ellis Street light rail station starting June 3, 2002. This change will provide free bus service from the light rail to ARC offices and back. Since the opening of the Ellis Street station over a year ago, commuters have had a mile and a half walk from the gate to Ames' central campus. In spite of this inconvenience, many Ames personnel have used the station. The new service will greatly ease the last leg of getting to work, and will undoubtedly increase the number of riders using the station.

Under the new schedule, morning runs will alternate between the Mountain View CalTrain and Ellis Street light rail stations. The afternoon runs will predominately go to the Ellis Street Station although one "express

run" to the CalTrain station will be made. This schedule was worked out after many months and much discussion on the part of the ACAP Employee Advisory Committee. The reinvigorated committee began discussions after a town hall meeting held on the subject over a year ago.

According to ACAP managers Norma Layton and Amanda Dunham, the new system will provide expanded shuttle service while improving the flexibility of arrival and departure times for all riders.

The committee worked hard to come up with a way to service both stations using the resources currently available to the program. "We are looking forward to the inauguration of light rail station service," said the ACAP managers.

Ames' Earth Day events capture employee interest

A bird hike led by an Ames wildlife biologist, a street fair comprised of over 35 exhibi-



tors, and lectures about 'green' building and 'green' purchasing took place during the week of April 22.

Exhibitors participating in the street fair included: Berkeley Solar Car Team, Code SGE, Toyota, Ames Native American Advisory Committee, Code QE, ABAG Bay Trail Project, City of San Jose, Korbin Sparrow, Code JFS, McSolar, County of San Mateo, Code JFP and many more.

Many people enjoyed performances by the Ames Jazz Band and the Ames Ballroom Dance Club.

The Ames Environmental Services group was gratified by the extent and enthusiasm



photos by Tom Trower

of participation by the Ames community.

Suggestions to make next year's event an even bigger success are welcome. Contact Julie Quanz at ext. 4-6810 or email jquanz@mail.arc.nasa.gov.

To view photos from Earth Day events, go to <http://q.arc.nasa.gov/qe/events/ED/ED2002/>

Darren Bouton, 'green' building coordinator for the City of San José's Environmental Services Department, delivered a talk titled 'Green Building Demystified.' Bouton defined 'green' building as any building that is sited, designed, constructed, operated and maintained for the health and well-being of the occupants, while minimizing impact on

the environment. 'Green' buildings promote resource conservation by including



design features that encourage energy efficiency, use of renewable energy and water conservation.

Shannah Trout, Recycling and Affirmative Procurement Specialist from Kennedy Space Center and Ames' Diane Shelander from the Environmental Services Office discussed "Green Purchasing at Ames." Green purchasing is the requirement to buy products with recycled content. All federal agencies are required to meet the procurement guidelines as established by the Environmental Protection Agency (EPA). One hundred percent of the center's purchases must comply with affirmative procurement—both civil servant and contractor.

Go to the Web at: <http://www.gsa.gov> to view this presentation, to Code QE's web site at: <http://q.arc.nasa.gov/qe/p2/index.php> or contact Julie Quanz at ext. 4-6810.

Your WebTADS questions answered

During the recent WebTADS comprehensive overview presentations, ARC employees generated many questions about the new time and attendance system. Some of the more frequently asked questions (FAQs) are answered below.

Q: What is the web site address for the WebTADS system?

A: www.webtads.arc.nasa.gov. Click the 'Enter Time' link to connect to the time and attendance system.

Q: How can I change my password and how often do I need to change my password?

A: Within the WebTADS system, you may change your password through the 'Employee Details' screen. In compliance with NPG 2810, you will be prompted to change your password every 90 days.

Q: If I'm on extended leave over more than one pay period, can I enter my time in advance?

A: If you cannot access WebTADS while on extended leave, you can make arrangements with your POC or approver to enter time for you. You can enter time at any point within the current pay period, other than during payroll processing.

Q: Do I have to re-enter my job orders

every pay period?

A: Once a job order is added, it will continue to appear on your timesheet until you delete it.

Q: What are the different tour types and which employees are eligible to work those tour types?

A: The tour types that ARC offers are Standard, Compressed, First Forty and Maxiflex. All tours are available for all ARC employees. The First Forty schedules require the approval of the Chief of Human Resources. More information on tour types can be found in the Pay and Leave Handbook, which is available under the 'Resources' section on the WebTADS web site.

Q: Can I submit a corrected timesheet using WebTADS?

A: Yes. In WebTADS, corrected timesheets are referred to as prior pay period adjustments.

Q: When is the timesheet approved?

A: In order to meet the payroll processing deadline, approvers and employees need to communicate to establish their time entry deadlines. The payroll processing deadline is the Monday after the end of the pay period at 10:00 a.m.

Q: Will there be a transition period

when both WebTADS and paper timesheets will be used?

A: WebTADS is gradually being rolled out at Ames. Code C will be the first code to start using WebTADS and other codes will not begin using WebTADS until Code C's rollout has been successful. When you begin to use WebTADS, you will no longer use the paper timesheets.

Q: Can you view your leave balances in WebTADS?

A: Yes. Leave balances are available in WebTADS through the 'Employee Details' screen.

Q: Are there any changes of policy, or only a change in method of entering data?

A: There have been updates to policies in the past couple of years. Therefore, the Pay and Leave Handbook is being updated. All civil servants should attend Policy training to ensure they are aware of updated policies. Policy Training is required for authorization to be an approver.

Go to the WebTADS Web site www.webtads.arc.nasa.gov for additional FAQs and training opportunities, including hands-on system training, time entry clinics, and policy training.

Take our daughters (and sons) to work celebrated at Ames

The seventh annual Virtual Take Our Daughters (and Sons) to Work Day, coordinated by the NASA Quest team, was held on April 25, in conjunction with the national



photo by Tom Trower

event sponsored by the Ms. Foundation. The day's activities featured a range of aeronautic experts, ranging from Marta Bohn Meyer, director of the Office of Safety and

Mission Assurance at Dryden, to 14-year old Anna Dell, who serves in the Civil Air Patrol. Participants logged in from parent offices, government sites, schools, homes, clubs and educational resource centers from as far away as Ireland and India. 4,300 unique IP addresses connected to participate online! Discussions centered on flight, education, role models and the technical areas involved in flight. The Young Women of NASA Advisory Council hosted the day and moderated all online events, including the Web casts.

The complete archive of events can be found linked from the NASA Quest schedule page <http://quest.nasa.gov> and the Women of NASA page at <http://quest.nasa.gov/projects/won/TODTWD/2002/>

Other 'Take Our Daughters (and Sons) to Work Day' activities included the Ames Aerospace Encounter, which hosted 120 children and Ames employees, participation in Aero Village at N211, and a group picture of Ames employees and their children with the pilots featured at the Aero Expo II event.

TISH KRIEG ▲



photo by Lisa Dali

Marilyn Vasques, NASA project scientist in Code SLO, looks over the shoulder of her step-daughter Callie Jones as she sows *Arabidopsis* seeds in the lab of Melissa Kirven-Brooks, Space Station Biological Research Project incubator science lead during Take Your Daughters (and Sons) to Work Day.

Aero Expo II -- a big hit with the kids!

One thousand students, teachers and chaperones converged on Ames as part of Aero Expo II, on April 24 - 25. This two-day event was the second in a series of Ames-



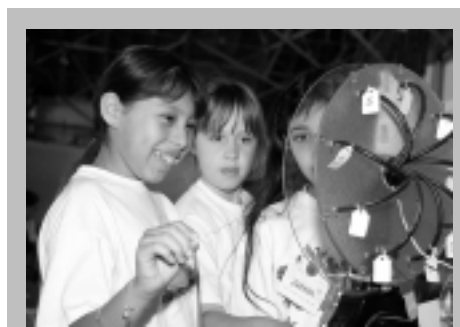
sponsored events celebrating the Centennial of Flight in 2003. Fifth through eighth grade students from 19 Bay Area schools, representing 15 school districts, attended. Students came from as far away as San Ardo (south of King City) and as close as Mountain View.

The theme of Aero Expo II was 'Women in Aviation,' and featured a panel presentation by three female pilots--all with ties to Ames. Cecilia Aragon, an aerobatic champion pilot and computer scientist at Ames, described her journey from being a shy woman with a fear of heights to becoming a member of the U.S. Aerobatic Team in 1991.

Wendy Holforty, an Ames aerospace engineer and Civil Air Patrol pilot, told students about here career as a search-and-rescue

pilot, flying in search of downed aircraft and during disaster relief efforts.

Mitzi Saylor, a Boeing 737 captain for United Airlines, shared stories of her desire to become a pilot at the age of 5. Mitzi developed an interest in human factors research while working for the Aviation Safety Reporting System (ASRS) program at Ames.



photos by Tom Trower

Five facilities were available to the students for tours: the Crew Vehicle Systems Research Facility (CVSRF); the Vertical Motion Simulator (VMS); the 80 x 120 wind tunnel; FutureFlight Central; and the Airspace Operations Laboratory.

"The VMS tour was fabulous! All volunteers were extremely helpful--many expressed encouragement to the kids in their approach to education and following a dream," stated Carol Pursifull a fifth grade teacher at Castro School in Mountain View.

When asked if the students were enjoying their tour of the Airspace Operations Lab, Clent Ingram, a 7th and 8th grade teacher at

Menlo Oaks School in Menlo Park, remarked, "The kids are having a ball. The experience they got today, giving directions to pilots, is something they'll remember for a lifetime."

Aero Village in N211 was the perfect ending for the day's activities. From the hang gliding simulation, to the helicopter simulator (from Hiller Aviation), to getting autographs from the panel speakers, Aero Expo II participants had lots of activities from which to choose.

As a memento of their participation, each school group took a class photo with the featured pilots. The students also received certificates of participation and career trading cards of each of the pilots.

The goals of Aero Expo I (December 2001) and Aero Expo II were to excite and engage students in science and technology; ignite their thinking about future career paths in the aeronautical sciences; and provoke interest among students and educators about the Centennial of Flight in 2003. Judging from the sparkle in the eyes of the student participants and the energy flowing in the Aero Village, it's safe to say we're off to a great start!

Aero Expo II was sponsored by the Aviation Systems Capacity Program; Computing Information and Communication Technology; Engineering for Complex Systems Program; Office of the Director of Aerospace; Office of the Director of Research and Development Services; Office of the Director of Information Services; Office of the Director of Center Operations; and Ames' Public Affairs and Education Office.

ANTOINETTE BATTISTE ▲

Embracing change for improved financial management

NASA is changing--we change to improve, we change to meet new demands, we change continuously for the betterment of

the Agency and the Center. The Integrated Financial Management Program (IFMP), an agency-wide effort to modernize NASA's financial and administrative systems and processes, is a prime example of our commitment to constant improvement. IFMP is a driver that leads to the implementation of new software systems and business processes designed to improve employee productivity and operational efficiency. These systems will deliver consistent and reliable information for use in management decision-making. In some cases, the new systems will give us a little more of what we need most, that is, time and resources.

The implementation of IFMP will standardize and streamline processes; create efficient workflow methods; and provide the ability to respond to information requests quickly. This will enhance Ames' relationships with customers, partners and employees. IFMP will improve the Agency's ability to integrate important information across the centers, and to better deal with issues related to programs and research.

IFMP is being rolled out in a series of module projects over the next several years here at Ames. Many may have already experienced the new system for recruitment and employment called NASA Stars, and some have participated in briefings introducing WebTADS. You will continue to hear more about those modules and another four that are scheduled for implementation in the next year. They are: core finance, travel manager, budget formulation and position description management. To keep you informed of IFMP module projects, they will be featured in the months to come; this month we are featuring highlights of the position description management (PDM) module project.

The PDM module is a project that automates the position classification process using a Web-based program. This project is scheduled to go "live" the week of Aug. 12, 2002. To get the system ready for implementation, a project team consisting of classification advisors from each NASA center

and Headquarters has been working with the vendor Avue Technologies to develop descriptions of work. This endeavor recently



photo by Tom Trower

The Avue team recently demonstrated PDM to the IFMP steering committee during its visit to Ames.

where they held focus group sessions and provided a demonstration of the system to the IFMP steering committee. PDM will provide a system of standardized position descriptions based on the U. S. Office of Personnel Management's classification standards. The system also will include summarized descriptions of the NASA supplemental classification system, known as the AST Schematic. In addition to standardized position descriptions, the system allows supervisors to add custom statements of duties to their descriptions.

The process of implementing change at Ames involves all of us. IFMP steering committee members, project teams, support teams and change management teams are focused on successfully implementing IFMP by balancing the systems and human side of change. This endeavor is designed to prepare employees to participate in the future that is the "one Ames, one system" way of conducting business.

To learn more about IFMP at Ames, please check out the developing Web site at: <http://www.ifmp.arc.nasa.gov>. Be on the lookout for more information coming your way about IFMP at Ames.

BY PAM MCGEE ▲

brought representatives from Avue to Ames,

Export compliance training session held at Ames



photo by Tom Trower

Outgoing Protective Services chief Clint Herbert (right) with keynote speaker, Ambassador Bob Pastorino, at the annual export compliance training program held at Ames on April 22.

Ames' plant-growth hardware passes test

Scientists at Ames received the first images of plants growing in the Biomass Production System (BPS) aboard the International Space Station (ISS) just four days after the STS-110 space shuttle mission carried it into orbit. They also acquired the ability to send commands to the orbiting plant-growth system. On April 18, orbiting astronauts harvested the first wheat from the unit. Astronauts had transferred the BPS from the space shuttle Atlantis to the ISS not long after the shuttle docked to the space station.

The Biomass Production System is an engineering development unit for a future ISS plant habitat capable of supporting long-term plant growth and botanical experimentation in space. The BPS and science samples will return to Earth on the STS-111 space shuttle mission, currently scheduled for a late May launch.

"BPS is a versatile piece of hardware, and the team is excited about this first chance to test its capabilities on orbit in support of current and future science experiments," said Dr. Randy Berthold, BPS payload manager. The BPS is one of several pieces of science hardware being developed by Ames' Space Station Biological Research Project (SSBRP) for use on the space station.

"Although the BPS is the third suite of flight hardware Ames has provided to the ISS, this marks the first time Ames has controlled any of the hardware from the ground," Berthold said. A 2001 space shuttle mission carried an autonomous radiation monitoring and recording system to the ISS. Later that year, the Avian Development Facility was carried on a mission to the ISS, although the facility remained on board the space shuttle.

Each day, the BPS team sends commands to the unit and retrieves the previous day's data files, seven in all. Pictures of the plants included in these files help the investigators determine how well the plants are developing. Commands also can be sent to the BPS to change the timeline for automated activities that were programmed into the unit preflight.

"The BPS allows us to test how best to grow plants in space over multiple generations," said Dr. Orlando Santos, former chief scientist for SSBRP. "The ability to carry out long-term experiments is a unique characteristic of the ISS facility that is critical for our understanding of the future of living things in the low-gravity environments of spacecraft, the moon or Mars."

The primary objective of the BPS is the technology validation test, which evaluates hardware performance on orbit in order to select the best subsystems for design and development of a permanent plant research unit. Once developed, the plant research

unit will be capable of supporting the continued growth and development of plant specimens and provide the capabilities necessary to perform scientific investigations for 90 days or more on orbit. The BPS also supports the Photosynthesis Experiment and System Testing Operations (PESTO), a study of the effects of microgravity on photosynthesis and metabolism in wheat plants. Some of the results from this study also will be used as part of the technology validation test.



The Biomass Production System (BPS) is an engineering development unit for a future International Space Station (ISS) plant habitat capable of supporting long-term plant growth and botanical experimentation in space.

The BPS is a powered hardware system that includes four independent plant growth chambers, a nutrient delivery system, a temperature/humidity control system, airflow and atmospheric control systems, a video system and a data-processing system. Each plant growth chamber has a growing area of about 42 square inches (260 square centimeters) and a height of over 6 inches (15 centimeters). The BPS was developed for NASA by Orbital Technologies Corp., Madison, Wisc.

The technology validation test will determine the ability of the BPS and its environmental control subsystems to support plant growth and development in microgravity. Researchers will study the health and growth of the plants, facility temperature and humidity controls, nutrient delivery, lighting, plant manipulation and sample retrieval, video and data acquisition, and performance of other operations and support systems.

The testing process uses two types of plants -- Brassica rapa and Apogee wheat. Brassica plants include such commonly grown vegetables as broccoli, cabbage, cauliflower, rutabaga and turnip. Brassica is a dicot, a plant with two cotyledons, or leaf-like structures, per seed, and exhibits multiple developmental stages (growth, flowering and seed-

pod production) in a short time. The growth of Brassica rapa seedlings will test the ability of the BPS to support the growth of a developmentally complex plant. Dr. Robert Morrow, Orbital Technologies Corp., Madison, Wisc., is the principal investigator.

Four-day-old Apogee wheat seedlings--a monocot plant with one cotyledon, or leaf-like structure, per seed -- also were exposed to a variety of temperature and humidity levels to test the ability of the BPS to control temperature and humidity set points. In addition, water utilization and plant photosynthesis will be measured. Plant tissue was harvested and frozen or fixed when the plants were 21 days old.

PESTO studies the growth, photosynthesis, gas exchange and metabolism of Apogee wheat in microgravity. This experiment will determine the ability of wheat seeds to germinate, develop and grow in microgravity conditions, measure the growth of the seedlings, and determine the effects of microgravity on photosynthesis and transpiration. The PESTO principal investigator is Dr. Gary Stutte, Dynamac Corp., Kennedy Space Center, Fla.

Understanding photosynthesis is a critical component of plant-based atmospheric regeneration systems now under study for possible use in future long-duration space missions. By generating oxygen, removing carbon dioxide and purifying water, living plants could help maintain proper spacecraft atmosphere, and reduce the costs of air and water resupply on long-duration missions. This research also will have direct application to future production of crops that the ISS crew could eat, such as radishes, lettuce or onions.

STS-110 ended with the successful landing of Atlantis at Kennedy Space Center on April 19. In addition to Berthold, Ames personnel who have key roles in supporting the BPS project include Kristina Lagel, project scientist; Dr. David Heathcote, project operations lead; Robert Yee, hardware contract monitor; and Dr. Charles Wade, Code S chief scientist.

The BPS testing and research are supported by NASA's Office of Biological and Physical Research, which promotes basic and applied research to support human exploration of space and to take advantage of the space environment as a laboratory. More information is available at: <http://spaceresearch.nasa.gov/>

For information about NASA's Space Station Biological Research Project, go to: <http://brp.arc.nasa.gov/>

BY ANN HUTCHISON 

Ames monitors power usage for energy efficiency

The Ames Power Monitoring System (APMS) is a centralized process for collecting and storing electrical data from potentially all of the electrical consumers at the center. Currently, Ames has over 35 power sensors deployed in the field monitoring all of the major research facilities. This is the initial pilot phase of the project.

The APMS project, which is managed by the Facilities Engineering Branch and designed, programmed and implemented by Jacobs/Sverdrup Technology, utilizes off-the-shelf hardware and software manufactured by Power Measurements Limited. The system architecture is designed to accommodate, theoretically, an unlimited number of field sensors and client workstations.

In the next phase of the project, approximately 50 additional field sensors will be installed to monitor virtually all of the remaining buildings not already covered by the initial phase of the project.

The APMS allows wind tunnel operators, test engineers, power managers and facilities personnel to efficiently manage real-time and future facility energy consumption. The APMS also provides vital information to power engineers and electricians in the areas of electrical distribution system modifications and day-to-day maintenance.

A unique power demand management feature programmed into the APMS allows wind tunnel users to estimate, in real time, the final integrated demand for the current demand period (30-minute window). This tool gives the wind tunnel users the flexibility to vary their load greatly within the 30-minute period and still stay below the maximum allowable integrated demand set by the Ames power manager.

Another practical feature allows the facility user to totalize the energy consumed during a particular test run. The system provides stop, start, pause and reset capabilities any time during a test run to ensure accurate logging. This tool is intended to provide a basis for an accurate energy usage billing system to the end customer.

The APMS software is preprogrammed to provide alarm signals to indicate warning

conditions and/or failures that may occur in the electrical system during its operation. Failure of a transformer, switch or control relay may be displayed on one-line diagrams and lead operators to the point of concern. The system is capable of providing other

costs for the last several years were:
 FY98-\$52,728
 FY99-\$166,264
 FY00-\$89,285
 FY01-\$19,279
 FY02 (Q1)-\$0.0.

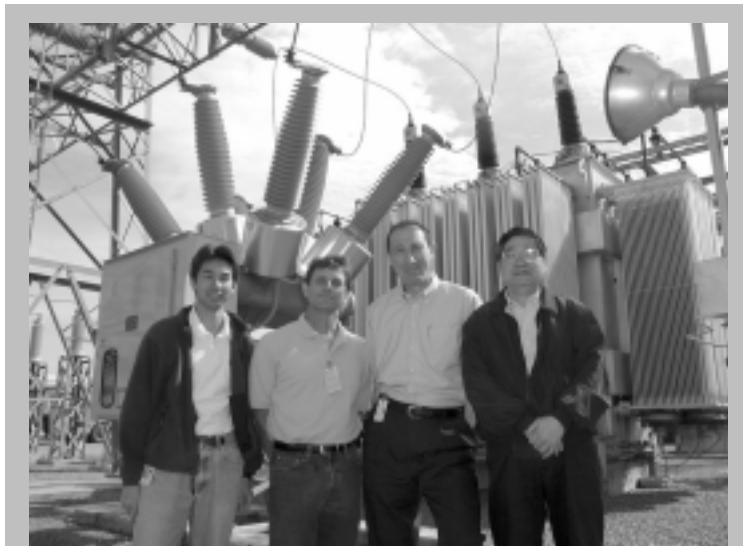


photo by David Wong

Shown (left to right) David Wong, APMS work package manager; George Sutton, Ames power manager; Leonid Osetinsky, APMS lead engineer; and Nelson Hsu, electrical restoration project manager.

The above figures show that since the APMS became operational in mid FY01, there has been a dramatic reduction in PF penalties.

- Minimizing or avoiding demand charge penalties from PG&E by providing timely information to users and managers to help maintain integrated demand below penalty levels. Ames gets its electrical power from two sources – the first 80 MW from Western Area Power Administration (WAPA), and anything over 80MW will result in demand charges from PG&E.

As part of the Summer Demand Reduction/Management program, Ames receives monetary credit from WAPA for reducing our demand from 80 MW to below 40 MW during peak use periods in the summer months. The Center

was able to accomplish great success with this program because of the demand management tool built into APMS. In FY01, Ames received credits worth \$1,064,000. In FY02 the maximum potential credit is \$1,475,000.

Currently, Ames is negotiating a new rate schedule with PG&E. With a new rate schedule, the APMS will be a key tool to administer our energy usage, to minimize peak demand, and to maximize energy use within that peak demand.

- Using historical data to help identify areas of potential power quality improvements and energy savings. The APMS identifies the areas of the distribution system with poor power factor and power quality. The APMS historical data will guide the scope definition for future Restoration of Electrical Distribution system projects.

alarming functions including E-mail messages and telephone paging of responsible personnel.

The operator interface for Ames Power Monitoring System was developed with classical human machine interface (HMI) techniques in mind, so that operators and managers, with different levels of privileges, find it relatively easy to navigate the screens and intuitive to use. Every HMI workstation is capable of displaying real-time and historical data from each field sensor and from the server. The APMS displays historical data in spreadsheet or graphical forms and thus provides a very convenient method for the users of the system to analyze the load profile of individual facilities.

Since deployment, Ames has achieved significant benefits by providing tools to achieve substantial energy cost savings and to assist future electrical upgrade in a variety of ways.

- Managing the overall power factor (PF) to avoid low PF penalties. The APMS is the key system control tool to monitor the system power factor. The Power Factor Penalty

BY LEO OSETINSKY AND DAVID WONG ▲

British Consul general's office tours Ames



photo by Tom Trower

On April 11, a group from the San Francisco office of the British consul general visited Ames for a tour of the center. Here the group is seen chatting with Ames Center Director Henry McDonald.

Spring Fun Walk and Run set

Come enjoy the fresh air, friends and some fantastic exercise by participating in the Spring 2-mile Fun Walk and Run on May 21. All participants will get a commemorative ribbon and some delicious cold refreshments at the finish line. Fun door prizes will also be given out after the race.

The event will start 12:00 noon, at DeFrance near Warner. Walkers and runners will be directed through the beautiful marshlands and eventually finish on King Road behind the Mega Bytes cafeteria. Winner's certificates will be given in walker and runner categories.

Registration will be included with the purchase of a \$10 fun run t-shirt or will be \$2 without a shirt. Pre-register with a fun run coordinator or at the Fitness Center before May 16. Registration will also take place at the starting line from 11:15 a.m. - 11:50 a.m. on race day. No roller-blades please. Leisurely walkers are encouraged to join in. Contact the Fitness Center manager, Nancy Dunagan, at ext. 4-5804, for additional information.

Energizer station coming to Ames for bike-to-work day

Mark your calendars for May 16, when the Moffett Park Transportation Management Association and the Ames Environmental Services Office will be hosting a Bike-To-Work Day Energizer Station at the NASA light rail stop outside the Ellis Street gate from 5:30 a.m. to 9:30 a.m.

Why is it called an "Energizer Station"? Because we provide free, premium-grade bike fuel (gourmet coffee and bagels, fresh fruit, energy bars) as well as lots of other goodies (along with a tote bag to carry it all!) in order to encourage people to try a healthy and environmentally-friendly commute option.

Do you live too far away to contemplate riding all the way to Ames? No problem -- just pedal to the nearest transit stop and take your bike on board the bus, light rail, or Caltrain.

So take that old bike out of the garage, pump up the tires and plan to visit us on Bike-To-Work Day!

For more information, including how to sign up for prize drawings, point your browser to RIDES.ORG.



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for your support!**

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 ODIN engineers, enhanced system administrators, and technicians
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May 29th, 2002

10 AM to 4 PM

**MTCC (Building 3),
Ballroom**

Demonstrations on ODIN Customer tools:
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 On-Line Delivery Order
 Customer Outreach website
 and more

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Reps from:
 Apple
 Hewlett Packard
 Compaq
 and more

**ODIN team members will be on
hand to answer your questions.**



Contact: Celeste Merryman, 4-0948



GLOBE brings scientists, teachers and students together

Teachers from across California "got their hands dirty" at a GLOBE (Global Learning

this international research and education program, which brings together scientists, teachers and students to carry out investigations about the Earth and how it functions as a global system.



photo by Pat Helton

Teachers analyze a soil profile and record their observations for eventual transmission to GLOBE's Internet data archive. Back in their classrooms, they will teach this to their students.

There are four main areas of investigation in GLOBE: soils (taught in this workshop), atmosphere, hydrology, and land cover. In each of these areas, students use scientific instruments and their own senses to observe the environment near their schools and at selected research sites nearby.

A significant feature of the

and Observations to Benefit the Environment) workshop April 5 - 6 at Ames' Educator Resource Center hosted by Bonnie Samuelson of Code DXE. NASA is the lead agency for

GLOBE data-gathering activity is that the information collected is archived on the Web at: <http://www.globe.gov/> and thereby made available to students, and uniquely, to re-

searchers in locales remote from the data collection site.

"It would be impossible for me to gather temperature and precipitation data at numerous sites in, for example, China or Argentina," said J. Skiles, a research scientist and GLOBE trainer in Code SGE. "However, school children collect and record such data at their schools, and enter these data on the GLOBE Web site where I can view and download them for research purposes," said Skiles. Such data can be used to study changing environments and to drive ecosystem models.

NASA Ames manages a GLOBE 'partnership' which offers teacher workshops on how to conduct these investigations, submit and analyze data, so they, in turn, can teach these techniques to their students. In addition, GLOBE's help desk is located here at Ames. This workshop is one of several new offerings for Bay Area teachers at Ames' Educator Resource Center (ERC). The ERC has offered other educator workshops that correlate to the California science content standards and give educators new tools to teach science in an exciting way that only NASA can provide. GLOBE's hydrology and land cover modules will be offered later this year.

According to one workshop participant, GLOBE is "an excellent program. It should be the foundation for your curriculum." Once teachers implement GLOBE in their schools, their students are participating in real science--contributing to knowledge about our home planet--rather than learning about science from a textbook or in a laboratory.

BY BONNIE SAMUELSON ▲

ACCC accepting board of director nominations

It is once again time to elect new members to serve on the Ames Child Care Center (ACCC) board of directors and the Tuition Assistance Council (TAC). The ACCC is a private, non-profit organization that provides on-site childcare to the NASA Ames-Moffett Field community.

The election committee is taking nominations (including self-nomination) for six board of directors positions and three available TAC positions, through May 17. Elections will be held at the ACCC on Wednesday, May 22 and Thursday, May 23. Election results will be announced at the ACCC parent meeting on May 30.

This is a wonderful opportunity for interested people to be an integral part of ACCC's functioning and to help plan its future.

Let your voice be heard by serving on the board. Forward your name and a brief statement of your experience and/or interest, by May 17, to the election committee in care of the ACCC board at: accboard@lists.arc.nasa.gov.

Ames' CFC coordinator recognized

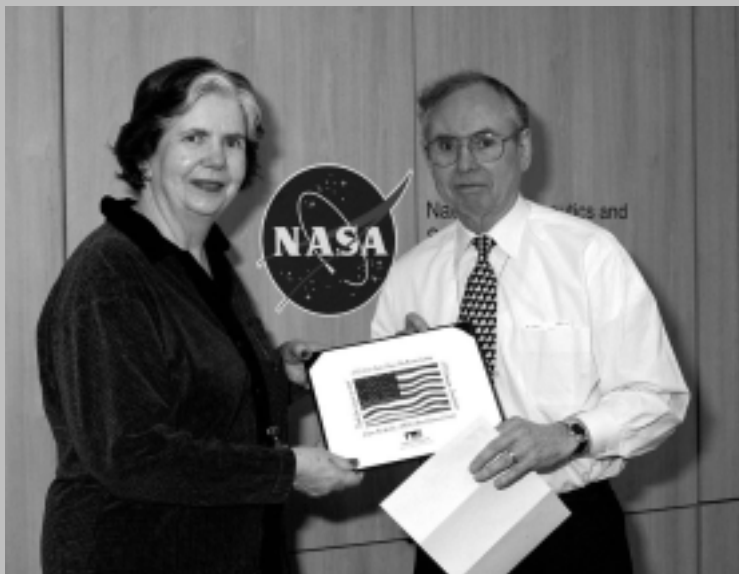


photo by Roger Brimmer

Center Director Dr. Henry McDonald presented an award to Grace Ann Weiler, of Code JA, on behalf of the local Combined Federal Campaign in recognition of her outstanding effort as the coordinator for this year's highly successful Ames campaign. The citation read: 'To Grace Ann Weiler in recognition of her dedication and leadership during the 2001-2002 Combined Federal Campaign at Ames Research Center. For exceeding all expectations for success in the wake of the September 11th disaster, by setting a record level for contributions. Thanks to the generous contributions from the Ames staff, we were able to set such a remarkable record and set an example for other agencies to follow, a position Ames has historically had within our community.'

Event Calendar

Model HO/HOn3 Railroad Train Club at Moffett Field in Bldg. 126, across from the south end of Hangar One. Work nights are usually Friday nights, 7:30 p.m. to 9:30 p.m. Play time is Sundays, 2 p.m. to 4 p.m. Call John Donovan (408) 735-4954 (W) or (408) 281-2899 (H).

Jetstream Toastmasters, Mondays, 12 noon to 1 p.m., N-269/Rm. 179. Guests welcome. POC: Cathy Payne at ext. 4-0003.

Ames Ballroom Dance Club. Classes meet Tuesdays. Begin classes start at 6:15 p.m. Higher-level class meets at 5:15 p.m. Held in Bldg. 944, the Rec. Center. POC: Helen Hwang, hwang@dm1.arc.nasa.gov.

Ames Bowling League, Palo Alto Bowl on Tuesday nights. Seeking full-time bowlers and substitutes. Pre-league meeting at Palo Alto Bowl on Tues, August 28 at 6 p.m. Questions to sign up: Mike Liu at ext. 4-1132.

Native American Advisory Committee Mtg, fourth Tuesday of each month, 12 noon to 1 p.m., Building 19, Rm 1096. POC: Mike Liu at ext. 4-1132.

Ames Diabetics (AAD), 1st & 3rd Weds, 12 noon to 1 p.m., at Ames Mega Bites, Sun rm. Support group discusses news affecting diabetics. POC: Bob Mohlenhoff, ext. 4-2523/email at: bmohlenhoff@mail.arc.nasa.gov.

Ames Contractor Council Mtg, first Wednesday of each month, 11 a.m., N-200, Comm. Rm. POC: Paul Chaplin at ext. 4-3262.

Ames Federal Employees Union (AFEU) Mtg, third Wednesday of each month, 12 p.m. to 1 p.m., Bldg. 19, Rm 1042. Info at: <http://www.afeu.org>. POC: Marianne Mosher at ext. 4-4055.

Environmental, Health and Safety Information Forum, first Thursday of each month, 8:30 a.m. to 9:30 a.m., Bldg. 19/Rm 1040. URL: <http://q.arc.nasa.gov/qe/events/EHSseries/> POC: Julie Quanz at ext. 4-6810.

Ames Sailing Club Mtg, second Thursday of each month, 11.30 a.m. -1 p.m. POC: Diane Purcell ext.4-3232. Check Web site for monthly calender of events, <http://sail.arc.nasa.gov>

Ames Amateur Radio Club, third Thursday of each month, 12 noon, N-T28 (across from N-255). POC: Michael Wright, KG6BFK, at ext. 4-6262. URL: <http://hamradio.arc.nasa.gov>.

Ames Child Care Center Board of Directors Mtg, every other Thursday (check web site for meeting dates: <http://acc.arc.nasa.gov>), 12 noon to 2 p.m., N-269, Rm. 201. POC: Joan Walton, ext 4-2005.

Nat'l Association of Retired Federal Employees, (NARFE), first Friday of each month, S. J. Chptr #50 mtg, 9:30 a.m., Hometown Buffet, Westgate Mall, 4735 Hamilton Avenue., San José. Program at 10 a.m. 'Guide Dogs for the Blind.' Lunch at 11 a.m. \$6.27 pp. POC: Earl Keener (408) 241-4459 or NARFE 1-800-627-3394.

Satellite Broadcast on Long Term Care, May 15, 9:30 a.m. to 10:30 a.m., Building N201 Auditorium. POC: Lita Que at ext. 4-1019.

Ames Classifieds

Ads for the next issue should be sent to astrogram@mail.arc.nasa.gov by the first Friday 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 a space-available basis only. First-time ads are given priority. Ads must include home phone numbers; Ames extensions and email addresses will be accepted for carpool and lost and found ads only. Due to the volume of material received, we are unable to verify the accuracy of the statements made in the ads.

Housing

Room with large closet in 4 bd/2 ba home, excellent, quiet Mtn View area close to Ames. W/D, microwave, fireplace. Tidy person/N/S. Easy access to Ames, 85, 237, & 101. \$475 + share utils. Call (650) 964-1900.

Santa Clara duplex 2bd/1ba, plus bonus rm, 1 car garage, enclosed bkyard. \$1,700 mo. Call (408) 986-8056.

For rent, great Santa Clara location, 10 miles from Ames, 3bd/2ba, 2 car garage, W/D hook-ups, refrigerator, backyard, pet ok. Connie or Joe (408) 246-5295.

Room in 3bd/2ba MV townhouse. \$800 rent (incl. utils). Share w/prof'l female. Priv. bthrm. Tennis courts, pool, hot tub. Female prefer'd. N/S. Call (650) 254-1121.

Sunnyvale 4plex, 2bd/1ba, 975 Helen Ave., \$995 plus deposit. James (408) 741-4922.

NASA summer fellow seeking temporary housing for self and 8-year-old daughter. Early June to late August. Contact via e-mail at: kubitz@towson.edu.

For rent: large room in clean and spacious home to share with two busy professionals. W/D, utils included (except phone). Off street parking. \$600. John (408) 567-0365 or email at: John.Stephenson@jdsu.com

Room for rent near Shoreline and Middlefield. \$550 including utils, W/D available for use. Call (650) 969-6620 (H) or (650) 714-5419 (cell).

Duplex 1bd/ 1ba and gar. in Mt.View, 5min. to Ames. Rent \$1,050 plus dep. Pet OK. Long (650)962-8728.

Palo Alto house for rent, 3bd/2ba plus huge bonus rm. AEK, D/W, frg, G/D, sep. Indry W/D. Large deck w/arbor. Quiet nghbd, close to Palo Alto schools, parks, library and shopping. N/S/P. 1 yr lease. \$2,850 mo., includes gardener & water. Alicia (650) 856-3054.

For rent: Sunnyvale 2 bd/1.5 ba townhouse, end unit w/fireplace and private back yard. Cupertino schools, half block to elementary/parks. Complex has pool and clubhouse. \$2,000/mo, avail 6/1/02. Call (408) 736-6039.

Miscellaneous

Sega Dreamcast video game set (used once), \$100. Security camera/monitor (still in box), \$75. Electronic crock pot, \$25. PJ (650) 599-9829.

Boat, 1985 Beachcraft 19 ft. 305 V8 with OMC outdrive, full canvas, dual batteries, cuddy cabin with berths and portable toilet, fish finder and VHF radio. Scotty downriggers and a tandem trailer, plus misc. equipment, great fishing boat or family cruiser. \$7,100 or B/O. Call (650) 369-0578 or (707) 894-5376.

McCulloch Electramac chain saw, hardly used, EM14E (electric, double insulated). \$25. Skill saw, like new, with case. SKIL auto-scroll/Vari-Orbit jig saw 4395, 1/3 HP. Double insulated, variable speed 45 degree tilting foot. \$15. Small photos of both available upon request at: mcfarland@abac.com. Call (510) 489-8037.

Lathe: Atlas 6"x24" (4" over carriage) metal cutting lathe with back gears, some tooling. Used very little, \$150. Owen (650) 363-5915.

NordicTrack Ellipse E7 elliptic trainer with electronic console, \$225 or B/O. NordicTrack Cross country skier, Pro Model with workout computer, \$150 or B/O. Neami (925) 828-7297 after 6:00 p.m. (lv msg.)

Credenza/hutch, 20in x 30in x 46in, beautiful honey-laquer finish, mint condition, only 1 year old, \$350. Call (650) 473-0604.

Pair of 49er tickets. Pre-season: Kansas City, Aug. 10, \$84/pair; San Diego, Aug. 28, \$84/pair. Regular season: Kansas City, Nov. 10, \$128/pair. Call (510) 656-7654.

Palm m100 PDA, brand new in original unopened shrink wrapped box, \$75. Call (650) 938-6546.

Girls mountain bike, 16 inch, blue-green, "Giant", \$65 or B/O. Girls small classic bike, \$20 or B/O. Rick (831) 423-5824.

Twin daybed, metal frame, porcelain knobs, trundle mattress. Makes into double bed. \$185; Dining table & chairs, seats 4. Glossy light wood. \$85. Call (650) 604-0490.

Transportation

'87 Ford Escort Pony, hatchback, automatic, new tires, good condition. \$1,100 or B/O. Call (650) 625-1325.

'89 Oldsmobile 98 Regency. V6 3.8 liter, very good condition, new tires, 4 dr, 6 passenger, power everything, cruise, leather, moon roof, AM/FM stereo, cassette, 90K mls, one owner. \$2,300 or B/O. Call (408) 446-9554.

'90 Ford Escort GT, 2 door hatch back, only 70K mls, good condition, red, 5 speed, PS, cruise, am/fm stereo, good gas mileage, great for commuting. Asking \$2,800, willing to negotiate. Rob or Sabrina (408) 723-8956.

'92 Toyota Privia 7-passenger Van, 30,000 mls, All-Track, new engine. Quad Seating, excellent condition. \$11,000 or B/O. Call (831) 335-1654.

'95 Mazda 626, A/C, C/D, auto trans, good condition, \$3,500. Mike (925) 244-9184.

'96 Ford Windstar, GL model, dark green, all power, excellent condition, 124K mls, one owner. \$7,500. Call (408) 847-9106 after 6:30 p.m.

'97 Toyota RAV4, PW, PB, PS, P-sun roof, A/C, CC, flared fenders, new tires, new battery, new brakes, am/fm cass., tilt wheel. \$13,500 or B/O. Bob (408) 736-4039.

'00 Chevy Impala Sedan, full power, cd, ps, pw, pl, front power seats, LS suspension, ABS. \$15,500. Bob (408) 736-4039.

'00 Toyota, Echo, 30,000 mls, 4-door, automatic, like new condition, \$8,000 or B/O. Call (831) 335-1654.

Ames Public Radio

1700 KHz AM radio -- information announcements and emergency instructions, when appropriate, for Ames employees. The emergency information phone number for Ames is (650) 604-9999.

Exchange Information

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

Beyond Galileo N-235 (8 a.m. to 2 p.m.) ext. 4-6873

Ask about NASA customized gifts for special occasions. Make your reservations for Chase Park.

Mega Bites N-235 (6 a.m. to 2 p.m.) ext. 4-5969

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

Visitor Center Gift Shop N-223

(10 a.m. to 4:00 p.m.) ext. 4-5412

NASA logo merchandise, souvenirs, toys, gifts and educational items.

Tickets, etc...(N-235, 8 a.m. to 2 p.m.) ext. 4-6873

Check web site for discounts to local attractions, <http://exchange.arc.nasa.gov> and click on tickets. Jun. 1, 8 p.m., Damn Yankees, San José Center for the Performing Arts.

NASA Lodge (N-19) 603-7100

Open 7 days a week, 7:00 a.m. to 10 p.m. Rates from \$40 - \$50.

Vacation Opportunities

Lake Tahoe-Squaw Valley townhs, 3 bd/2ba, view of slopes, close to lifts. Wknd \$500, midwk \$190 nite. Included lines, cleaning, propane fireplace, fully furnished. Call (650) 968-4155. DBMcKellar@aol.com

South Lake Tahoe Cottage w/wood fireplace and hot tub. Rates from \$50 to \$130 per night. Call (650) 967-7659 or (650) 704-7732.

Vacation rental, Bass Lake CA 14 mls south of Yosemite. 3bd/1.5 ba, TV, VCR, MW, frplc, BBQ, priv. boat dock. Sleeps 8. \$1,050/wk. Call (559) 642-3600 or (650) 390-9668.

Big Sur vacation rental, secluded 4bd/2ba house in lovely canyon setting. Fully eqpd kitchen. Access to priv. beach. Tub in patio gdn. Halfway between Carmel & Big Sur. \$175/night for 2; \$225 for 4 and \$250 for more, plus \$150 cleaning dep. Call (650) 328-4427.

Incline Village: Forest Pines, Lake Tahoe condo, 3 bd/2 ba, sleeps 8. Fireplc, TV/VCR, MW, W/D, jacuzzi, sauna, pool. \$120/night low season; \$155/night high season. \$90 cleaning fee and 12% Nevada room tax. Charlie (650) 366-1873.

Ames' hardware meets performance specifications

"When STS-108 landed on Dec. 17, 2001 after a 12-day mission, it provided the successful culmination of a six-year effort between Ames and SHOT, Inc. to build the Avian Development Facility (ADF)," says



Norman Donnelly, ADF hardware lead. Originating as a Phase 1 Small Business Innovative Research (SBIR) contract, the ADF progressed from the concept stage to the prototype stage to the flight unit that was launched on Dec. 5, 2001 as one of the habitats under development by the Ames Space Station Biological Research Program (SSBRP). Randy Berthold, acting chief of the Science Payloads Operations Branch, managed the payload team for the ADF.

The evolution of the ADF was not an easy process. It went from being a space shuttle

flight candidate to a space station candidate to its present configuration as a space station sortie payload, within a three-year period. A sortie payload is defined as an ISSP-sponsored payload that is manifested in the orbiter middeck, operated in the orbiter middeck and returned to Earth on the same flight. The demands placed on the developer in order to respond to these major changes were challenging, to say the least. It is to SHOT's credit that they met all the demands with a successful flight.

The ADF is a fully automated egg incubator capable of housing 36 Japanese quail eggs. The original purpose of the flight was to evaluate the ability of the unit to support the quail embryo development in microgravity. This was amended to also support the research objectives of two principal investigators, focusing on vestibular and skeletal systems by initiating and preserving embryo development in weightlessness.

Each egg was placed in an individual holder residing on one of two centrifuges that served to provide microgravity or 1-g

conditions (77 rpm) under the same controlled environment. Pre-programmed controls regulated the temperature, humidity, carbon dioxide and oxygen levels. An automated fixation system was set to operate at time intervals determined by the principal investigators. Prior to launch the eggs were kept chilled to inhibit development until reaching orbit. Initiation of incubation was then started and the unit operated autonomously until leaving orbit.

Preliminary results indicate that the ADF achieved the goal of meeting the performance specifications. Both Investigators and their staffs are currently analyzing the flight embryos as well as the control embryos that were maintained in facilities at the Kennedy Space Center during the mission. Future activity may include a ground-based control study to isolate the effects of an 18-hour EVA that was conducted from the shuttle during the mission.

BY ROBERT YEE ▲

Astrogram deadlines

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

<i>Deadline:</i>	<i>Publication:</i>
May 29, '02	June '02
July 8, '02	July '02



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