

THE AMES

Astrogram



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

AMES RESEARCH CENTER, MOFFETT FIELD

January 29, 2001

on-line at: <http://amesnews.arc.nasa.gov>

Rotorcraft center gets prestigious Vice President's award

Getting "hammered" or even "Gore'd" might not be such a bad thing after all. Ames' National Rotorcraft Technology Center (NRTC) was recently selected to receive the Vice President's Hammer Award — for reinventing government. The award is intended as a red-tape-cutting counter-

office, industry is organized as the Rotorcraft Industry Technology Association (RITA). RITA is composed of Bell, Boeing, Sikorsky, 13 universities and six supporting members of the rotorcraft industry. They work together in a special "pre-competitive environment" that emphasizes rapid technology sharing, not only among the industry partners, but also with the government.

requires execution of 94 separate NRTC/RITA projects. The emphasis in project



point to a prior DoD procurement process ...one that resulted in a one-hammer purchase costing \$400. The multi-agency NRTC government office is located at Ames, which provides the site, procurement support and more.

The NRTC is a partnership of government, industry and academia that provides a unique way to leverage investments and accelerate technology development, with low-overhead and streamlined operations.

The NRTC program is an integral part of both NASA's rotorcraft base R&T program and the Army's aviation applied technology program. Each of these programs supplies approximately one quarter of the total NRTC funding; industry and academia cost-sharing provides the rest. This saved the government well over 50 million dollars during the 1995 to 2000 program years.

One part of NRTC supports the rotorcraft centers of excellence at the University of Maryland, Penn State and Georgia Tech. Dozens of students have gained advanced degrees in rotorcraft technology and participated in high-tech, NRTC-guided projects at their schools.

The larger part of the NRTC effort consists of a partnership with industry and academia to produce technology for the nearer-term — something that could show up on a U.S.-made helicopter or tiltrotor within just a few years. Examples of products developed include: web-based rotorcraft-design systems; award-winning work to use GPS systems for precision, automated landing; active-noise control for quieter cabins; and much, much more.

To work with the NRTC government

Industry proposes and executes all the projects; the government reviews, influences and approves individual projects. Industry and government cost-share on a 50-50 basis. All projects have dual-use value: increasing U.S. competitiveness in the world-wide marketplace as well as enhancing military-rotorcraft supremacy.

The plan for the current, sixth year



Photo by Dominic Hart

The National Rotorcraft Technology Center (NRTC) group with the Vice President's Hammer Award, shown center, presented to the group for reinventing government. From left to right top are: Waleska Santiago; LCDR Glen Knaust; Charles Morris, Dr. Henry McDonald; Andrew Kerr; Dr. Yung Yu, Dr. John Coy, John Davis. Left to right bottom: Kathleen Giffin and Dr. Steve Dunagan. Not present: Tom Synder and George Price.

disciplines ranges from aerodynamics to structures to acoustics. The spectrum of

continued on page 8

Ames' Kepler mission selected as Discovery program candidate

NASA has selected for further study an Ames proposal to search for Earth-sized planets around stars beyond our solar system.

The Kepler mission, which will use a space telescope specifically designed to search for habitable planets, is one of three candidates for NASA's next Discovery Program mission. If selected, Kepler will be launched in 2005.

"The Kepler mission will, for the first time, enable humans to search our galaxy for Earth-sized or even smaller planets," said principal investigator William Borucki of Ames. The mission could find habitable planets in Earth-like orbits within 4 years of launch, he said.

To date, about 50 extra-solar planets have been discovered. However, they are all giant planets similar to Jupiter, and are probably composed of hydrogen and he-

lium. They are not likely to be habitable. So far, none of the planet detection methods used has the capability of finding Earth-sized habitable planets — those that are 30 to 600 times less massive than Jupiter and have liquid water on their surfaces.

The Kepler method is different; it will look for "transits" of planets. A transit occurs each time a planet crosses the line of sight between the observer and the planet's parent star. When this happens, the planet blocks some of the starlight, resulting in periodic dimming, which is used to detect the planet and determine its size.

A mere three transits of the star, all with a consistent period, brightness change and duration, will provide a rigorous method of detection and planet confirmation. And three values — orbit, temperature and size — will be used to determine if a planet is habitable.

continued on back page

Communication for the information technology age

ENERGY CONSERVATION, NOW! see p. 4

Center Briefs

NASA seeks proposals for Pluto mission restructuring of outer planet program

NASA's Office of Space Science announced in December that the agency is seeking proposals from principal investigators and institutions around the world to develop the first mission to Pluto.

This announcement of opportunity marks the first time the Office of Space Science has solicited proposals for a mission to an outer planet, such as Jupiter, Saturn, Uranus, Neptune and Pluto, to be selected on a competitive basis, similar to the agency's Discovery program. That program features lower-cost, highly focused missions with rapid development of the scientific spacecraft. Proposals submitted in response to the current announcement are due to NASA Headquarters by March 19, 2001.

Space odyssey for NASA renewed in 2000

NASA has pioneered the future for more than four decades, and the agency's achievements this past year are marked by a spirit of cooperation never-before-seen in the history of space exploration.

"We face a new frontier of possibilities and opportunities in 2001," said NASA Administrator Daniel S. Goldin. "NASA is about discovery and that's what we're going to do next year and for many years to come," he said.

For additional information as well as images from the past year, visit the following site at: <http://www.nasa.gov/newsinfo/topten2000.html>

NASA robotics may soon help spinal cord patients take first steps

NASA engineers and University of California, Los Angeles (UCLA) neurophysiologists are creating a robot-like device that could help rehabilitate thousands of Americans with spinal cord injuries.

The device, still in the development phase, will look like a treadmill with robotic arms, and will be fitted with a harness to support a patient's weight. The arms resemble knee braces that attach to the patient's legs, guiding them properly on the moving treadmill.

The robotic stepper device is one of several projects in the neural repair program at the UCLA Brain Research Institute and at NASA's Jet Propulsion Laboratory.

UCLA neurologists now believe that, by using the robotic stepper device in rehabilitation, some patients functionally confined to wheelchairs may be able to learn to walk again, and those with limited movement could improve their level of walking.

Ames hosts minority educators



photo by Tom Trower

On Friday, Jan. 12, the presidential advisory committee of the National Association for Equal Opportunity (NAFEO) in higher education conducted a session in the Ames Moffett Training and Conference Center ballroom. Ames' Office of Development and Communication (Code DX) hosted Bettie White, director of the minority university research and education division in the NASA headquarters Office of Equal Opportunity Programs, and her guests during the three days of meetings.

Disaster exercises held on site



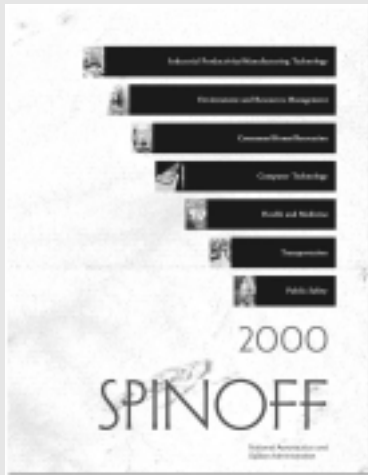
photo by Dominic Hart

On the morning of Jan. 18, emergency response training exercises were held at the fuel terminal (Air National Guard). The exercise included a simulated fuel tanker leak, application of foam and a simulated rescue.

2000 "Spinoff" publication now available

Ames' Commercial Technology Office (Code DK) has recently received a shipment of the year 2000 issue of NASA Spinoff.

For the past 27 years, this magazine has been published annually to promote NASA R&D efforts and commercialization success stories. The application of NASA technol-



"It is with pleasure that we present Spinoff 2000 to make you aware of our Commercial Technology program. Our efforts will continue to enhance all of our lives and contribute to the economic success of the U.S. industry in a very competitive global environment."

--Dr. Robert L. Norwood, Director, Commercial Technology Division, NASA Headquarters

ogy helps the U.S. meet international competitive challenges and stay at the leading edge of technical innovation. The return benefits—"spinoffs"—represent a significant dividend to the taxpayer and the nation's investment in aerospace research.

Spinoff 2000 is an instrument of the NASA commercial technology program and documents the outcome of the agency's spinoff successes. It is a true measuring rod of NASA's commitment to transfer technologies to the private sector.

In addition, this year's edition highlights the activities of the Ames Commercial Technology Office. There are three main categories in the publication: aerospace research and development; commercial benefits and technology transfer and outreach.

To obtain a copy of the Spinoff 2000 issue, send an email to Charissa Kolar at: ckolar@mail.arc.nasa.gov.

SAFETY SNAPSHOTS



This feature is one in a series intended to inform the Ames community about facets of Ames' Safety and Environmental programs.

Ionizing Radiation

PROFILE

Ionizing radiation is odorless, colorless, tasteless and hazardous. The images presented by the media are of giant mutant spiders and mushroom clouds. Is fear justified? Not when radiation is used responsibly. At Ames, we use radiation in life science research to observe processes at the cellular level. We use radiation in the industrial setting to examine welds with x-rays; to measure the density and moisture content of soils; to detect smoke from fires and activate fire alarms and to measure bone density of human research subjects. Elsewhere, in the medical environment, radioactive materials are used to diagnose and treat disease. Radiation should not represent a source of fear, but rather a benefit to society.

CLOSEUP

Patrick Muldoon, radiation safety officer for Ames, says that the most important methods for personnel to protect themselves from radiation used at the center are to obey posted signs and to be trained and knowledgeable in the use of radioactive materials and radiation to the level their job requires.

The Ames health physics program provides oversight of radiation use and over 10 different courses, from radiation safety awareness for ancillary employees who may only empty the trash in a radiation lab, to highly technical classes for radiation research personnel who use radiation on a daily basis.

What is the worst-case radiation accident risk at Ames? At Ames, and in most industrial environments, the procedure with the greatest risk for high-level radiation exposure is high energy industrial radiography. In industrial radiography, trained personnel use a strong radiation source to obtain an image of a weld or piping or flat-plate steel, similar to the manner in which a doctor obtains a chest x-ray. The main difference is that the thick iron and steel of the pipes or support materials require much stronger x-rays to penetrate--x-rays that are dangerous to personnel close to the source. The radiographer uses the shielding of buildings and distance from the source to protect himself and other involved personnel.

Boundaries are established at a safe distance from the source and posted with danger signs and flashing lights, usually after business hours. Guards are stationed within sight of these boundaries to prevent entry into the marked radiation areas. Personnel need to realize that violating these boundaries, for whatever reason, poses a risk of severe injury and possible expulsion from the facility. Always obey all hazard postings at Ames, radiation or otherwise!

And finally, to answer the most frequently asked question regarding radiation – no, it does not make you glow in the dark!

For more information about Ames' radiation programs, go to Ames' Health and Safety manual, AHB 1700.1, chapter 7 on the web, or browse radiation safety courses at: <http://q.arc.nasa.gov/qh/classes/physics/index.php>. Employees are encouraged to visit the Health Physics training site to learn more about radiation and its safe use.

Energy Conservation & Volunteerism

Ames employee volunteers at local, robotics event

On Dec. 3, 2000, the First LEGO League (FLL) held its northern California state tournament at the San José State University event center. The competition was sponsored by Adept Technology, Inc. and in-



Austin Schuh (left) and Ramin Morshed (right) during the competition run.

cluded 70 teams from northern California. The goal of the FLL is to inspire elementary school children in the field of robotics, a growing field of interest for NASA. The approach is to provide materials and opportunities for children to compete and relies heavily on the volunteer efforts of teachers and parents.

At the competition, there were 12 judges from local companies and universities. The judges interviewed the teams on different aspects of their design experience to evaluate their performance in 12 award categories. Two teams (TigerBots and TigerBots2) were comprised of Los Altos Oak Elementary School students and coached by volunteer parent Dr. Michael Schuh of the Advanced Aircraft and Powered Lift Branch at Ames. One of the Oak teams, TigerBots2 (comprised of sixth graders Austin Schuh, Zach Dougherty, Ramin Morshed, Vinh Nguyen, Sean Chen and fourth grader Jeremy Chen) came in 3rd on points. The other team, TigerBots (comprised of fifth graders Travis Schuh, Katherine Johnson, Sean Craig and sixth graders Mike Hess, Akhil Gopal, and Kyle McDonald) won 10th place. The TigerBots2 team also received the innovative design award. The description for the award states: "innovative designs represent new approaches to problem solving... This award goes to the team which demonstrates the most unique and interesting designs, reflecting 'out-of-the-box'

thinking." The winning team embraced risk and people who see its robot work typically say "Oh, cool!"



photo by Wyn Schuh

From left to right: Travis Schuh, Katherine Johnson, Sean Craig, Mike Hess and Akhil Gopal with Michael Schuh of Ames in the background, practice-running the robot.

The award included a 10-inch tall trophy made completely out of LEGO pieces. Visit the web site at: <http://www.legomindstorms.com/fll> for information on the FLL program. For more information on FIRST, including their high school level robotics competition, visit <http://www.usfirst.org>

BY MICHAEL J. SCHUH

California energy crisis threatens cost increases and possible blackouts

Just hours prior to the Jan. 17 wave of rolling electrical blackouts that hit the Pacific Gas and Electric (PG&E) service area in California, Ames senior staff heard Center power experts predict that Ames could soon face a more dire situation, if the state's energy situation continues to deteriorate.

"The U.S. Department of Energy could direct Ames and other federal facilities in California to cut energy use to a much greater extent than we have cut usage so far since the beginning of this crisis," said Steve Frankel, chief of the Plant Engineering Branch. Following the senior staff meeting, Code J management tasked Frankel with dealing with Ames' energy crisis issues.

If you believe costs are due mainly to wind tunnel and other large institutional facility costs, think again. Approximately 80 percent of Ames' annual energy usage is for everyday office and related purposes, not for large facilities. Increases in costs for

power that do fall on large Ames facilities can, in large measure, be passed along to Ames' customers — the benefiting end users. However, office and other everyday power costs CANNOT be passed to others, but must be paid through the base operating budget.

"We absolutely need to conserve electricity and power for the good of Ames as well as the people of California. Everybody on Ames grounds needs to be diligent in saving energy," urged Ames Center Director Dr. Henry McDonald.

A few days before the rolling blackouts hit California, George Sutton of the Electric Power Office and Frankel sent a joint memorandum to Ames staff stating, "We do NOT expect a blackout at NASA Ames, but we must voluntarily reduce our electricity usage. When not in use, please turn off lighting, computers, printers and appliances, except as required for health, safety and

security."

Frankel will chair a committee to develop a comprehensive plan for coping with the energy crisis. One objective of the committee is internal education and information gathering. Some facts being ascertained are costs (who are the big energy users?); and what are the real and potential impacts. The committee will also develop an energy conservation plan and procedures for an orderly power shutdown.

Prior to the California energy crisis, Ames had already instituted a number of energy conservation measures, including more efficient lighting, off-peak use of electricity by major research facilities and a solar demonstration project on the roof of Bldg. N245. Ames has reduced energy consumption by 20 percent since 1985.

As it stands now, by agreement with the Western Area Power Administration (WAPA),

continued on page 7

Parts and equipment quality assurance

Ames employees have access to an easy-to-use system for information about parts, equipment, or processes that could fail or cause a safety hazard. This program, the Government-Industry Data Exchange Program (GIDEP), is a joint effort by industry and government. NASA has been a major participant since the inception of the program, since mission success is intimately linked to the quality and reliability of each and every component of mission-critical equipment.

Ames Quality Assurance and Systems Safety groups encourage wider use of GIDEP tools by design engineers, reliability engineers and calibration technicians, in fact, by anyone working on Ames projects. NASA Procedures and Guidelines (NPG) 8735.1 describes how GIDEP should be used during design development and operations to identify and avoid parts that may cause critical failure. GIDEP routinely provides parts list batch reports for projects such as Space Station experiment modules.

David Walton, Ames' GIDEP administrator, reviews newly issued alerts and forwards them to organizations with an identified need to know. He encourages employees involved in design and planning to let him know what type of information they need. Contractors who design and build prototypes and equipment are required by NASA policy to screen their parts lists through GIDEP; however, they sometimes fail to do so. When this happens, resulting problems may cause delays if the equipment is found to contain nonconforming parts.

GIDEP provides access to a wide range of technical reports and documents, organized into these general categories:

- engineering: quality assessment, engineering test reports, nonstandard parts data, specifications and other engineering data, with related energy and environmental information;
- failure experience: objective failure

reports and notifications of nonconforming parts, components, chemicals, processes, materials, safety and hazardous situation lessons learned;

- metrology: calibration procedures and technical manuals for test and inspection equipment and related engineering information;

- products: discontinued or redesigned parts, components and materials, along with alternate sources;

- reliability and maintainability (R&M): Field performance and failure test data for parts, components and subsystems along with related theory and methods;

- urgent data request: direct queries from GIDEP members needing technical information or experiencing technical problems to the GIDEP community; shared suggestions and solutions. This opportunity for personal contact is described in the GIDEP program summary as the most important aspect of GIDEP.

Recent workplace equipment alerts include:

- unmarked and possibly counterfeit aircraft fittings -- five were found at Ames and removed from stock;

- high-pressure gas cylinders with low-pressure valves -- 245 cylinders in Ames stores stock were checked and arrangements were made with suppliers to check empty cylinders scheduled for refill;

- poorly-designed fire extinguishers (a cylinder exploded and caused a fatality in August 2000, not at Ames)--the fire marshal checked Ames' cylinder inventory and determined that none of these cylinders are in service at Ames.

GIDEP also provides access to safety information useful outside the workplace. In 1999, there were over 900 products recalled in the U.S. for safety reasons. For example, "Hot Links" lead to the Consumer Product Safety Commission or to safety alerts. These public sites list recent recalls -

power strips with undersize wiring, battery packs with cracked caps, eye wash solution contaminated by a hazardous chemical in the label, cookies with unlisted allergenic ingredients such as dairy and egg white and many unsafe toys.

To access GIDEP public information, log on to <http://www.gidep.org>. To obtain a password to access controlled files available to NASA, click on "how to join." Open the application link and print the GIDEP "user authorization form." Fill out the form, then call the Ames GIDEP administrator at ext. 4-5134 for Ames authorization and directions.

The electronic parts information management system (EPIMS) is a web site maintained by Goddard Space Flight Center as an additional quality assurance resource for electronic parts. EPIMS manages project parts lists and related information for the context of parts lists, such as directories of organizations, projects, systems and Alerts. For more information and access to uncontrolled data, go to the EPIMS home page at: <http://epims.gsfc.nasa.gov>. Any employee listed in Ames' X.500 directory may obtain access to the controlled databases by submitting the on-line request form.

NASA's lessons learned information system (LLIS) is a recently developed tool to identify problems and avoid repetition of past failures and mistakes. Ames employees and approved contractors may access reports through the easy-to-use search function at: <http://llis.nasa.gov>.

To learn more about quality assurance services available through QS, contact the mission assurance office at ext. 4-5301 or visit the web site at: qs.arc.nasa.gov.

BY ED BEATTY, SYSTEM SAFETY;
DAVID WALTON, GIDEP ADMINISTRATOR AND RUTH MARINER, SAFETY AND ENVIRONMENTAL TRAINING

Turn those computer systems OFF!

Imagine the following scenario: upon leaving the office, Joe gets into his car, which has been idling since he arrived in the morning, and heads home. Once there, Joe enters his empty and well-lit house—the lights are on, of course—to the familiar sound of the television. He slides a frozen pizza into the hot oven, which he always keeps set at a blazing 425 degrees, and as he steps into a shower that's been running all day, Joe smiles and thinks to himself, "I'm a smart guy. Nothing I own will ever wear out because I leave it running all the time."

Such reasoning is ridiculous, but thousands of computer users follow the same logic when they choose to leave their PCs powered on at all times. The fact is that

every component in your system consumes electricity. An average computer monitor, for instance, consumes an average of 130 watts per hour. If that monitor runs ten hours a day for 250 days of the year, it will eat up 325 kilowatts annually. Leave that same monitor running around the clock, however, and it will consume 1,139 kilowatts per year. At a cost of approximately 7 cents per kilowatt, that adds up to an extra \$57 per year on your electric bill.

If you're concerned that turning an electrical device on and off reduces its lifespan, don't be. Take the hard drive as an example. People often claim that the startup process damages hard drives. "That's not true," says Richard Van Dyke, senior man-

ager of product marketing engineering for Maxtor. "Before you have started your hard drive for the first time, samples of that drive have already gone through thousands of start/stop cycle testing—approximately 50,000 minimum for most hard drive companies," Van Dyke says.

"The results of these tests conclude there is no risk to shutting down your PC every night before going home," he states.

Here's the bottom line: leaving your system turned on at all times won't extend the life of the equipment. It just wastes electricity.

BY JEFF DODD,
SMART COMPUTING MAGAZINE, NOV 2000
(REPRINTED BY PERMISSION)

Ames will host 10,000-plus California students during JASON project

Hawaiian volcanoes and life forms will be highlights of 50 interactive satellite telecasts that more than 10,000 California students will attend Jan. 29 through Feb. 9 at Ames.

Students will talk live by satellite with scientists and students who are studying volcanoes and the kinds of life that live in lava tubes in Hawaii. These investigations are part of a big educational effort, "JASON Project XII: A Living Laboratory." Two broadcast sites will be the Hawaii Volcanoes National Park and the Little House on the Lava, both on the big island of Hawaii. A third broadcast site is the Kilauea Point National Wildlife Refuge on the island of Kauai.

"Students on location and viewers around the world will see lava flowing out of a Kilauea volcano vent, through a lava tube and into the ocean," said science teacher John Colombero, Ames' JASON project coordinator. "This particular lava flow has been active since January 1983 and travels about 7 miles through a lava tube with very low temperature loss."

"The JASON broadcast gives students the opportunity to see their peers participate in real research as it actually happens," said Thomas Clausen, education officer at Ames. "The teachers and students participating in JASON have been preparing for their visit to Ames since last fall, learning about Hawaii and its unique geology and ecosystems."

During the broadcasts, students in grades 3 through 9 will be able to chat with scientists, researchers and "Argonauts." Argonauts are students and teachers selected by the JASON Project to travel to JASON expedition sites. Ames is one of 38 JASON "primary interactive network" sites located across the nation and in Bermuda, Mexico and the United Kingdom as well as other countries.

Worldwide, JASON officials expect about



Scenes from last year's "JASON XI: Going to Extremes" activity event, which was attended by over 10,000 students and teachers from San Francisco Bay Area local schools attended.



strations and will offer a Kilauea volcano exhibit. USGS will give each teacher a rock

sample of Hawaii's Loihi, an island still forming beneath the ocean's surface. These programs will repeat daily during JASON from 9:45 a.m. to 1:45 p.m.

Founded by international explorer and RMS Titanic discoverer Dr. Robert Ballard, the JASON Project incorporates cutting-edge technologies, a multi-disciplinary curriculum, professional training for teachers and Internet communications within a comprehensive learning program.

750,000 students and teachers to take part in the program. Many other youths also will participate

via the Internet at: <http://www.jasonproject.org>. The JASON Internet site includes "chat sessions" with scientists, a digital lab that provides experiments students can do on-line and other information. In addition, teachers can manage their students' class work with the JASON website.

NASA Ames is sponsoring an Argonaut, ninth grader Sarah Beth Walker of Nevada Union High School, Grass Valley, CA. She will take part in the broadcasts from Hawaii.

In Bldg. 583C at NASA Ames, students also will get hands-on experience in solving problems and will participate in a scavenger hunt. In addition, the Monterey Bay National Marine Sanctuary and the Marine Advanced Technology Education Center, both of Monterey, CA, will provide an interactive watershed exhibit that illustrates the water cycle. United States Geological Survey (USGS), Menlo Park, CA, scientists will conduct hands-on seismographic demon-

strations and will offer a Kilauea volcano exhibit. USGS will give each teacher a rock sample of Hawaii's Loihi, an island still forming beneath the ocean's surface. These programs will repeat daily during JASON from 9:45 a.m. to 1:45 p.m.

BY JOHN BLUCK

VPP STAR Tip:

"At VPP sites, meaningful and active employee involvement helps ensure that, every day, the site's protective systems operate successfully and employees understand their essential roles within these systems."
...Federal Register 65:45649-45663

-- Margaret Richardson, in *Preparing for the Voluntary Protection Programs*, Copyright © 1999 by John Wiley & Sons, Inc. Reprinted by permission of the publishers.

Aerospace & Energy Conservation

Ames honors aerospace accomplishments; TGIR recipients —Center sweeps 7 of 12 awards at recent annual ceremony

The center's Aerospace Directorate, code A, held a rousing celebration at the Visitor Center just before the recent holidays to honor seven Ames teams and recognize a truly astounding accomplishment. Each of the teams had been singled out in a ceremony held earlier in the year at Marshall Space Flight Center and were presented with a prestigious "Turning Goals Into Reality" (TGIR) award. In each case, the awards were given to recognize exemplary work in support of the nation's aerospace program throughout the course of the entire previous year.

The Turning Goals Into Reality awards were founded in 1997 to recognize major accomplishments by NASA teams and their industry and academic partners in aerospace and aeronautics research on an annual basis. The awards focus on the three program pillar goals and ten pillar objectives established by NASA's Office of Aerospace Technology (OAT) to guide its stewardship of the nation's aerospace research mission.

"I am delighted with the success of our center in this agencywide TGIR awards program," said Skip Fletcher, Ames aerospace director. "It reflects well on the technical accomplishments of our staff and their focus on mission-related programs and projects. I look forward to Ames continuing this success in the 2001 TGIR awards program."

The three program pillars established by OAT and recognized during TGIR are global civil aviation, revolutionary technology leaps and advanced space transportation. During

the TGIR 2000 awards ceremony, a total of twelve awards were given with teams from Ames receiving seven.



photo by Tom Trower

The Turning Goals Into Reality (TGIR) awards celebration held this past November at the Visitor's Center.

In global civil aviation, Ames teams received four awards. The aviation safety award was given to the fatigue countermeasures program research team for their work developing and evaluating procedures to reduce pilot fatigue due to "jet lag." The team's findings have been reported to Congress, the Federal Aviation Administration (FAA) and the aviation industry.

The tiltrotor noise abatement team, in conjunction with Langley, received the aviation noise reduction award. Procedures developed by this team have reduced the noise signature of tiltrotor aircraft which hold the promise of minimizing airport congestion due to the aircraft's small runway requirements.

In an effort to reduce airport delays, the collaborative arrival planning research team have developed the Collaborative Arrival Planner (CAP) which helps airlines and air traffic control personnel in the nation's airport towers accurately predict and manage airplane arrivals and departures. Their efforts were recognized with the aviation system throughput award.

The affordable air travel award was given to the airborne information for lateral spacing research team who worked in collaboration with their Langley counterparts. Their research will make it possible to accurately track the position of all aircraft, thereby substantially reducing the likelihood of one aircraft making an incursion into another's landing path.

The Slender Hyper-Aerothermodynamic Research Probes (SHARP) high-temperature materials flight test team were honored with the access to space award for their research breakthroughs in the area of ultra high-temperature ceramics.

Finally, the NASA intercenter systems analysis team (ISAT) comprised of members from Ames, Langley, Dryden, Glenn and Marshall along with industry and academic partners were awarded the Administrator's Award. ISAT is credited with developing analytical tools that determine a program's technology readiness level and their contribution to meeting NASA's mission goals. This is the second Administrator's Award for Ames; CTAS won during the first annual TGIR awards ceremony in 1999.

The TGIR 2000 awards were held at Marshall, in Huntsville, AL. The TGIR 2001 awards are scheduled for May 14-18, 2001 in Washington DC.

BY JONAS DIÑO

California energy crisis threatens cost increases and possible blackouts

continued from page 4

the largest volume provider of Ames' electricity, the center will shut down wind tunnels during a phase 3 electricity crisis when rolling blackouts have been implemented by PG&E. A phase 3 crisis is when the state power reserve levels fall below 1 percent. Estimates are that the Center is also looking at a substantial increase in its electricity and natural gas costs.

At the beginning of the California energy crisis, Ames temporarily stopped operating the 11ft. by 11ft. Unitary wind tunnel. Managers implemented a "shifted shift" plan, instituting two shifts to operate the tunnel from 8:30 p.m. to 5 a.m. and 4:30

a.m. until 1 p.m., according to Sutton. "By monitoring a PG&E website that tracks power usage and by receiving e-mail updates that give the status of California power levels, Ames engineers have voluntarily curtailed the running of the tunnel when electricity use is peaking," Sutton said.

Before a complete Ames energy plan is developed, common sense actions employees can take include turning off lights when nobody is present (and certainly overnight), and also turning off computers and other electric appliances when they are not in use (and, again, absolutely over

night).

Ames power experts say that, despite what you may have heard, it is not true that it takes more energy to turn lights and computers on and off than to leave them operational all the time. Further, it does not harm electrical appliances to turn them on and off to a reasonable degree.

Center management asks everyone to begin immediately exercising prudent energy conservation procedures and to inform their colleagues of the need to do likewise.

BY JOHN BLUCK

NASA researcher validates discovery of planets' gravitational "dance"

A team of planet hunters revealed on Jan. 9 a discovery that will help researchers better understand planet migration and how planets' gravitational pulls influence each other. The discovery was announced at the American Astronomical Society meeting in San Diego.

The planet sleuths from the University of California at Berkeley, NASA and other institutions discovered a planetary pair locked in what appear to be "resonant" orbits, moving in synch around their star with orbital periods of 60 and 30 days. Because of the 2-to-1 ratio, the inner planet goes around the star twice for each orbit of the outer one. They gravitationally tug on each other to maintain this synchronicity.

"The resonance between the two orbiting planets is among the most exciting planet-detection discoveries to date," said Dr. Jack Lissauer, an Ames scientist. A "resonance" is similar to the harmonic vibration produced by plucking two notes on a stringed instrument. This gravitational pas de deux between the two planets is common among moons and asteroids, but not planets. The axes of the two newly detected planets' elliptical orbits also appear to be nearly perfectly aligned.

Lissauer and State University of New York at Stony Brook graduate student Eugenio Rivera used a numerical model to demonstrate the stability of the nearly-twin orbits around the star known as Gliese 876,

a dim red dwarf 15 light years from Earth in the constellation Aquarius. "Questions about planetary migration and gravitational influence are still very much unsolved," Lissauer said.

"This discovery is significant for several reasons," said Lissauer. "This is the first extra-solar planetary system to show a strong resonance. It also is the smallest star known to have any orbiting planets, much less two," he added.

The two gravitationally linked planets have masses of at least 0.5 and 1.8 times the mass of Jupiter, he said. The inner planetary companion was not recognized at first because the orbital resonance allowed the pair of planets to masquerade as a single planet with an elongated orbit.

The two orbiting planets are located relatively close to each other, within 0.08 astronomical units (the distance between the Earth and the sun) of each other, less than one-third of the distance from the Earth to its nearest neighbor, Venus.

In our solar system, the only known resonance between a pair of planets involves Pluto, orbiting the sun twice for every three times Neptune circles the sun.

Besides Lissauer, the planet-hunting team that discovered the system includes Drs. Geoff Marcy and Debra Fischer of the University of California at Berkeley; Dr. Paul Butler of the Carnegie Institution of Washington and Dr. Steve Vogt of the University

of California at Santa Cruz.

Though significant and unusual, the discovery will require more modeling before researchers can determine what the resonance they have discovered actually means.

The team based both sets of its conclusions on 6 years of precise Doppler measurements and observations made at the Keck I telescope atop Mauna Kea in Hawaii and the Lick Observatory telescope in California. The research is part of a multi-year project to look for planets among 1,100 stars within 300 light years of Earth. The project is supported by NASA, the National Science Foundation and Sun Microsystems.

More information about these discoveries is at: <http://www.exoplanets.org>.

BY KATHLEEN BURTON



Rotorcraft center gets prestigious Vice President's award

continued from front page

multi-disciplinary work covers crash-worthiness design tools, fail-safe transmission gears and integrated design/manufacture.

The NRTC partnerships are based on streamlined operations via funded cooperative agreements implemented through NASA. An interagency memorandum of agreement links NASA with the other government partners. The streamlining reduces the time required to go from an innovative idea to a funded technological program from years to months.

The NRTC government office at Ames is staffed by NASA, the Army, Navy and FAA. The director, Andy Kerr, is an Army employee; the deputy director, the current author, is a NASA employee. NASA is the host agency for the office stie and for fiscal/

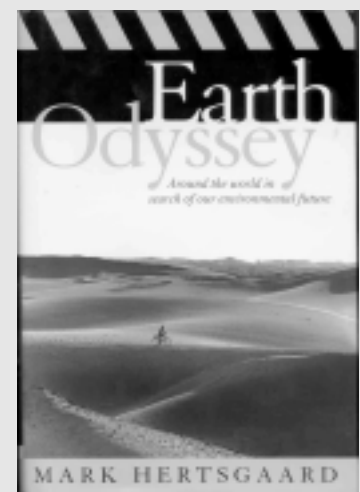
procurement activities. NRTC work is very closely aligned with the NASA aerospace technology goals for aviation safety, design tools and noise reduction.

Some NASA/Army projects at Ames are linked to RITA (and therefore NRTC). A prime example is the RASCAL's onboard equipment for the health and utilization monitoring system. RITA-contributed components gather data while the helicopter flies. The data give a much better idea of when to replace high-stress components. This contributes to developing commercial systems and standards to increase safety and decrease cost.

BY CHARLES MORRIS



Lecture set



On Feb. 8, Mark Hertsgaard, travel writer, will lecture on his book "Earth Odyssey: Around the World in Search of Our Environmental Future." Hertsgaard traveled the world, talked to people along the way and has come to some interesting conclusions about the future of our world.

Join in at 11:30 a.m. in Bldg. 3, the Northwing Room, for this, the last in Code QEs brown-bag series on sustainability.

For more information, contact Julie Quanz at ext. 4-6810 or e-mail her at: jquanz@mail.arc.nasa.gov

Calendar & Classifieds

Event Calendar

Model HO/HO3 Railroad Train Club at Moffett Field invites train buffs to visit & join the club in Bldg. 126, across from the south end of Hangar One. Work nights are usually on Friday nights from 7:30 p.m. to 9:30 p.m. Play time is Sunday from 2 p.m. to 4 p.m. For more info, call John Donovan at (408) 735-4954 (W) or (408) 281-2899 (H).

Jetstream Toastmasters, Mondays, 12 noon to 1 p.m., N-269/Rm. 179. Guests welcome. POC: Samson Cheung at ext. 4-2875 or Lich Tran at ext. 4-5997.

Ames Bowling League, Tuesdays, at 6 p.m. at Palo Alto Bowl. Bowlers needed. POC: Mina Cappuccio at ext. 4-1313 or Carmen Park at ext. 4-1215.

Ames Ballroom Dance Club. Tuesdays: Rumba 1/30, 2/6, 2/13, Bolero 2/20, 2/27, 3/6, Salsa 3/13, 3/20, 3/27. 3 levels of classes, from Beg. to Int., 5:15 p.m. - 6:45 p.m. Classes in building 944, the Recreation Center. Women dancers are especially encouraged to join. POC: Helen Hwang at: hwang@dm1.arc.nasa.gov.

Ames Diabetics (AAD), meet twice a month on first and third Wednesdays, 12 noon to 1:00 p.m., in the Ames Café, far corner of the Sun room. Peer support group that discusses news that affects diabetics, both type I and II & exchange experiences in treatment & control & most importantly, help each other best cope with the disease. No cost, sales people, leader & medical professionals. Attend a meeting or call Bob Mohlenhoff at ext. 4-2523, or email him at bmohlenhoff@mail.arc.nasa.gov.

Ames Child Care Center Board of Directors Mtg, Every other Thursday (check website for meeting dates: <http://acc.arc.nasa.gov>), 12:00 noon to 2:00 PM, N269, rm. 201. POC: Katharine Lee, ext 4-5051.

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

Hispanic Advisory Committee for Employees, Feb 1, 11:45 a.m. to 12:30 p.m., N-241/Rm 237. POC: Mary R. Valdez, at ext. 4-5819.

Nat'l Association of Retired Federal Employees, (NARFE), San Jose Chapter #50, Mtg, Feb 2, at Hometown

Buffett, Westgate Mall, 4735 Hamilton Av, San Jose. Prog. & bus. mtg. at 9 a.m., followed by lunch, \$6.27, in a reserved area. Program starts at 9:30 a.m. followed by lunch. POC: Mr. Rod Perry (650) 967-9418 or NARFE 1-800-627-3394.

Ames Contractor Council Mtg, Feb 7, 11 a.m., N-200 Comm. Rm. POC: David Lawrence at ext. 4-6434.

Ames Asian American Pacific Islander Advisory Group Mtg, Feb 15, 11:30 a.m. to 1 p.m., N-237/Rm. 101. POC: Daryl Wong, ext. 4-6889 or Margaret Salas, ext. 4-6755.

Ames Amateur Radio Club, Feb 15, 12 noon, T28-N (across from N-255). POC: Michael Wright, KG6BFB, at ext. 4-6262. URL: <http://hamradio.arc.nasa.gov>

NFFE Local 997 Union General Mtg, Feb 21, noon to 1 p.m., Bldg. 19/Rm. 2017. Guests welcome. POC: Marianne Mosher at ext. 4-4055.

Native American Advisory Committee Mtg, Feb 27, 12 noon to 1 p.m., Ames Café. POC: Mike Liu at ext. 4-1132.

Ames Classifieds

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

3 bd/1.5 ba, 2-story townhouse on Luz Avenue, San José. Freshly painted inside, dishwasher, gas heat, w/w carpeting, outside child play area/large patio. 1 car port. Easy access to H101/680/280. \$295K. Azucena Guzman (408) 559-2881.

Live by the ocean! Manufactured home in Pacifica. One bedroom, yard (pets OK), swimming pool in park. 42K. Minutes to SF or to San Bruno Caltrain station. Call (415) 826-3041.

NRC senior research associate & spouse seek a furnished 2 bdrm apartment or house, Feb 1 to end July 2001. Interested in buying/leasing a cheap, used car for this period. Contact Sophie Wuerger, email to: s.m.wuerger@keele.ac.uk or by phone (+44 1782 752299 or +44 1782 584214) or by fax (+44 1782 583055).

Room for rent in Sunnyvale. Part-time roommate desired - rate negotiable. Avail. 1/15/01. (female preferred/no pets) 2bd/1ba apt. near El Camino off Mary. Barrie Anne (408) 736-8961.

Looking for a room to rent. I'm quiet, clean & private. Close to AMES but not necessary. Please contact Rose (408) 292-4707.

Transportation

Mini motor-home, self-contained. 96K mls on '87 Ford Econoline engine. \$14K or B/O. Call (415) 826-3041.

'89 Toyota Tercel (gold); 197K mls. Needs engine work. Have records of all repair work done on the car. \$1,000 or B/O. Tim (408) 378-0967.

'92 Ford Explorer XLT 4WD. Excellent condition, 92K mls, 5 spd manual, new tires, brakes, shocks. Green/tan exterior, tan interior. \$7,500 or B/O. Call (510) 796-4311.

'95 Mercury Tracer wagon - Trio edition, 67K mls, single family owner, excellent condition, CD, A/C, pwr windows/locks, cruise control, brand new tires, \$6,600, Herb (408) 246-3616.

'96 Nissan 240SX 60K mls. Black, fully loaded. Exc. cond. Must sell to qualify for home loan. Asking \$12K or B/O. Crystal (408) 768-3680 or Dani (707) 428-1484.

'97 Dodge Grand Caravan LE, 26K mls, 3.8L engine, alloy wheels, captain chairs, CD player, dual air, luggage rack, power drivers seat, rear heater, sunscreen glass, white, asking \$18,500. Robert (650) 858-2630.

'97 Saturn SC2, 42K mls, drk grn w/ tan leather interior, 2 dr, man trans, CD, alloy wheels, 1.8L, \$8,500 or B/O. Call (650) 917-6141.

Miscellaneous

Sailboat 1/4 partnership. 25' Pacific Seacraft in Fort Mason marina (San Fran). \$4K or B/O. Call (415) 826-3041.

Sega Dreamcast (used once) \$150; chrome towel warmer (used once) \$100; security camera/monitor (still in box) \$75; light wood coffee table (exc cond) \$50. PJ (650) 599-9829.

Girl's canopy bed, white, w/canopy framework, pink canopy & bed rails. (You add mattresses) \$70. Boy's Schwinn mountain bike, 20" wheels, 18 speed, gd cond., \$65. David (408) 296-3326.

Fitness trampoline. Foldable, still in box. \$200. Call (415) 826-3041.

Golf clubs, w/graphite shafts: irons, 3 through PWS, 7. Woods, 1, 3, 5, 7. Also, Ping I-2 sand wedge, w/steel shaft. All in excellent condition. Head covers included. \$350. Call (408) 374-2369.

15' Mahogany FJ, cold molded in Holland by Dusseldorf, recently refinished, Procter mast, Hyfield levers, Harkin blocks and cleats and tilt trailer. Light and agile and ready to sail. Would make a great racer or just for fun, \$1,195 or B/O. John (408) 737-8209.

4 x 4 wood and glass coffee table \$25 or B/O. Call (408) 777-8048.

Lifecycle 6000 stat'y exercise bike, just like the ones @ Ames gym. Gr. cond. \$250. Call (650) 949-0793.

Indoor sauna by Ca. Cooperage Hot Tubs Co. Dimension L 8' W 6' H 7'. Orig. price \$6,500, used several times only, must sell, nd space. \$3,500 or B/O. Andrea (415) 566-0406.

Compaq demonstrator needed for Moffett Field Exchange 10 hrs per month@ \$9 per hour. Call 1 (877) 954-8803, ext. 108.

2 dumbbells w/removable weights + 70 lbs of plates \$20 for all. Michael (408) 247-1125.

Rollerblades. XCS women's size 7, 72mm polyurethane wheels. Used once. Comes with wrist guards, elbow pads and knee pads. \$35 or B/O. Julie jlevri@yahoo.com or call (650) 248-5755.

HealthRider fitness machine, deluxe model, exc. condition, \$125. Call (650) 947-8124 eves or weekends.

Jogging stroller/bicycle trailer w/computer. Seats 2 kids, with rain cover and detachable bicycle towing bar. Computer tracks speed and mileage, etc. \$80. Like new condition. Nans (510) 790-3506.

Ames Retirements

Name	Code	Date
Theodore E. Bunch	SSX	1-27-01

San Francisco Symphony at Davies Symphony Hall (SF), two tickets, 1st tier, Sat. Eve. April 28, \$48 each, Call (408) 736 3642.

Vacation rental

Lake Tahoe-Squaw Valley townhse, 3bd/2bd. View of slopes, close to lifts. Wkend \$490, midwk \$180 nite. Includes linens, firewood. Call (650) 968-4155, DBMcKellar@aol.com

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

Ames public radio

1700 KHz AM radio -- information announcements & emergency instructions, when appropriate, for Ames employees.

Carpool

Carpool wanted from Solano county (Fairfield/Benicia), to Ames. Willing to pick up riders enroute along H680. Days of week & times negotiable. Crystal at ext.4-6704 or email at: cwillingham@mail.arc.nasa.gov

Astrogram deadlines

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

Deadline	Publication
Mon, Feb 5	Mon, Feb 12
Mon, Feb 19	Mon, Feb 26
Mon, Mar 5	Mon, Mar 12
Mon, Mar 19	Mon, Mar 26
Mon, Apr 2	Mon, Apr 9

Ames Kepler mission selected as Discovery program candidate

continued from front page

To measure small changes in brightness, the Kepler mission will hunt for planets using a specialized one-meter diameter telescope called a photometer that will be

might be alone."

The Kepler mission will view an amount of sky about equal to the size of a human hand held at arm's length, or about equal



launched into orbit around the sun, away from the distorting effects of the Earth's atmosphere. The light meter in a camera is another form of a photometer.

The key technology at the heart of the photometer is a set of charged coupled devices (CCDs) that measure the brightness of hundreds of thousands of stars at the same time. CCDs are the silicon light-sensitive chips that are used in every TV camera, camcorder and digital camera today. Kepler will monitor many thousands of stars simultaneously, since the chance of any one planet being aligned along the line of sight is only about 1/2 of 1 percent.

"From monitoring 100,000 stars similar to our sun for 4 years, the Kepler mission team expects to find about 640 terrestrial planets," said David Koch of NASA Ames, the mission's deputy principal investigator. "If many planets are found, then life could be widespread in our galaxy. If few or none are found, then life must be rare, or we

in area to two "scoops" of the sky made with the Big Dipper constellation.

The Kepler mission team also includes researchers from 15 institutions in the U.S. and Canada. The industrial partner for development of the hardware is Ball Aerospace and Technologies Corporation.

NASA's Discovery program is designed to provide frequent, low-cost access to space for planetary missions and missions to search for planets around other stars. The selected science missions must be ready for launch before Sept. 30, 2006, and within the Discovery program's cap on each mission's cost to NASA of \$299 million.

More information about the Discovery program is available at:

<http://discovery.nasa.gov/>

Details about the Kepler mission are at: <http://www.kepler.arc.nasa.gov>

BY KATHLEEN BURTON



Editor's note

Changes to on-site mail-stop allotments for Astrogram allocations are made the same day they are received. However, it takes between one and three issues before that mailstop will receive its updated allotment. This is because the off-site printer collects three sets of labels for the next three Astrogram issues at one time. Retiree address changes are also made the same day they are received.

When the Office of Communication receives returned issues with "no forwarding address" or "forwarding address no longer in effect" stamped on them, that address is deleted from the database.

Please make sure you send us your address change if you wish to continue receiving the Astrogram. To submit an address change, either call the Astrogram office at: (650) 604-3347 or send an email to: astrogram@mail.arc.nasa.gov. Alternately, you can send a change of address request to:

NASA Ames Research Center,
Astrogram Office, DX:204-2
Moffett Field, CA 94035



National Aeronautics and Space Administration

Ames Research Center
Moffett Field, California 94035-1000

Official Business
Penalty for Private Use, \$300



FIRST CLASS MAIL
POSTAGE & FEES PAID
NASA
Permit No. G-27



The Ames ASTROGRAM is an official publication of the Ames Research Center, National Aeronautics and Space Administration.

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

We can be reached via email at: astrogram@mail.arc.nasa.gov or by phone at (650) 604-3347.

PLEASE RECYCLE
Printed on recycled and recyclable paper with vegetable-based ink.