National Aeronautics and Space Administration

ASTROGRAM

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May 2006

Worden gives rousing address; predicts strong future for Ames

"Ames is the template for the new NASA," declared Simon P. (Pete) Worden, Ames' newly appointed 10th center director, during a well-received all-hands meeting on May 5. "In my opinion, Ames is the coolest place at NASA."

NASA photo by Dominic Hart

Pete Worden declared Ames "the coolest place at NASA" during his first all-hands address as center director.

Addressing a capacity audience gathered in the main auditorium for his first meeting with Ames employees, Worden predicted a strong role for the center as NASA implements the Vision for Space Exploration.

"Mike Griffin has sent me here to expand the center, so there won't be any job cuts," Worden asserted to enthusiastic applause. Worden, who arrived at the center the day before, explained that his remarks contained his "preliminary thoughts" on the state of the center and that he would deliver a much more comprehensive briefing to employees in a few weeks after he has settled into his new job.

A retired U.S. Air Force brigadier general who worked as a research professor of astronomy at the University of Arizona prior to coming to Ames, Worden was introduced by Hans Mark, a former Ames director and deputy administrator of NASA, who hailed Worden as a "world-class scientist" and military leader.

Mark, who said he first met Worden 28 years ago when he was the secretary of the Air Force and Worden was an Air Force captain, described Worden as "a bit of a philosopher."

"Actually, he's a zen master," quipped Mark. He then presented Worden with the Ames badge that he wore 30 years ago when he served as the center's third director.

As Ames moves ahead to expand its role in space exploration, Worden said the focus of the center should remain on its scientific and technical expertise, while working with other partners in government, in the private sector and in other nations. He said there are a lot of opportunities for Ames to play a vital role in space exploration.

"There are lots of Silicon Valley venture philanthropists who want to partner with us," Worden ventured. He said in order to succeed, Ames will have to move quickly to implement new programs and take on new ventures.

"I'm interested in seeing how we can do things quickly," Worden said. "If we do that, I think we can succeed in space exploration."

In addition to space exploration, Worden also said there are "real opportunities in aeronautics" and that he wants to expand the center's partnership with the Department of Defense.

One such opportunity Worden said he was interested in pursuing involved

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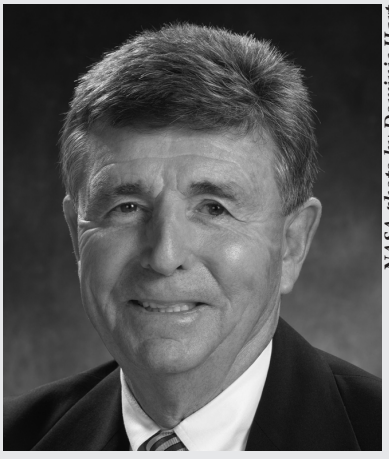
Ames appoints new deputy director

NASA Ames Research Center Director Simon "Pete" Worden announced on May 11 that he had named Marvin "Chris" Christensen to serve as his deputy director.



NASA photo by Dominic Hart

Newly appointed Ames Deputy Center Director Marvin "Chris" Christensen is looking forward to his new role.

Worden was appointed NASA Ames Research Center director by NASA Administrator Michael Griffin on April 21, 2006. Christensen assumed his new duties on May 14.

He has served as the acting center director for the past two and a half months pending Worden's arrival from the University of Arizona, Tucson, where he was a research professor of astronomy.

"Chris has provided experienced leadership as acting program manager of the Robotic Lunar Exploration Program (RLEP) since coming to Ames in September 2005," said Worden. "In that role, he has been instrumental in regaining a true mission management role for

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Worden gives rousing address; predicts strong future for Ames

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'air launches' whereby rockets would be dropped from the back of an airplane. He suggested the procedure might be a "viable approach" for supplying the International Space Station and also might tie in to exploration.

NASA photo by Dominic Hart

Hans Mark, left, a former Ames director and deputy administrator of NASA, presented Worden with the Ames badge that he wore 30 years ago when he served as the center's third director.

Turning to the status of the Stratospheric Observatory for Infrared Astronomy (SOFIA), Worden voiced cautious optimism.

"I know there's a lot of concern about SOFIA here and I think there's a recognition of how important it is at Headquarters," Worden said. "I hope to get some good news soon."

Worden also said the center's expertise in astrobiology, nanotechnology and robotics would serve it well in helping define Ames's role in space exploration.

"I have a vision that in a few decades when astronauts travel to another planet and walk into a space habitat, there will be a robot there with a martini -- made with lunar material," Worden joked.

He also touched on the Kepler project, calling the mission's search for other Earth-like planets "incredibly neat," and said it represented an area of possible expansion for Ames, as would the center's research in near-Earth objects and asteroids, which he jokingly described as "the pet rocks of the universe."

Worden also predicted strong roles in information technology for Ames. "Information technology is the most powerful factor in our lives," Worden said. "Space is about getting information and generating information."

He said he wants to see Ames retain NASA Research Park and the airfield, calling them "incredibly valuable assets" and he pledged to strongly advocate retaining them.

He called the agreement between Ames and Google Inc., a "neat idea" and said that he would like to work with the Silicon Valley icon in space exploration.

At the conclusion of his remarks, Worden received a standing ovation and prolonged applause from the crowd. Asked if he would be able to "restore prosperity" to Ames, Worden said he will do everything he can.

"I'm sure as heck going to try," Worden said. "I'm going to fight as hard as I can."

BY MIKE MEWHINNEY

Ames appoints new deputy director

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the center and in kicking off our efforts in the area of small satellites, which I think will be key to our future."

Prior to coming to Ames, Christensen served as a senior manager at Lockheed Martin, and he also brings 40 years of experience at NASA Headquarters, the Jet Propulsion Laboratory, NASA field centers and the aerospace industry.

"I am delighted that Pete Worden has demonstrated his confidence in me by naming me as his deputy director," Christensen said. "I look forward to working with him to strengthen Ames by building on our traditional areas of excellence, expanding our business base and pursuing creative use of our facilities."

Christensen succeeds Steven Zornetzer, who served as acting deputy center director in addition to his duties as deputy director for research since August 2005.

"With Chris and Steve at the helm, the center was able to navigate its way through turbulent times and we find ourselves closer to our goals as a result of their skill and dedication," Worden said.

BY MIKE MEWHINNEY

New goals outlined for safety and health Improvement

The Executive Safety Committee approved goals for improvement of safety and health at Ames during 2006. These goals include two new centerwide goals, continued commitment to the five Ames Safety Accountability Program (ASAP) metrics to ensure superior safety performance, and, for the first time, a specific safety improvement goal within each directorate.

The first new goal is to "improve awareness of injury and occupational illness trends." Examples of occupational injuries include slips, trips and falls; back injuries and chemical splashes.

Occupational illnesses include hearing loss and repetitive trauma disorders such as carpal tunnel syndrome. You can expect to hear from your supervisor about the center's monthly 'Safety Snapshot' of injuries and illnesses in your bi-monthly safety meetings. By being aware of significant trends, you can avoid common causes of injury by adopting protective measures in your daily activity.

The second centerwide goal is to 'update the interim control measures for our x-files.' No, this does not mean we are restricting a certain television show, or that we've become the branch of government that monitors paranormal phenomena. The center's x-files are a list of safety hazards, which require specific financial arrangements for resolution, such as installing stair railings. Since the need does not necessarily produce the necessary funds to correct the safety hazard, interim control measures are instituted. Such an interim control measure can vary, depending on need, from posting a warning sign to closing a facility. Supervisors have been asked to review all the x-file issues in their organization and make sure the interim control measure has been updated within the past 12 months.

BY PAUL DAVIS, SHELLEEN LOMAS, AND STAN PHILLIPS

Ames shows media how CEV heat shield materials were tested

During a recent visit to the center, local news media representatives learned that Ames is playing a vital role in the creation and testing of the 16.5-foot (5-meter) diameter, Frisbee-shaped heat shield for NASA's new spaceship, the Crew Exploration Vehicle (CEV). The big disk will be attached to the base of the cone-shaped CEV crew capsule.

Initial tests of materials that could be used in the heat shield for the new spaceship were recently completed in Ames' arc jet facility.

NASA photo by Cesar Acosta

Arc jet test at the NASA Ames Interaction Heating Facility (IHF) (top view) with thermal protection system (TPS) material coupon glowing after test completion. The tests are a critical part of developing new TPS materials.

Reporters and television cameras from all but one Bay Area TV station watched as engineers and technicians fired up their arc jet apparatus and conducted a simulated test run of hockey-puck-size samples in what resembles a 'room-size blowtorch.'

Ames's James Reuther, project manager for the CEV Thermal Protection System Advanced Development Project and Ames's Ernie Fretter made presentations. Reporters interviewed Ames engineers, scientists and technicians as well as Reuther, Fretter and George Sarver, who leads Ames's CEV support office.

The CEV heat shield must protect the capsule and its astronaut crew from the searing heat that develops during flight through the atmosphere when returning from either low-Earth orbit, or from the moon. As it streaks into Earth's atmosphere after a trip to the moon, the heat shield of NASA's spaceship of the future must endure searing temperatures capable of melting any metal.

The Ames arc jet tests are among the first steps NASA Ames is taking to design and test a new space exploration system that will return human beings to the moon and support later missions to Mars. Several other NASA facilities across the nation also are taking part in the development effort.

Additional information about NASA's effort to develop a new spaceship is on the World Wide Web at: http://www.nasa.gov/mission_pages/exploration/main/index.html

BY JOHN BLUCK

Science fair winners visit Exploration Center

NASA photo by Dominic Hart

NASA award winners of the 2006 Synopsys Silicon Valley Science and Engineering Technology Championship join NASA researchers Karen Gundy-Burlet, left, of code TI, and Anthony Colaprete, right, of code SST, for a visit to Ames on May 4. A NASA judging team chose the winners from nearly 1,000 students who displayed their projects in March at the San Jose Convention Center.

NASA Ames tests prototype software for future spaceflight

Software that astronauts could use during spaceflight and in future moon habitats was tested by a NASA Ames team in a Utah desert April 23 to May 7, 2006.

The research took place in Utah's southeast desert, at the Mars Society's Mars Desert Research Station near Hanksville, where scientists field-tested a computer network to monitor space power systems. The network uses the same kind of intelligent software that also may assist astronauts to conduct planetary exploration with robotic systems.

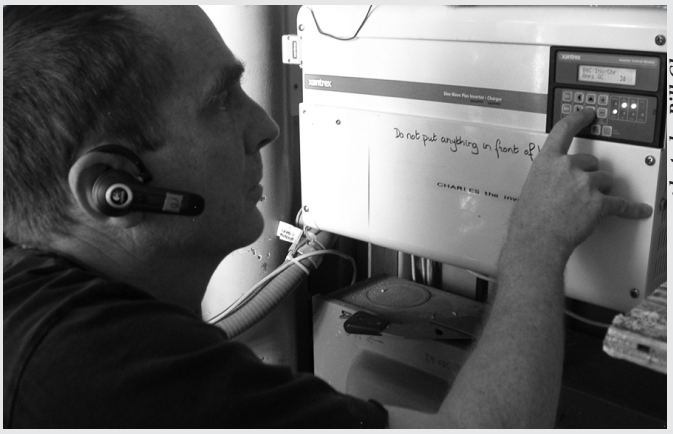

photo by Bill Clancey

A crew member at the Mars Society's Mars Desert Research Station near Hanksville, Utah, wearing a wireless headset, inspects the power system inverter to monitor or modify the power settings. He is interacting with his 'personal agent' using voice commanding to inquire about the current and historical status of the power system.

"We will experiment with sensors and software that will help us manage a generator and batteries that provide power to a habitat, while we are living and working inside (of it)," said Bill Clancey of Ames, the project's principal investigator, just before the tests began.

Nine scientists and engineers from NASA Ames took part in the experiments with the software and hardware systems. The Mars Desert Research Station simulated a spaceship in flight or a habitat on the moon.

During the field exercise, the researchers' objective was to test software 'agents' that will assist astronauts by monitoring an electrical power system and sounding alarms that indicate problems. The agents also will provide procedural advice when problems occur. The system could keep track of astronaut locations, timelines and important tasks. Researchers triggered some simulated problems to learn how the computer systems help or hinder the crew's response.

"By using the systems we are developing in the habitat, we are both testing our ideas and validating our assumptions about what kinds of tools people really need," Clancey said.

"A total systems perspective - developing our software in a setting analogous to where it will be used - provides direct experience and new insights about how people and automated systems can be designed to fit together," Clancey added.

Team members used prototype tools, including a wireless computer network, and voice-commanded mission control communication services that partly automate the role of capsule communicator (CAPCOM) personnel, who monitor and advise astronauts like they did during the Apollo missions to the moon in the late 1960s and early 1970s.

Scientists made audio and video recordings of the activities using the crew-activity analyzer system developed under a Small Business Innovation Research Program grant to Foster-Miller, Inc., Waltham, Mass. It synchronized audio and video recordings with records of the crewmembers' locations in the habitat.

From analysis of the recordings and other data, investigators can evaluate the prototype power system monitoring software and develop requirements for computer systems to interact with people.

"Human-systems interaction is one of the focus areas for exploration research," said David Korsmeyer, chief of the Intelligent Systems Division at Ames. "Ames participates in several space autonomy, health management and advanced software projects that can increase future exploration spacecraft capabilities," Korsmeyer explained.

The Spacecraft Autonomy Project is a component of the Exploration Technology Development Program within NASA's Exploration Systems Mission Directorate, and funds mobile agents research. The project is developing a computer language, simulation environment and operational network for modeling and simulating how software 'agents,' people, tools and facilities interact in practical settings.

BY JOHN BLUCK

Be safe - avoid being a distracted driver

We all know that distracted driving is hazardous. We now know precisely how hazardous it is.

Ken Thomas of the Associated Press reports that "Researchers reviewed thousands of hours of video and data from sensor monitors linked to more than 200 drivers and pinpointed examples of what keeps drivers from paying close attention to the road."

For more than a year, researchers studied the behavior of the drivers of 100 vehicles in metropolitan Washington, D.C. They tracked 241 drivers, who were involved in 82 crashes of various degrees of seriousness (15 were reported to police) and 761 near-crashes. Air bags deployed in three instances.

We are all frequently made aware these days of the dangers of cell phone use and eating while driving, but even worse, "A driver's reaching for a moving object increased the risk of a crash or potential collision by nine times," according to the researchers at the National Highway Traffic Safety Administration and the Virginia Tech Transportation Institute.

This caught my eye because years and years ago, I caused just such an accident right here at Ames.

I had an object on the passenger seat of my car. I was approaching an intersection and a truck in front of me came to a stop. As I began to apply my brakes, the object shifted and I instinctively reached for it, releasing the pressure on my own brakes. I was not injured, and the hefty truck survived intact, but my car was totaled.

So when you are reminded to avoid distracted driving, remember two things -- we now have scientific proof of its danger, and the distraction you are not thinking of, is worse than the distraction you know about!

BY PAUL K DAVIS

Ames' spacecraft to look for valuable ice at moon's south pole

Most people might think that finding water on the moon would be as impractical as locating green cheese there. But as unlikely as it might seem, water may well exist on our nearest neighbor in space. Both the Clementine (in 1994) and the Lunar Prospector (in 1998) spacecraft found indirect -- but not rock-solid -- evidence that water ice may be in the dark shadows of craters in the lunar south pole area - gloomy places that never see the light of day.

These permanently shadowed craters are ideal spots for ice to exist in the extreme cold. As part of the Vision for Space Exploration, the United States has plans to send astronauts back to the moon by 2018 to establish bases there. One good place to build a base might be in an area where water ice could be mined. Scientists think there might be enough of this precious water to provide astronauts with drinking water.

During the Lunar Prospector mission in 1998, scientists estimated that as much as 6 billion metric tons of water ice could be under about 18 inches of lunar soil in the craters. Astronauts could even break down the water into hydrogen and oxygen to make rocket fuel.

So it is no surprise that NASA has begun work to launch a spacecraft to the moon to look for solid evidence of water ice - potentially a very valuable commodity there. Scientists currently reckon it would cost more than $10,000 per pound (0.45 kilogram) to launch material, such as water, to the moon. To lift an ounce (28.35 grams) of water from the Earth to the moon would cost at least $625. If you have lugged a bucket of water, you know how heavy even a small amount of water can be.

To kick off the quest for lunar water ice, NASA announced April 10 that a small, 'secondary payload' spacecraft, to be developed by a team at NASA Ames would begin a trip to the moon in October 2008 to look for precious water.

The water-seeking spacecraft is called the Lunar CRater Observation and Sensing Satellite (LCROSS). It is known as a 'secondary payload spacecraft' because it will begin its trip to the moon on the same rocket as the Lunar Reconnaissance Orbiter (LRO), which is on a different mission to the moon. The rocket, the Evolved Expendable Launch Vehicle (EELV), will launch from Kennedy Space Center, Florida.

"We think we have assembled a very creative, highly innovative mission, turning the upper stage of the rocket that brought us to the moon into a substantial impactor on the moon," said Daniel Andrews of Ames, whose team proposed the LCROSS mission.

The LCROSS spacecraft will arrive in the lunar vicinity independent of the LRO satellite. Prior to impacting the moon, LCROSS will orbit Earth twice for about 80 days, and then will strike the lunar south pole in January 2009.

On the way to the moon, the LCROSS spacecraft's two main parts, the Shepherding Spacecraft and the Earth Departure Upper Stage, will remain coupled.

As the spacecraft approaches the moon's south pole, the upper stage will separate, and then will impact a crater in the south pole area. A plume from the upper stage crash will develop as the Shepherding Spacecraft heads in toward the moon.

"The strategy is not to go there and dig it up, but, we're lifting it by means of an impact and bringing it to the spacecraft in a huge cloud," said Tony Colaprete, LCROSS principal investigator, and a planetary scientist at Ames.

The Shepherding Spacecraft will fly through the plume, and instruments on the spacecraft will analyze the cloud to look for signs of water and other compounds. Additional space and Earth-based instruments also will study the 2.2-million-pound (1000-metric-ton) plume.

The Shepherding Spacecraft will have six cameras and two spectrometers. "The instruments are capable of telling us whether there is water in the plume, either in the form of vapor or ice," Colaprete explained. "We'll be able to measure water down to a tenth of a percent of the total mass of the cloud."

"We will have two cameras that can see both visible and ultraviolet (UV) light," Colaprete said. "The cameras will document the growth of the shape of the cloud, and they will also measure UV light emitted by excited water molecules. So these cameras are capable of detecting water, too."

"Then there are four other cameras that will look at infrared light, which is not visible to human beings," he added. "These cameras will tell us how the temperature of the cloud changes over time. This is important because the water would affect the temperature of the cloud. Therefore, these infrared cameras indirectly will be able to detect water."

Artist's conception: LCROSS enroute to moon.

The four infrared cameras also will give scientists measurements of what minerals are in the cloud, which researchers can compare to samples collected on the surface of the moon in the equatorial regions during the Apollo missions of 1969 through the early 1970s.

"We'll be able to distinguish between water vapor, water ice, and hydrated minerals like salts or clays that contain molecularly bound water," Colaprete said. "We'll be able to compare the moon dirt from the permanently shadowed regions of craters at the lunar south pole with moon soil samples collected during the Apollo missions at much lower latitudes, near the equator. The stuff inside the dark craters of the south pole may well be different from what we found during Apollo," Colaprete observed.

Then the Shepherding Spacecraft itself will become an impactor, creating a second plume visible to lunar-orbiting spacecraft and Earth-based observatories. If water ice exists in clumps only in certain areas within the targeted crater, the upper stage impactor could miss an

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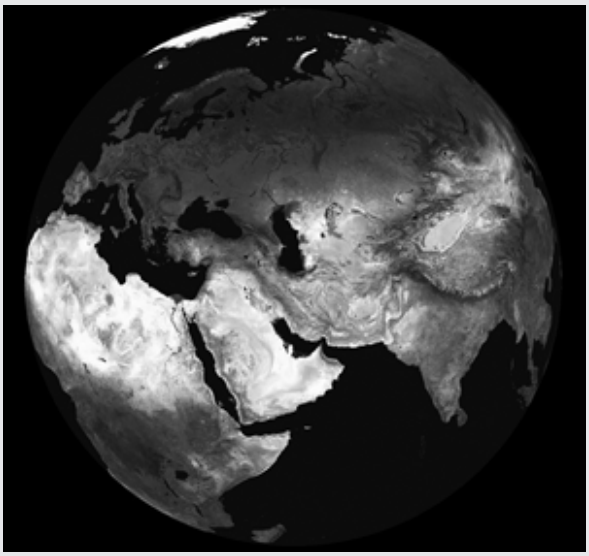
NASA internet software shows planets in 3-D color

NASA recently updated its World Wind computer program that enables Internet users to explore not only the Earth and the moon, but now permits Web surfers virtually to fly through huge Mars canyons and visit Venus and Jupiter in 3-D color.



Screen snap shot from the World Wind Web site of the Earth and the view of the eastern hemisphere.

The new version also allows users to see some of Jupiter's moons, and to cruise into the depths of Earth's oceans. The newly revised, free program is available on the Web at: http://worldwind.arc.nasa.gov

"The users -- from the comfort of their own homes -- can visit anyplace on Earth, Mars and other places in the solar system," said Chris Maxwell, lead World Wind developer at Ames. "All you need is (a) standard personal computer (PC) with a decent video card, and a decent Internet connection."

More than 10 million users have used World Wind since NASA first released it about a year ago. "Well over 100,000 new users download the program each week from all over the planet," said Patrick Hogan, program manager for World Wind at Ames.

The program itself is only five megabytes, but data containing place names and imagery make up the rest of the 50-megabyte World Wind download, according to Hogan. A version written in the Java computer language that will run on Macintosh and Linux computers is scheduled for release in September 2006, Hogan noted.

"NASA is providing the free World Wind program to improve public and researcher access to high-quality imagery and other data," said Hogan.

In the future, the planetary imagery will give users the chance to explore not only the moon, Mars, Venus and Jupiter, but also other planets when additional data sets become available.

The computer program can 'transport' Web users to just about anywhere on the moon, when they zoom in from a global view to closer pictures of our natural satellite taken by the Clementine spacecraft in the 1990s.

"We can . . . (now) deliver the moon at 66 feet (20 meters) of resolution," Hogan said.

Launched in early 1994, Clementine took 1.8 million pictures of the lunar surface during a two-month orbit of the moon. The Ballistic Missile Defense Organization and NASA jointly sponsored the Deep Space Program Science Experiment that included the Clementine spacecraft. Its principal objective was to 'space-qualify' lightweight imaging sensors and component technologies for the next generation of Department of Defense spacecraft.

The program enables users to better understand Earth processes such as changing ozone conditions, ocean temperature, weather and earthquake activity.

"We're working with the United States Geological Survey and the Department of Defense to deliver their data to the public," Hogan said. According to Hogan, the Department of Defense itself is using World Wind software, and the National Guard plans to make use of the software to help respond to natural disasters.

NASA processes almost 10 million requests for World Wind imagery daily. The program is delivering terabytes of global NASA satellite data that are a result of years of daily observations of precipitation, temperature, barometric pressure and much more. Hurricane Katrina data are part of World Wind's collection of images.

NASA programmers recently have increased the resolution of images of Earth from 3,281-foot (one-kilometer) resolution to 1,640-foot (500-meter) resolution in an upgrade called 'Blue Marble, Next Generation Earth.' Also, some World Wind data sets include images of the entire Earth at 49-foot (15-meter) resolution. World Wind accesses public domain United States Geological Survey aerial photography and topographic maps as well as Shuttle Radar Topography Mission and Landsat satellite data.

Computer users from more than 100 nations have acquired the free World Wind program, though most users are from the United States.

BY JOHN BLUCK

SATERN'S 'go-live' date arrives

The 'System for Administration, Training, and Educational Resources for NASA' (SATERN) has been implemented as the agency's new learning management system.

SATERN is now available for use by both civil servants and contractors. This new system will provide you with one-stop access to a robust learning and development environment where you can view course catalogs, self-register for courses, view your individual learning history and launch online courses from your desktop.

The URL to log in to SATERN is https://satern.nasa.gov.

Support and assistance on SATERN will be offered through WBT at https:saterninfo.nasa.gov as well as at drop-in clinics.

For more information, visit http://ameshr.arc.nasa.gov/SATERN/index.html or contact satern@mail.arc.nasa.gov.

Upcoming events . . .

Come to the 'Federal Employees Night at the Park'

Attention Bay Area baseball fans! The San Francisco Bay Area Federal Executive Board is pleased to announce another Federal Employee Night at the Park on Friday, Aug. 18, at 7:15 p.m., when the Giants play the Los Angeles Dodgers.

Plan to join other federal employees, family and friends at beautiful AT&T Park to cheer the Giants to victory.

The Federal Executive Board has reserved a block of 1,500 tickets for a game that is expected to sell out. Last year, 1,500 tickets were sold in about four weeks and it is expected to be another sellout this year. To eliminate the possibility of getting shut out, send your order in as soon as possible.

Ask your friends, family and neighbors to join you for this night of fun. This is going to be an exciting game, so come out and see the San Francisco Giants.

Frequently asked questions and answers:

- Once I place my order, can I change it?Yes, you can increase the ticket total as long as tickets are available.
- Can I buy individual tickets to the game? Yes, you may buy as many as you need or you may buy a single seat
- When will I get my tickets? This will depend on ticket sales. We hope to have all the tickets in your hand two weeks before the game
- Can friends and family purchase tickets? Yes, everyone is welcome to come out and enjoy the game.

Mail in your orders early. For questions and further information contact Gail Castaneda at (510) 637-6104.

Order forms are available on the Internet Web site at www.sanfrancisco.feb.gov/

JPL to co-host Viking 30th Anniversary conference

The Jet Propulsion Laboratory is co-hosting a technical conference on June 22 to commemorate the Viking 30th anniversary.

Thirty years ago this July, the Viking 1 lander made its historic landing on Mars. Over the following years, the Viking spacecraft conducted experiments studying atmospheric and soil composition, meteorology and seismology.

Along with Viking 2, which joined its partner on Mars two months later, these craft provided a catalog of more than 50,000 images from the martian surface as well as from orbit.

Managed from Langley Research Center, Viking was truly a collaborative effort. The Jet Propulsion Laboratory built the orbiters and would later manage the science mission.

Glenn Research Center, known then as NASA Lewis, designed the Atlas/Centaur rockets.

For more information, contact Lindsay Crouch at Langley at e-mail l.m.crouch@larc.nasa.gov

Employees prevent major hazard from occuring at Ames

NASA photo by Tom Trower

The Sierra Lobo contractor safety award was presented recently to three of its employees at Ames. They received the award for detecting a leak in the building N250 compressor. If this leak had gone undetected, a catastrophic failure could have resulted in equipment damage costing millions of dollars, or at worst, injury or death to the arc jet team or any nearby bystanders. Shown (left to right) are: presenter, Michael Dudley director, Code Q; award recipients: Eduardo Tamez, Alejandro Saura and Kenneth Huber.

Congressman Wu visits Oregon's first NASA Explorer school

Congressman David Wu of Oregon's First Congressional District visited NASA Explorer School Faulconer/Chapman Middle School in Sheridan, Ore., in April. The school is part of the NASA Explorer School Ames service region.

photo by Anthony Leavitt

Congressman David Wu addresses students during his visit to NASA Explorer School Faulconer/Chapmn Middle School in Sheridan, Ore., in April.

Wu was accompanied by staffer Ramona Perrault and was greeted by principal Marty Hofenbredl, Catherine Lanier of Oregon Space Grant and Tony Leavitt of NASA's Aerospace Education Services Project. Hofenbredl briefed Wu on the newly expanded school - now kindergarten through eighth grade.

Wu visited the school library and met with 25 students, ranging from 6th grade to high school seniors who talked with the congressman about their school and the NASA Explorer School program. Also in attendance were NASA Explorer School team members Marie Scott and Carol Clark; school district superintendent Roy Williams; high school principal A.J. Grauer and a reporter from the Sheridan Sun newspaper.

The congressman spoke about his job working with schools and said he had come to Faulconer/Chapman Middle School to get feedback from people in his district. The students shared their experiences as part of the NASA Explorer School program. In particular, the students spoke about NASA Explorer School student symposiums they attended at Kennedy Space Center in 2004 and Johnson Space Center in 2005; trips to the Evergreen Aviation Museum and the Oregon Museum of Science and Industry; as well as activities with their own classes, including rocket launches, egg drop contests, e-missions and Marsbound mission design.

Wu compared the challenges of designing a space mission to the Lewis and Clark expeditions, and stressed the fact that the initial goals one sets out to achieve often lead to unexpected discoveries, and that this is the wonder of exploration. He mentioned scholarships being offered to students for space camp experiences at both the Oregon Museum of Science and Industry in Portland and in Huntsville, Ala., and encouraged students to apply.

Students shared many NASA and other educational experiences and asked a number of questions. Many focused on the congressman's job, such as "What part of your job is the most difficult?", and "What part of your job is the most important?", and "What are the most difficult challenges ahead?" Wu stressed that one of the biggest challenges is going to be refocusing our national goals from consumption and immediate gratification, to looking for long-term solutions. These answers, he said, would require careful research and study. He also spoke of the need to invest in science and education for a prosperous future.

He spoke with the students for nearly a full hour, and fully engaged their attention. He said that the enthusiasm and programs generated by the NASA Explorer School program at Sheridan needed to be continued and he vowed to help get the support to make that happen.

BY TOM CLAUSEN

Ames spacecraft to look for ice on moon

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icy area, scientists note. The second plume will give scientists a second chance to look for water ice, according to researchers.

"We've talked about water as a resource, but also these water measurements are scientifically significant. We want to understand how the water got there and what its state is -- water ice or hydrated minerals -- such as clays or salt where water is chemically bound to a mineral," Colaprete noted.

The information gathered by LCROSS will give scientists insight into the processes that took place during the formation of the early solar system. "For example, if this water was emplaced by comets, it was probably done billions of years ago," Colaprete said. "Or, if it's implanted by hydrogen in the solar wind that comes from the sun, then that could be a process that continues today."

Solar wind is a fast outflow of hot gas in all directions from the upper atmosphere of the sun. The composition of solar wind matches that of the sun's atmosphere (mostly hydrogen) and its typical velocity is 400 km/sec, covering the distance from sun to Earth in four to five days.

According to Colaprete, Mercury, which is at least 801 degrees Fahrenheit (427 degrees Celsius) in the sunlit areas and is the planet closest to the sun, may well have ice in permanently shadowed craters, similar to those of the moon.

"The point is that this water is indicative of processes that may be common across all bodies in the inner solar system," Colaprete observed. "The moon is a fossil record of the solar system. Understanding about the water at its poles is to understand the nature of the early solar system. The earth is loaded with water, and it might have come from comets, according to some scientists."

In addition to the instruments on the Shepherding Spacecraft that will observe the impact up close and personal, the LRO satellite will be able to observe the fresh LCROSS impact craters with multiple instruments. They may be able to see remnant water ice in the fresh material lying around the new craters formed by the impact of spacecraft.

Water vapor from ice changing directly into water vapor will remain encircling the moon from hours to as long as days. This water is said to be 'exosphered', according to Colaprete, and will be observable by LRO satellite as well as ground-based telescopes. LRO will carry advanced sensors that can detect water in at least four different ways.

The LCROSS prime contractor for the spacecraft and the spacecraft integration is Northrop Grumman.

BY JOHN BLUCK

Ames celebrates Earth Day with its employees

In April, the AIB Express hosted its semi-annual free customer appreciation lunch in building 255. This was in celebration of Earth Day, which is April 22 of each year.

First place Ames' Earth Day photo contest winner was Ray Gilstrap's photograph, 'Rainbow at Victoria Falls.'

Second place Ames' Earth Day photo contest winner was Faten Mansour's photograph, 'Endless Serenity Where the Sky Meets the Earth."

The Environmental Services Division hosted its annual environmental event in conjunction with the AIB lunch.

'Green,' or environmentally friendly companies, were on hand to share information describing ways in which one can make more sustainable choices every day at home and at work. The Environmental Services Division also sponsored the 2006 Ames Earth Day photo contest.

Third place Ames' Earth Day photo contest winner was Linda Montgomery photograph, 'Our Mark on the Earth Should be as Temporary as Bird Tracks in the Sand.'

Planetary care starts with household care

What does a company that sells laundry detergent have in common with NASA? On April 18, Jeffrey Hollender, the CEO of Seventh Generation, a non-toxic household products company, told an audience assembled to celebrate Earth Day that "both want to communicate the value they generate for society."

According to Hollender, Seventh Generation has distinguished itself as a company that strives to be sustainable. Moving toward sustainability means not only minimizing your impact on the environment, but finding ways to restore the natural world. Manufacturing and selling post-consumer recycled content paper towels and non-toxic cleaning products helps reduce natural resource consumption and hazardous waste. But that's only part of the solution.

To facilitate the generation of more sustainability ideas, Hollender brought in a professional storyteller to teach employees how to better communicate their ideas. As a result of this effort, someone wondered if laundry detergent could be formulated in a way to strengthen clothing fibers, instead of weakening them. Once the company tapped the creative genius of its employees, the possibilities to be more sustainable were endless.

During his talk, Hollender encouraged NASA employees to share their stories. He asked the audience "Which of the many research and exploration projects you are doing benefit our environment? Think about it and tell those stories."

Both Seventh Generation and NASA are helping to build a more sustainable world: one does so at the household level and one at the planetary level. The challenge for both is to communicate their value to society and encourage more support for the environmental sustainability work they do.

NASA photo by Dominic Hart

Jeffrey Hollender, CEO of Seventh Generation, spoke at the recent Earth Day celebration at Ames.

BY JUSTINE BURT

Ames Ongoing Monthly Events Calendar

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.

Ames Ballroom Dance Club. Classes on Tuesdays. Beginning classes meet at 5:15 p.m. Higher-level class meets at 5:50 p.m. Held in Bldg. 944, the Rec. Center. POC: Helen Hwang at helen.hwang@nasa.gov, ext. 4-1368.

Ames Bicycling Club Every 3rd Wednesday of the month 11:00 a.m. to12:00 p.m. in Building 245 auditorium. POC: Julie Nottage at jnottage@mail.arc.nasa.gov or ext. 4-3711. By-laws of Ames Bicycling Club can be found at: http://zen.arc.nasa.gov, the link is under the picture.

Ames Bowling League, Palo Alto Bowl on Tuesday nights. Seeking full-time bowlers and substitutes. Questions to sign up: Mike Liu at ext. 4-1132.

Ames Child Care Center Board of Directors Mtg, every other Thursday (check Web site for meeting dates: http://accc.arc.nasa.gov), 12 noon to 1:30 p.m., N-210, Rm. 205. POC: Cheryl Quinn, ext 4-5793.

Ames Contractor Council Mtg, first Wednesday each month, 11 a.m., N-200, Comm. Rm. POC: Linda McCahon, ext. 4-1891.

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

Ames Federal Employees Union (AFEU) Mtg, third Wednesday of ea. month, 12 p.m. to 1 p.m., Bldg. 221, Rm 104. Guests welcome. Info at: http://www.afeu.org. POC: Marianne Mosher, ext. 4-4055.

Ames Mac Support Group Mtg, third Tuesday of ea. month, 11:30 a.m.to 1 p.m., Bldg. N262, Rm 180. POC: Tony ext. 4-0340.

Ames Model Aircraft Club, flying radio-controlled aircraft at the north end of Parsons Ave. on weekend mornings. POC: Mark Sumich, ext. 4-6193.

Ames Sailing Club Mtg, second Thursday of ea. month (Feb through Nov), from 12:00 p.m. -1:00 p.m. in Bldg. N-262, Rm 100. URL: http://sail.arc.nasa.gov/. POC: Becky Hooey, ext. 4-2399.

Environmental Forum, first Thursday of each month, 8:30 a.m. to 9:30 a.m., Bldg. 221/Rm 155. URL: http://q.arc.nasa.gov/qe/events/EHSseries/ POC: Stacy St. Louis at ext. 4-6810.

The Hispanic Advisory Committee for Excellence (HACE) Mtg, first Thurs of month in N255 room 101C from 11:45 a.m. to 12:45 p.m. POC: Eric Kristich at ext. 4-5137 and Mark Leon at ext. 4-6498.

Jetstream Toastmasters, Mondays, 12 p.m. to 1 p.m., N-269/Rm.179. POC: Bob Hilton at ext. 4-2909, bhilton@mail.arc.nasa.gov.

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

NASA Engineering Network goes on-line

NASA has unveiled a new knowledge network designed to promote learning and sharing knowledge among agency engineers.

The NASA Engineering Network (NEN) is an enhanced knowledge-management system that provides capabilities to search across distributed engineering data sources, build technical communities of practice and create online presence for agency engineers. The network's centerpiece is the 'lessons learned' repository that documents critical success factors for flight projects. This repository replaces the former Lessons Learned Information System.

Through three phased roll-outs during 2006, NEN will supply NASA engineers with tools and engineering resources, including NASA's lessons learned, to help them solve problems and design solutions more efficiently.

As a vehicle to facilitate learning within the engineering community, the NEN has redesigned the lessons learned system to make searching, browsing and submitting lessons easier. Advanced search capabilities also mine information from other NASA engineering repositories, so the engineer can search few, several or all resources at once. This network also links to other agency-wide resources, such as the NASA Technical Standards, risk management principles and guidelines and project/program leadership training and development programs (APPEL).

In the near future, NEN will provide the engineer with collaboration tools to help in creating, reviewing and disseminating requirements and specifications. This fall, the expertise locator will be operational and ready to assist in finding the best collaboration partner from across NASA to help other engineers complete their tasks.

Sponsored by the office of NASA chief engineer Chris Scolese, the NASA Engineering Network is managed by JPL's Knowledge Management Technologies Program.

More information and network access are available on the Web at: http://nen.nasa.gov.

Safety Data

NASA-Ames Occupational Illness-Injury Data for Calendar Year-to-Date 2006
Jan. 1, 2006 – April 30, 2006

	Civil Servants	Contractors
First aid cases	4	9
Lost-time cases	0	2
Recordable cases	0	3
Lost workdays	0	2
Restricted duty days	0	0

Above data are as of 05/10/06. May be subject to slight adjustment in the event of a new case or new information regarding an existing case.

Undersecretary of the Air Force tours Ames' wind tunnel

NASA photo by Tom Trower

Former astronaut Ronald Sega, undersecretary of the Air Force (far left), visited Ames on May 16 to meet with Ames Deputy Center Director Marv Christensen (far right) and to tour the National Full-Scale Aerodynamics Complex 40-foot-by-80-foot-by-120-foot wind tunnel.

Ames Classifieds

Ads for the next issue should be sent to *astrogram@mail.arc.nasa.gov* 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. Caveat emptor!

Housing

Room available for rent in house in mid town Palo Alto, with kitchen, laundry, and pool, $500 plus $50 toward utils, for a quiet, neat, stable and conscientious person or couple. E-mail jims@eos.arc.nasa.gov; ham call wb6yoy.

Unfurnished single family home for rent in Tracy. 1,400 sq.ft - 3bd/2 1/2 ba, 2 car garage; exc. cond., recently painted. hottub and external shed for storage. Monthly rent $1,370, security dep. Pets allowed w/add'l security. Call (209) 221-5002 or E-mail awigna@sbcglobal.net

2 bd/1ba house for rent. 5 mls from Moffett, near downtown Sunnyvale. Available 13 May. $1,500 mo. Call (408) 736-8260.

Miscellaneous

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

1/2 share in Skylane C182A, $24,000. New paint and recent annual. New fuel bladders. Good condition. Basic IFR panel. Can base at LVK, 4Q5, TCY, possibly elsewhere. Key Dismukes. Call (408) 938-0455.

Craftsman gasoline lawn mower, 3.5 HP, 20". Runs fine. $60 or B/O. E-mail acsullivan@comcast.net

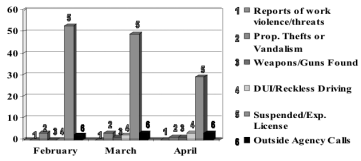
Automotive

'96 Ford Explorer XLT, 4WD, 4-dr, all pwr, 2 extra wheels / tires, new radio/CD player, tow hitch ball, excellent condition, 85K mls. $5,700 firm, must see. Call or e-mail Vince Ambrosia (408) 666-7609.

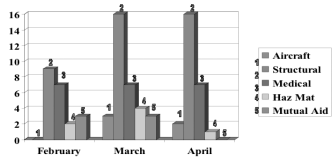
Protective Services monthly activity

A statistical summary of activities of the Protective Services Division's Security/Law Enforcement and Fire Protection Services units for the month of April 2006 is shown below.

Security/Law Enforcement Activity



Fire Protection Activity



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.

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-943 (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.

NASA Lodge (N-19) 603-7100

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

Ames Swim Center (N-109) 603-8025

Ames Swim Center, 25 meter swimming pool open and heated year round. (80-82 degrees) Lap swim: Mon, Weds, Fri, 10 a.m. to 1 p.m. and 3-6 Tues to Thurs 10 a.m. to 1 p.m. and 4 p.m. to 7 p.m. Seasonal recreation swim; swim lessons. Locker rooms w/sauna and shower facility. Open to all civil servants and contractors. Location: Bldg. 109 across the street from the tennis courts. Fees vary depending on activity. POC: Tana Windhorst, ext. 3-8025; e-mail: tw4lsb@aol.com

Vacation Opportunities

Lake Tahoe Squaw Valley townhouse, 3bd/2ba-equipped, balcony view, horseback riding, hiking, biking, golf, river rafting, tennis, ice skating and more. Summer rates. (650) 968-4155, e-mail DBMcKellar@aol.com

South Lake Tahoe cottage w/wood fireplace, hot tub. Rates $50 to $130 per night. Call (650) 967-7659.

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

Tahoe Donner vacation home, 2 bd/2ba. trees, deck. Access to pools, spa, golf, horseback riding, $280 wkend, $650 week. Call (408) 739-9134.

Pine Mountain Lake vacation home. Access to golf, tennis, lake, swimming, horseback riding, walk to beach. Three bedrooms/sleeps 10. $100/night. Call (408) 799-4052 or (831) 623-4054.

Incline Village, Forest Pines, Lake Tahoe condo, 3 bdrms/2 ba, sleeps 8, fireplace, TVs/VCR/DVD, stereo w/ CD player, microwv, W/D, jacuzzi, sauna, outdoor pool. Walk to lake. Close to ski areas. Visit web site for pictures: http://www.ACruiseStore.com $135/night spring and fall, $173/night summer and winter (holidays higher) plus $125 cleaning fee and 12 percent Nevada room tax. Charlie (650) 743-8990.

New York, 5th Ave. One fully furnished bedroom in 24 hour security bldg. overlooking Washington Square Park, $1,000/wk or $3,000/mo. negotiable. Call (650) 349-0238.

Paris/France: Fully furnished studio, 5th Arr, Latin Quarter, Notre Dame and Lie-St. Louis., $1,400/wk. negotiable. Call (650) 349-0238.

Santa Cruz townhouse, 2 bedrooms plus study, 2 baths, decks, totally furnished, 3 blocks from beach, available July, August, September; $1,600 per month. Call (831) 423-5777 (H) or (831) 277-8476 (C).

Vacation rental. Ferndale - The Victorian Village. Victorian home on Main Street a short stroll to the Village which has been designated as a state historical landmark. Enjoy the many holiday activities which include a Christmas parade and lighting of America's tallest living Christmas tree. Four bedrooms (sleeps approx. six), two full baths, large kitchen, dining room, parlor w/fireplace, enclosed desk w/hot tub. For info call (707) 983-9514.

Monterey Bay vacation rental at Pajaro Dunes, 20 miles south of Santa Cruz, 3bd/2ba beach house with distinctive architecture. Beautiful ocean and valley views, only 150 ft from the beach, first-class tennis courts. $600/wkend, $2,100/wk, including cleaning by the maid service when you depart. Call (408) 252-7260.

Lake Tahoe cabin rental in Agate Bay, North Shore. 4bd/3ba tri-level, AEK, cable TVs, fireplace, BBQ, deck, sleeps 10. Closest skiing is Northstar, Alpine and Squaw. Rates are $375 a weekend, $1,000 a week. Call (408) 867-4656.

Florida west coast vacation in St. Petersburg, beautiful 2bd/2ba condo, fully equipped kitchen and furnished, sunset views, 1/4 mile from St. Pete Beach, monthly or 2 week minimum rentals only. Call (703) 299-8889 or e-mail: jdgoehler@aol.com

Maui luxury oceanfront resort one-bedroom condo available one week. Rents for $345/night now, $495/night in the summer. We will rent to an Ames family for $1,750 for the week. See the condo at http://www.starwoodvo.com/resorts/villafeatures.jsp?resortID=12 Call (650) 572-8877 for availabilty and questions.

Astrogram deadlines

Please submit articles, calendar and classified advertisements to astrogram@mail.arc.nasa.gov no later than the 10th of each month. If this falls on the weekend or holiday, then the following business day becomes the deadline.

For Astrogram questions, contact Astrid Terlep at the aforementioned e-mail address or ext. 4-3347.

Ames emergency announcements

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

Ames airfield, emergency crews help private pilot land safely

Thanks to the prompt response of NASA Ames Research Center airfield personnel and emergency crews, a potential disaster was averted this month when a small airplane whose landing gear malfunctioned landed safely at Moffett Federal Airfield.

The accident happened on Thursday, May 18, 2006, about 2:30 p.m. PDT when a Cessna 172 Cutlass RG airplane was forced to make an emergency landing at Moffett Federal Airfield when the pilot was unable to lower the airplane's landing gear. The single-engine, four-seat aircraft was returning to the Bay Area from a cross-country trip when the incident occurred.

The pilot attempted to lower the landing gear; however, the left main gear failed to lock in position for landing. The pilot then proceeded to circle the airfield several times to burn off excess fuel and reduce the potential for a fire. After burning off sufficient fuel, the pilot was directed to land on Runway 32L, the secondary runway, to avoid creating a potential hazard on the main runway, Runway 32R, used for instrument landings.

"She did a superb job of landing the aircraft," said Munro Dearing, aviation safety officer for Moffett Field. Both the pilot and her passenger were not injured in the accident and there was no fire. "Everything worked beautifully, just like clockwork," Dearing said.

"I am very proud of the way our emergency crews and airfield personnel responded to help prevent what could have been a major incident," said Marvin "Chris" Christensen, deputy director of NASA Ames Research Center. "The fact that Moffett Field was available and had the necessary emergency resources for this emergency landing demonstrates how valuable the airfield is to the community."

Although Ames had a small crane available, it was not big enough to safely lift the aircraft off the runway where it landed. An East Bay company in Newark, however, did have a large crane that was brought in early that evening to lift the aircraft onto a flatbed truck that took it to Hangar 2 for temporary storage. The Federal Aviation Administration is investigating the incident.

"We'll be looking into the maintenance of the aircraft and work with the mechanics to determine the cause of the main landing gear not retracting," said Michael Schaadt, aviation safety inspector, FAA Flight Standards District Office, San Jose, Calif.

BY MIKE MEWHINNEY

NASA photo by Dominic Hart

Ames airfield and emergency crews responded to an emergency landing at Moffett in May by a private aircraft.

Astrogram

National Aeronautics and Space Administration

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