

The Ames Astrogram

Communication for the Information Technology Age

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NASA Ames' technology to keep transit systems safe

A NASA-developed, environmentally friendly anti-icing fluid that can make railroad and commuter travel safer and more reliable during snowy conditions now is available for commercial applications.

Under license from Ames, Midwest Industrial Supply, Inc. of Canton, Ohio, has produced several commercial products that prevent the build-up of ice and snow on railways, providing a smooth ride for passengers and helping to eliminate transit system delays and shutdowns due to weather conditions.

"This anti-icing fluid, if applied before freezing conditions are encountered, will prevent ice from forming," explained Dr. John Zuk of Ames, one of the developers of the technology. "The fluid also can be applied to an already-frozen surface to melt the snow and ice," he said.

The environmentally friendly anti-icing fluid originally was developed by Ames researchers in the 1990s to replace highly toxic and non-biodegradable anti-icing fluids used in the aerospace industry. "Current aircraft anti-icing fluids are not environmentally friendly," Zuk said. "Ames' development, however, is an essentially non-toxic, totally biodegradable and non-corrosive material that improves travel conditions without polluting the environment."

"This remarkable material derived from the space program can significantly enhance products for railroad operations," said Robert Vitale, president of Midwest Industrial Supply (MIS), Inc. "Now, MIS is ready to offer several products that use NASA's fluid technology to free the railways and transit systems of ice and snow," he said.

The fluid can be pressure-sprayed, applied with a brush or poured, depending on the application. When a small amount of the fluid is sprayed on the surface to be protected, a very thin fluid film is formed. If applied before freezing conditions are encountered, the fluid will prevent rain or dew from freezing on the object and will melt fallen snow upon contact.

It also can be applied to melt pre-existing snow and ice, and it prevents refreezing of the object. One of the unique characteristics of the fluid is its strong resistance to the effects of gravity, which minimizes removal of the protective coat by rain, snow, wind or gravity-induced run-off.

"We have all been impressed with the results, and now the company is looking to expand the application of Ames' anti-icing fluid to other industries that face similar problems," said Vitale.

The Ames environmentally friendly anti-icing fluid potentially may be used on bridges, streets, runways, ships and boats, automobiles and even around homes, for sidewalks

and roofs. "Because the fluid is neither an acid nor a base, it will not corrode steel and reinforced concrete, so roadways and bridges can be treated safely with the fluid," said Zuk. "Similarly, vehicles will avoid the body-corrosion typically associated with the use of road salt," he added.

"NASA's commercial technology charter

is to transfer new technology developments to industry for commercial use," said Cathy Pochel, technology commercialization manager in Ames' Commercial Technology Office. "This project is not only an outstanding example of this objective, but directly benefits the public as well," she said.

BY VICTORIA KUSHNIR ▲

The JASON Project invites you to 'Frozen Worlds'

Put on a warm jacket and come on an icy adventure to explore the mysteries of the frozen world and its bizarre living creatures! Join Ames' Education Office and JASON Project on a virtual trip to the frozen worlds

and access to the JASON broadcast. In addition, they receive free membership to Team JASON online, a gated web community, as well as posters, maps and CDs.

This year, JASON's collaboration with RAFT



Students at a previous JASON event completing coral reef surveys in Ames' historic Hangar 1.

of the Arctic and Antarctic regions.

On Jan. 28 through Feb. 8, students will come to the Ames main auditorium to participate in a live interactive broadcast, working with real-time research data and the JASON expedition teams. Following the broadcast, students will go to historic Hangar 1 where Team NASA volunteers will help them engage in exciting activities about the Frozen World. Over 11,000 local students and teachers will participate in this year's JASON City event.

The mission of the JASON Project is to engage and excite students in the study of science. The standards-based curriculum offers students an integrated learning experience that utilizes satellite, microwave and internet technology. Teachers who participate in the Ames JASON training receive a free 250-page curriculum, video supplements

(Resource Area for Teachers) has been expanded, providing outstanding dividends for all participants. Through the collaborative efforts of RAFT and the JASON Project at Ames, the City of San José's Healthy Neighborhoods Venture Fund provided grant money. Part of this grant money is dedicated to increasing the enrollment of under-served students from San José schools, providing buses to the JASON event. These funds have made it possible for nearly 3,000 students from under served San José schools to participate in JASON for the first time.

RAFT is a non-profit organization whose mission is to support excellence in education. RAFT's support of the JASON Project includes preparing lessons, presenting workshops and donating curriculum materials for the Frozen World hangar activities.

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Center Briefs

All-terrain rovers may scale Mars' cliffs

New prototype robots are being developed by NASA researchers that can drive up steep hills and descend almost-vertical cliffs. Working alone or as a team, these autonomous robotic explorers may go where no rover has gone before--the cliffs of Mars.

Recent Mars Global Surveyor images suggest water outflows near cliff edges and the possibility of rich, water-borne mineral deposits that extend all the way to the cliff base.

"We know that some of the most exciting Mars science and history will be in very rough, currently inaccessible terrain. Getting to those hard-to-reach spots--navigating and exploring them--will require altogether new types of robotic vehicles," said Paul Schenker, supervisor of the Mechanical and Robotics Technologies Group at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., and principal investigator for the all-terrain explorer.

Satellites help researchers track carbon storage in forests

How much carbon is being 'absorbed' by forests in the Northern Hemisphere? NASA-funded Earth science researchers, using high-resolution maps of carbon storage derived from NASA-developed satellite data sets, suggest that forests in the United States, Europe and Russia have been storing nearly 700 million metric tons of carbon a year during the 1980s and 1990s.

Scientists hope to understand to what extent carbon is stored in the Earth's forests because of the need to account for the fate of the carbon released into the Earth's atmosphere in the form of carbon dioxide from fossil-fuel combustion. NASA's research will further understanding of the role that such 'sinks' play in sequestering carbon and the impact climate change has on agriculture, rangelands and forests.

Galactic hot gas arms point to vicious cycle

NASA's Chandra X-ray Observatory has recently revealed the aftermath of a titanic explosion that wracked the elliptical galaxy known as NGC 4636. This eruption could be the latest episode in a cycle of violence triggered by gas falling into a central massive black hole.

Chandra's images of NGC 4636 show spectacular symmetric arms, or arcs, of hot gas extending 25,000 light-years into a huge cloud of multimillion-degree Celsius gas that envelopes the galaxy. At a temperature of 10 million degrees, the arms are 30 percent hotter than the surrounding gas cloud.

Les Videll passes away

Leslie (Les) Videll, one of Ames' very first employees, passed away in San José on Dec. 17, 2001 at the age of 82 following a long illness. He retired from Ames in 1969 after 32-1/2 years with the center.

Videll began his career at Ames delivering mail. As one of the few employees at Ames

worked on a variety of aircraft from the U.S. Army, Navy and Marines, including the P-51 fighter, B-25 bomber, F-6F and F-7F and early jets such as the F-86 and F-94.

Among the highlights of Videll's career were three trips to Cape Canaveral, Fla., in the first days of the U.S. space program to



Leslie (Les) Videll, seen here wearing the dark suit in the center of the photo, passed away on Dec. 17 of last year. Videll retired in 1969 after 32 1/2 years of service. He is pictured here in the first staff group photo ever taken at the NASA Ames Research Center.

at the time, he was involved in nearly everything that went on at the center. After taking classes and getting certified, he worked as an airplane mechanic, then became crew chief on several sophisticated airplanes, including Ames' Learjet Observatory. Science observers used the aircraft's 11.8-inch telescope to discover a host of bright infrared sources and pioneer infrared astronomy. Videll also

watch some of the early manned launches. He was very proud of these opportunities to witness history being made, according to family members.

Videll is survived by his wife, Dorothy, of San José; two daughters, Mary and Karen; two sons, Clifford and Glen, three grandchildren and two great-grandchildren. Private services were held last month.

Ames Occupational illness/injury data for Dec. 2001

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

Data above are as of 1/10/02. May be subject to slight adjustment due to late reporting or new information in reclassification.

SAFETY SNAPSHOTS



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

Hazard Assessment for Personal Protective Equipment

PROFILE

Occupational Safety and Health Administration (OSHA) regulations require every employer to do a written assessment of workplace operations to determine the hazards present. The employer selects the correct protective equipment for each hazard, includes this information in the written assessment, and provides both the equipment and training on correct usage.

CLOSEUP

Hazard assessment and documentation may stand alone or be combined with other safety information. Laboratories should include it with their safety plan; shops and other areas can add the necessary information to their job hazard analysis. Including the employees in the assessment process delineated below will help identify the hazards and begin the training process. The steps to follow include:

- Identify the jobs or activities to be performed.
- Break the task down into several steps (one operation may have several activities and each activity may have several hazards).
- Identify the hazards associated with each step and the environment around the activity. Some examples of hazards are high noise levels, toxic chemicals, biological material, electricity and lifting heavy objects. Check the material safety data sheet for information.
- The risk and potential for injury or illness is related to the amount or level of the exposure, its frequency and duration. Consider the risk level in determining the PPE required.
- Determine what can be done to eliminate or control the hazards identified. If you can reduce or eliminate the hazard, the need for PPE will change. There are many ways to control hazards, including better design, and engineering and administrative controls.
- Where hazards still exist, use personal protective equipment to shield the worker. The PPE specific for the hazard must be identified. For example, a specific activity might be spraying solvent-based paint containing toluene on a one-foot high model. The PPE ensemble would consist of chemical splash goggles, 12-mil Viton gloves, a respirator with organic vapor cartridges with pre-filters and a disposable full body coverall. Alternately, for weed eating around the yard, the specific PPE ensemble might consist of closed toed shoes, long pants, ear muffs or ear plugs and safety glasses.

If skin absorption of a chemical is the hazard, identify the specific glove that will provide protection. Consult the glove manufacturer's literature for the correct recommendation, since no glove material protects against all chemicals. A link to several glove manufacturers is available on the QH web site located at: <http://q.arc.nasa.gov/qh/safety/gloves>. The same half-mask respirator that is used by painters cannot be used by welders; the correct filter must be used. Contact the Industrial Hygiene group at ext. 4-6295 for respirator evaluation.

The information in a detailed hazard assessment can be used to determine and document PPE, engineering controls, training requirements and potential exposures. For more information, go to chapter 33, Ames Safety and Health manual under safety at q.arc.nasa.gov. The OSHA web site is at: <http://www.osha-slc.gov/SLTC/personalprotectiveequipment/index.html>. You may also contact Stan Phillips at ext. 4-3530, or Janeen Robertson at ext. 4-5986.

Why have safety committees?

There are a number of long-standing and active safety committees that support injury prevention at Ames. Because of our OSHA Voluntary Protection Program initiative, safety committees have been given greater visibility and the number of committees has increased. But what do these committees do and why are they important?

All Ames safety committees support decision making on health and safety matters. Management at Ames recognizes that employees are typically 'in tune' with the hazards they may encounter while performing their jobs.

Management supports safety committees to encourage greater and more meaningful worker participation at the level where accidents and health hazards most commonly occur. This type of employee participation is a critical component of an effective safety program.

The safety committees do not reduce management's responsibility for maintaining a safe workplace. They support management responsibility for ensuring compliance with safety regulations and procedures.

The safety committee member's role is more that of an observer and advisor, not an enforcer of Ames injury prevention efforts. Committee meetings are an opportunity for management to hear about employees' safety concerns and ideas for safety improvements.

Safety committee activities support, but do not replace, Ames' health and safety programs. Safety committees are only one part of Ames' overall safety program which includes Ames safety accountability program actions; individual responsibility (management, supervisor and worker); safety, health and environmental training; provision of emergency and medical services; and preventive maintenance.

A comprehensive list of Ames safety committees and information about their activities can be found on the Code QH web site at: <http://dq.arc.nasa.gov/qh/safetycom/>

Speak to your manager if you would like to join or start a safety committee. If you have any questions about Ames safety committees, contact David King at ext. 4-1316 or Shelleen Lomas at ext. 4-0716.

VPP STAR Tip:

Seeing the demonstrations of true and successful concern for worker well-being has given government regulatory employees a strong appreciation for VPP participating worksites.

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

Ames' Kepler mission selected for Discovery program

NASA has selected the Kepler Mission, a project based at Ames, as one of the next two new Discovery missions.

Scheduled for launch in 2006, the Kepler Mission will use a unique spaceborne telescope specifically designed to search for Earth-like planets around stars beyond our solar system.

"The Kepler Mission will, for the first time, enable humans to search our galaxy for Earth-size or even smaller planets," said prin-

time. CCDs are the silicon, light-sensitive chips that are used in today's camcorders, television and digital cameras. Kepler must monitor many thousands of stars simultaneously, since the chance of any one planet being aligned along the line-of-sight is only about one-half of one percent.

"From monitoring 100,000 stars similar to our sun for four years, the Kepler team expects to find many hundreds of terrestrial-type planets," said David Koch of Ames, the

Deep Impact in January 2004; and MESSENGER in March 2004. ASPERA-3 and NetLander are Discovery missions-of-opportunity that are under development.

Additional details about the Kepler mission can be seen at: <http://www.kepler.arc.nasa.gov>. More information about the Discovery Program is available at: <http://discovery.nasa.gov>.

BY MICHAEL MEWHINNEY ▲



cipal investigator William Borucki of Ames. "With this cutting-edge capability, Kepler may help us answer one of the most enduring questions humans have asked throughout history: are there others like us in the universe?" he said.

To date, about 80 extra-solar planets have been discovered. However, these are all gaseous-giant planets similar to Jupiter, which probably are composed mostly of hydrogen and helium and unlikely to harbor life. None of the planet-detection methods used so far has the capability of finding Earth-size planets--those that are 30 to 600 times less massive than Jupiter. Hence, none of the giants discovered to date has liquid water or even a solid surface.

The Kepler Mission is different from previous ways of looking for planets; it will look for the 'transit' signature of planets. A transit occurs each time a planet crosses the line-of-sight between the planet's parent star that it is orbiting and the observer. When this happens, the planet blocks some of the light from its star, resulting in a periodic dimming. This periodic signature is used to detect the planet and to determine its size and its orbit.

Three transits of a star, all with a consistent period, brightness change and duration, provide a robust method of detection and planet confirmation. The measured orbit of the planet and the known properties of the parent star are used to determine if each planet discovered is in 'the habitable zone,' that is, at a distance from its star where liquid water could exist on the surface of the planet.

The Kepler Mission will hunt for planets using a specialized one-meter diameter telescope called a photometer to measure the small changes in brightness caused by the transits.

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

mission's deputy principal investigator.

The Kepler mission will continuously view an amount of sky about equal to the size of a human hand held at arms length or about equal in area to two 'scoops' of the sky made with the Big Dipper constellation. In comparison, the Hubble Space Telescope can view only the amount of sky equal to a grain of sand held at arms length, and then only for about a half hour at a time.

"One of Ames' most important efforts is our work in the field of astrobiology--the study of life in the universe. Kepler's goal of finding planets that might harbor life represents a major step in advancing astrobiology research," said Henry McDonald, Ames' Center Director.

"The Kepler Mission represents a cornerstone in our effort to search for evidence of life in the universe and will pave the way for future, more complex space projects. I am very proud of the years of work invested by the Kepler team leading to this selection," said Scott Hubbard, Ames' Deputy Director for Research.

The industrial partner for development of the hardware is Ball Aerospace and Technologies Corp., Boulder, Colo. Kepler's selection involves a delayed start of development of up to one year due to funding constraints in the Discovery program.

NASA selected Kepler from 26 proposals submitted in early 2001. The mission must stay within the Discovery program's development cost cap of about \$299 million.

The Discovery program emphasizes lower-cost, highly focused scientific missions. Past Discovery missions include NEAR Shoemaker, Mars Pathfinder and Lunar Prospector, all of which successfully completed their missions. The Stardust and Genesis missions are currently in space; both have begun collecting science data, although Stardust has not yet arrived at its target comet. CONTOUR is scheduled to launch next summer;

Summer faculty fellowship program at Ames

The NASA Ames American Society for Engineering Education (ASEE) San José State University (SJSU) Summer Faculty Fellowship program offers scientists and engineers doing aeronautics or space research an opportunity to work with a university colleague for 10 continuous weeks during the summer. The Ames program is scheduled to run from June 3 to Aug. 9 this year.

Fellows are paid a stipend, a travel allowance and a relocation allowance for those who must move their residence. Fellows are required to conduct their research on site at Ames. Since the program pays for all costs, participation does not require Ames colleagues to contribute from their research funds.

To be eligible, fellows must be U.S. citizens with teaching or research appointments at U.S. universities or colleges, with a minimum of two years experience. Application packets must be submitted to Jacob Redmond at Mail Stop 241-3 before the submission deadline of Feb. 15.

The JASON Project invites you to 'Frozen Worlds'

continued from front page

Ames employees and children are invited to attend the JASON 8:30 a.m. broadcast on Jan. 29, Feb. 1 or Feb. 7.

To volunteer to help with the event, contact Lori Burkart at ext. 4-0494 or email her at lburkart@mail.arc.nasa.gov.

For more information about the event, contact Jill Osofsky at ext. 4-3867 or John Colombero at ext. 4-0857. For more information about the JASON Project, visit www.jasonproject.org.

NASA scientist finds some meteorites not sugar-free

Recently, a discovery by a NASA Ames scientist of sugar and several related organic compounds in two carbonaceous meteorites provided the first evidence that another fundamental building block of life on Earth may have come from outer space. A carbonaceous meteorite contains carbon as one of its important constituents.

Previously, researchers had found in meteorites other organic, carbon-based compounds that play major roles in life on Earth, such as amino acids and carboxylic acids, but no sugars. The new research is reported in a paper, "Carbonaceous Meteorites as a Source of Sugar-related Organic Compounds for the Early Earth," by Dr. George Cooper and co-workers at Ames. The work was published in the Dec. 20, 2001 issue of *Nature*.

"Finding these compounds greatly adds to our understanding of what organic materials could have been present on Earth before life began," Cooper said. "Sugar chemistry appears to be involved in life as far back as our records go." Recent research using ratios of carbon isotopes have pushed the origin of life on Earth to as far back as 3.8 billion years. An isotope is one of two or more atoms whose nuclei have the same number of protons, but different numbers of neutrons.

Scientists have long believed meteorites and comets played a role in the origin of life. Raining down on Earth during the heavy bombardment period some 3.8 billion to 4.5 billion years ago, they brought with them the materials that may have been critical for life, such as oxygen, sulfur, hydrogen and nitrogen. Sugars and the closely related compounds discovered by Cooper, collectively called 'polyols,' are critical to all known life forms. They act as components of the nucleic acids RNA and DNA, constituents of cell membranes and cellular energy sources.

"This discovery shows that it's highly likely organic synthesis critical to life has gone on throughout the universe," said Kenneth Souza, acting director of Ames' Astrobiology and Space Research directorate. "Then, on Earth, since the other critical elements were in place, life could blossom."

Cooper identified a small sugar called 'dihydroxyacetone' and several sugar-like substances, known as sugar acids and sugar alcohols, in his study of the Murchison and Murray meteorites. All these are important for life today. He also found one sugar alcohol, glycerol (also known as glycerin), that is used by all contemporary cells to build cell walls. In addition, Cooper discovered pre-

liminary evidence of other compounds that may contain larger sugars critical in cellular metabolism, such as glucose.

There still are many unknowns about the chemistry that existed before the origin of life on Earth, according to Cooper. "What we found could just be interesting space chemistry, and polyols could be just relatives of the compounds that actually gave rise to early life. More research on the meteorites is essential to determine the significance of these findings," he concluded.

The Murchison meteorite, found in Australia in 1969, is a famous example of a carbonaceous meteorite that contains numerous amino acids and a variety of other organic compounds that are thought to have played a role in the origin of life. The Murray meteorite, which fell to Earth in 1950, is similar to Murchison in its organic content.

Related information about the Cooper paper in *Nature* can be found at: <http://www.nature.com> Further information about the Murchison meteorite is available at <http://www.touchanotherworld.com/CurrentPhoto/CPcarbonaceous.htm> NASA's exobiology program provided funding for the research.

BY KATHLEEN BURTON ▲

Ames employee honored by 'Profile of Excellence'

Starting the year with a media exclusive, Channel 7's annual program 'Profile of Excellence' series honors outstanding people for their achievements. This year, Sheila Johnson of Ames' Code DXC is one of the five honorees.

This year's focus is helping children. The series with the segment about Johnson initially aired on Jan. 20. It will air again on Feb. 10 at 10:30 a.m.

Johnson is a founding member of the National Coalition of 100 Black Women (NCBW), Inc., Silicon Valley Chapter, and a national board member. This is a non-profit organization of black women serving as an advocacy group for issues in education, healthcare and youth development.

Part of Johnson's dedication to children is shown through her leadership in raising thousands of dollars for minority girls to experience hands-on interactive educational opportunities to inspire and fuel their interest in math, science and technology.

Along with Johnson's involvement in the NCBW, she also is a board member of the American Red Cross of Santa Clara County. On behalf of the American Red Cross, Johnson

leads and organizes various events for the community.

Having worked in city, federal and private industry, Johnson brings 25 years of experience to the workplace, 20 of which are in the city and federal government arena.

Presently, she is a community relations specialist with Ames. Johnson is committed to serve as an advocate for positive change in her community. She is married to Daniel Heacock, Chief, Financial Reporting Branch, Code CFR.

BY ANIL JINDIA ▲



Sheila Johnson, community relations specialist in Ames' Public Affairs Office (Code DX), is the subject of an upcoming 'Profile of Excellence.'

NASA supports 200 high schools in robotics competition

NASA and its corporate partners will support robotics education for about 200 high schools that are outlined.

"Education is key to the success of our country and this approach represents one of the most powerful ways to get students motivated,"



Foothill High School team 255 discusses their strategy before the 2000 national championship matches. Former NASA engineer Jeff Ota on left.

said Mark Leon, project manager of the Robotics Education Project at Ames. "Some of these students may go on to help NASA engage in bold new missions of exploration of our solar system. The idea here is to involve students in hands-on activities to turn them on to science and math."

The robotics project kicked off Jan. 5 at the Verizon Center in Manchester, N.H., with a demonstration of the task for this year's regional and national competitions. Rules, goals and other details, such as the lay-

out of the playing field, will be revealed during NASA TV's broadcast of the ceremony. Detailed requirements of the robotic games are carefully guarded until announced at the kick-off event.

Following the ceremony, students and their advisors will have six weeks to design and construct remote-control robots, using identical kits of material.

The annual nationwide robotics competition is conducted by the non-profit FIRST

(For Inspiration and Recognition of Science and Technology) organization in Manchester and sponsored by NASA and a number of corporations. Each year, FIRST presents a game problem and identical parts kits to each team. The teams, composed of high school students and professional engineers and scientists, work together to construct their robots for the competition. The engineers come from NASA, private industry, other government agencies and universities.

Students also organize marketing, public relations, fund-raising and management groups to compete for the award-winning solution. Each year's competition is different, so returning teams always have a new challenge.

NASA-sponsored teams will receive a total of about \$1.5 million. Each school received a \$5,000 credit toward registration fees, and about \$1,000 for travel to the kickoff ceremony. The group of NASA-sponsored teams includes many from disadvantaged schools.

For a complete list of the awards issued by NASA, visit: <http://robots.larc.nasa.gov/> A complete list of the regional events, corporate sponsors and other details are on the FIRST web site at: <http://www.usfirst.org/>

FIRST was started in 1989 by inventor Dean Kamen to persuade American youth that engineering and technology are exciting fields. The annual robotics competition is patterned after Massachusetts Institute of Technology professor Woodie Flowers' engineering design course.

NASA participation in the FIRST program is provided through the NASA Office of Space Science and is directed by Dave Lavery.

More information about NASA's Robotics Education Project can be found at: <http://robotics.nasa.gov>

BY JONAS DIÑO ▲

'Fish pole' device could pluck people from fires or off the sea surface

Soon, a NASA-patented telescoping rescue boom for helicopters could safely pluck people from high-rise fires or from the sea beyond dangerous downwash waves.

The retractable boom would project a helicopter's existing rescue hoist cable end from the front of the aircraft within the pilot's vision and beyond the main rotor's downwash. In contrast, Coast Guard divers now often must risk dropping into the ocean from hovering helicopters to rescue people who otherwise could drown in turbulent waves created by the main rotors of whirlybirds.

"Like a fishing pole, the 60-pound (27-kilogram) helicopter telescoping rescue boom also could reach onto ships between obstructions to lift a patient," said Dr. Len Haslim, retired from Ames. He is an Ames associate, still performing scientific research at the center. "In addition, the boom could reach into high-rise building windows to rescue people while reducing danger to the

helicopter and minimizing the chance the chopper would fan flames," he added.

The telescoping boom is hollow and made of reinforced plastic. Another innovative element of the boom design is that, once the rescued person is hooked onto the cable end, the victim's weight pulls the cable free from the boom progressively through a series of quick-release eyelets. The rescuer is winched up to the helicopter in the normal way, free of the boom. "The fall-free cable feature results in the boom never carrying the rescue weight, which is a major deficiency of previous approaches," Haslim said.

Also covered in the patent is a novel, lightweight device that extends and retracts the telescoping boom. A flat metal ribbon roll unreels and wraps around a wire rope that also unwinds from a spool to form a rod. The rod is stiff enough that it can push or pull. The wire rope keeps the hose-like metal ribbon from kinking as it extends, and later retracts, the telescoping sections of the boom.

Helicopter crew members could pivot the boom to various angles along the helicopter's side if a rescue must be made from the aircraft's side, Haslim said.

Intersecting red and green light beams could be used to help the crew locate a proper safe blade-tip distance from obstructions or from the victim. "Use of this device would greatly improve the rescue capabilities of helicopter crews that confront rough seas, mountainous terrain and even high-rise building fires," Haslim said. "Using quick attachment features, a ground crew could easily connect the boom to a helicopter's 'hardpoint' that can carry as much as 600 pounds. In addition, astronauts could use a modified boom to safely dock one spacecraft to another," he said.

A U.S. government patent (No. 5,020,742) was issued for the device. Its design is available for use by U.S. industry, Haslim said.

BY JOHN BLUCK ▲

Event Calendar

Model HO/HO3 Railroad Train Club at Moffett Field in Bldg. 126, across from the south end of Hangar One. Work nights are usually Friday nights, 7:30 p.m. to 9:30 p.m. Play time is Sundays, 2 p.m. to 4 p.m. Call John Donovan (408) 735-4954 (W) or (408) 281-2899 (H).

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

Ames Ballroom Dance Club. Classes meet Tuesdays. Begin. classes start 6:15 p.m. Schedule: Jan., nightclub two-step; Feb., East Coast swing; Mar., waltz. Higher-level class meets at 5:15 p.m., Schedule: Jan. 8, 15, 22, nightclub two-step; Jan. 29, Feb. 5, 12, East Coast swing; Feb. 19, 26, Mar. 5, West Coast swing; Mar. 12, 19 and 26, waltz. Classes held in Bldg. 944, the Recreation Center. POC: Helen Hwang, hwang@dm1.arc.nasa.gov.

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

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

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

Native American Advisory Committee Mtg, Jan. 22, 12 noon to 1 p.m., Building 19, Rm 1096. POC: Mike Liu at ext. 4-1132.

Nat'l Association of Retired Federal Employees, (NARFE), Feb. 1, S. J. Chptr #50 mtg, 9:30 a.m., Hometown

Buffet, Westgate Mall, 4735 Hamilton Avenue., San José. Program at 10 a.m. Eldercare specialist. Lunch at 11 a.m. \$6.27 pp. POC: Earl Keener (408) 241-4459 or NARFE 1-800-627-3394.

Ames Contractor Council Mtg, Feb. 6, 11 a.m., N-200, Comm. Rm. POC: Paul Chaplin at ext. 4-3262.

Environmental, Health and Safety Information Forum, resumes Thursday, Feb. 7, 8:30 a.m. to 9:30 a.m., Bldg. 19/Rm 1040. URL: <http://q.arc.nasa.gov/qe/events/EHSeries/> POC: Julie Quanz at ext. 4-6810.

Ames Federal Employees Union (AFEU) Mtg, Feb. 20, 12 p.m. to 1 p.m., Bldg. 19, Rm 1042. Info at: <http://www.afeu.org>. POC: Marianne Mosher at ext. 4-4055.

Ames Amateur Radio Club, Feb. 21, 12 noon, N-228 (across from N-255). POC: Michael Wright, KG6BFC, at ext. 4-6262. URL: <http://hamradio.arc.nasa.gov>

Ames Classifieds

Ads for the next issue should be sent to astrogram@mail.arc.nasa.gov by the first Friday following publication of the present issue and must be resubmitted for each issue. Ads must involve personal needs or items; (no commercial/third-party ads) and will run on a space-available basis only. First-time ads are given priority. Ads must include home phone numbers; Ames extensions and email addresses will be accepted for carpool and lost and found ads only. Due to the volume of material received, we are unable to verify the accuracy of the statements made in the ads.

Housing

3bd/2ba, 1550sf house for sale, near Hwy 85 and Hwy 17, large back yard and patio, needs paint, carpets and roof, but otherwise is in sound condition. Recently appraised for \$565K. Recent comparable sales (within last 2 months) \$585K - \$595K. Call (408) 978-6556 or email at: house@renchen.com.

Room in 4 bd/2 ba home excellent, quiet Mt. View area. W/D, microwave, fireplace, PG&E block 50. Tidy person & nonsmoker. Easy access to Ames, 85, 237, & 101. \$400 + share utils. Avail. 2/1. Call (650) 964-1900.

Condo for rent: 1bdm, remodeled bath, w/large closet, new W/D, new carpet/paint, 2 decks, outdoor gas BBQ, pool + jac, garage negotiable, on Fair Oaks close to 101. Rent \$1,450/mo (or \$1,800 furnished) + \$1500 dep + PGE (typically less than \$30/mo). Rental agreement, refs, & credit history req'd. Avail March. Scott (408) 736-3121.

Miscellaneous

Looking for a good home for two female miniature pinschers (pure breed) about 6 years old. Call (408) 995-3411 after 5 p.m. weekday & anytime weekend. Or call (408) 497-0989, (408) 236-3527.

Honey oak 3-drawer baby dresser/changing table \$125; 1 Dutilier glider w/ottoman honey oak \$125; both in exc. condition. \$200 for both. Women's white pro ice skates, like new sharp blade size 7, \$150/pair. Eric or Deb at (650) 424-8138.

Canon BJC-6000 photo printer (1440x720dpi) with manual & software with (6) full ink tanks and spare black cartridge. 1yr old in great condition; example photos available, \$70. Call (408) 295-2160.

Two matching pairs of double, prairie-style casement windows removed from 1923 California Bungalow home. Good condition, Call for pics, \$75 408.295.2160.

Large office desk w/swivel caster chair & carpet pad: \$100. Plastic patio furn. set (table & 4 chrs): \$15; Toddler car seat, exc. cond (used 1 wk by visiting relative): \$35. Email: jardin@stanford.edu or call Matt (650) 625-8819.

Burley 2-seat bike trailer w/external yard bar, \$200; the Twinner double jogger stroller, \$100; Yakima ski & bike rack system, \$400; large golf bag, \$35; single jogger stroller, \$15; girls' 10-speed bike, \$15. Jeff (650) 328-7191.

Credenza/hutch, 20in x 30in x 46in, beautiful honey-laquer finish, great condition, only a year old, \$400 (30% of original cost), must sell. Call (650) 473-0604.

Bedroom set, bed frame & headboard, three 3-drawer chest of drawers, display cabinet w/glass doors, 4-shelf bkcase. Light oak finish, by Lea. \$495. Call (510) 656-7654.

Three filing cabinets, gd cond: 4 dwr legal, 5 dwr legal & 4 dwr letter. Most have pendaflex hangers included. \$40 ea. Call (408) 259-4114. Photos avail. upon request.

Four wool area rugs. Blue and grey with deep rose flowers. 3 rugs 5 x 7, 1 rug 7 x 11. Gd cond, \$300 all. Call (408) 259-4114. Photos available upon request.

Verdigris metal & glass top Occasional Tables-Two side tables and one soft table. \$350 all. Call (408) 259-4114. Photos available upon request.

Pearl drum set, color brown, fairly new. 5 drums w/ complete cases & hardware. Sarah Rivera (408) 410-4019.

Furrari, portable dog kennel, accommodates pet weighing up to 60 lbs. \$30. Call (408) 979-9107.

Chinese art print, peacock, framed, 42"H x 23"W,\$55; contemp Chinese hand painted jar w/lid, 12" H \$30; blk cer vase, 14" H, \$10. Lou Salerno (650) 851-5290 after 6 p.m.

Transportation

'71 Ford 3/4 ton pickup truck. No smog needed. Good shape. Lumber rack. Low miles on rebuilt motor, new battery, carburetor and fuel pump. Turn key. Super reliable work truck \$2,200 or B/O. Call (831) 335-1621.

'84 Honda Accord 4dr, white, 240K mls, automatic, pwr windows, \$1,000. Call evenings (650) 938-6154.

'89 Buick Century limited, one owner, auto, air, loaded, four new tires, like new, smogged, \$2,475 or B/O, Call (408) 733-1906.

'89 Jeep Cherokee Laredo 4x4 6 cyl, 4.0 liter, pwr win & locks, cruise, CD, 160k mls, runs great, \$3,500. Call (408) 823-1111.

'90 Ford Explorer XLT 4x4, 6-passenger, very good condition, white, roof rack, tow pkg, 4.0L V6, AT, PW, PL, CD, front bench, new brakes & tires, recent engine work, 110K mls. \$5,550. Tom (408) 255-2325.

'91 Acura Integra GS (top model), 79k mls--2/3 the average mileage! Well maintained w/ records. Red, 5 spd man'l, sunroof, ABS, pwr win, \$5,000. Call (650) 964-0496.

'91 Ford Explorer XLT 4X4, 6-passenger, very good condition, white, roof rack, tow pkg, 4.0L V6, AT, PW, PL, CD, front bench, new brakes & tires, recent engine work, 110K mls. \$5,550. Tom (408) 255-2325.

'93 GMC 1500 SLE full size truck, 5.0L eng. 2-tone red/black, 5 spd man'l trans, 108,000 mls, cruise cntrl, pwr windows, pwr locks, A/C, new clutch & radiator, tow package. Must sell. \$6,900 or B/O coma557@yahoo.com or call Colby/Kathey (510) 796-4503.

'96 Nissan Sentra GXE, 56,600 mls. \$6,850 (Blue Book value). A/C, cruise cntrl, pwr wndws & lcks, pwr steering/brakes, driver/passenger airbags, 4 dr w/big trunk, ster cass player, white w/tan interior. Gets better than 30 MPG as commuter car; runs great. Call (408) 268-8672.

'99 Dodge Intrepid exc. condition, green, cloth seats, cass, PW, PL, V6, AT, tinted windows, roomy, enormous trunk space, 41K mls. \$12,600. Tom (408) 255-2325.

Ames Public Radio

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

Lost & Found

Found car/truck key, Bld 259, Bldg. 211N 12/13/01. Call P. Grant ext. 4-1050 or J. Bush ext. 4-3863.

Exchange Information

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

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

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

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

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

Visitor Center Gift Shop N-223 (10 a.m. to 4:00 p.m.) ext. 4-5412

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

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

Check web site for discounts to local attractions, <http://exchange.arc.nasa.gov> and click on tickets. Feb. 2, 2 p.m. 'Copenhagen' at the Curran Theatre, San Francisco. Feb. 2, 8 p.m., 'Evita' at the San José Center for Performing Arts

NASA Lodge (N-19) 603-7100

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

Vacation Opportunities

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

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

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

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

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

Third annual IPG workshop concludes in Palo Alto

Researchers from across the United States gathered in Palo Alto, Calif., Dec. 4-5 for NASA's third annual Information Power Grid (IPG) workshop. They discussed the current state of the geographically distributed computational network. More than 100 computer scientists from academic institutions, government labs and NASA centers were in attendance to learn about recent developments in grid technology. Thirty scientists presented their research and the development progress of IPG infrastructure components during the workshop. Peer feedback, problem solving and networking enabled researchers to address problems encountered in developing new web tools and applications for the IPG.

Kicking off the two-day event, NASA Advanced Supercomputing (NAS) Division Chief Bill Feiereisen emphasized the significance of collaboration. "I think it is important to realize that, even though this is NASA's IPG workshop, the IPG is part of an entire grid effort throughout the United States, throughout Europe, and throughout the Asian Pacific Rim. I want to make it really evident that we are doing this all together. Many levels of many different organizations are working toward the same goal of merging efforts into a single grid."

Although presenters were from different institutions, reporting on different topics, there was a central theme and direction to all presentations. "It's pretty clear that the area of web services is going to be the hot topic this year in grids. There was quite a bit of discussion in all of the talks about what web services are," explained Tony Lisotta, NAS Division IPG task lead. In the presentation, "Peer to Peer Networks and Web Services for

a Community Grid," Geoffrey Fox, an IPG collaborator from Indiana University, discussed the need to define interfaces of web applications to facilitate computer-to-computer interactions. Another presentation delivered by George Myers from Ames outlined the recent developments of IPG's LaunchPad, a web portal created to enable grid users to submit jobs to IPG resources via any web browser. NASA Glenn's Robert Griffin discussed interactive online job submission for monitoring and modeling aircraft through the aviation safety program.

Not only was work presented on grid efforts by current participants of the IPG, but a new collaboration was formed at the workshop between NASA's IPG and the National Virtual Observatory (NVO) project. The NVO project aims to make available to the individual astronomer images of the night sky captured with powerful telescopes. In addition, they would like to be able to provide high-powered

computational resources necessary to process the data. This sort of collaboration is



photo by Nicholas A. Veronico

NAS computer scientist Robert Van Der Wijngaart speaks about distributed parametric study capabilities for the grid at the third annual Information Power Grid workshop.

what enables the IPG to grow and expand its capabilities. "I thought the workshop was extremely successful. We had good participation from the general grid community this year, and I hope to see more applications people at future workshops," said Tom Hinke, NAS senior scientist.

BY HOLLY A. AMUNDSON ▲



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