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Space Administration
Langley Research Center

News Researcher

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Proteus Makes Stop At Langley High-Flying Aircraft Is Supporting INTEX-NA Climate Study

Mike Melvill, who recently made aviation history as the first civilian to fly a spaceship out of the atmosphere into low-Earth sub orbit, visited Langley Research Center the week of July 19 with Scaled Composites' Proteus aircraft.

NASA called upon the high-flying Proteus to support the Intercontinental Chemical Transport Experiment-North America (INTEX-NA) climate study.

Proteus is a unique aircraft, designed as a high-altitude, long-duration telecommunications relay platform with potential for use on atmospheric sampling and Earth-monitoring science missions.

Designed by Burt Rutan, president of Scaled Composites, LLC, of Mojave, Calif., Proteus is an "optionally piloted" aircraft

■ **Langley Active In INTEX Study, Page 4.**



Scaled Composites' Proteus aircraft taxis down the runway before a research flight on July 21 at Langley Research Center. Proteus is a unique aircraft, designed as a high-altitude, long-duration telecommunications relay platform with potential for use on atmospheric sampling and Earth-monitoring science missions.

Photo by Jeff Caplan

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Langley Part Of Seven TGIR-Winning Teams

By **ELVIA H. THOMPSON**
NASA Headquarters

NASA hosted the sixth annual Turning Goals into Reality (TGIR) Awards ceremony on July 14 at NASA Headquarters.

TGIR Awards celebrate the accomplishments of NASA researchers — and their industry and university partners — whose work in safe and affordable air transportation, growth in critical national industries, enhanced national security, and scientific exploration and discovery has contributed to society.

"Over the past 45 years, NASA's research and technology developments have transformed our society," said J. Victor Lebacqz, NASA's Associate Administrator for Aeronautics. "Today we are celebrating the year's most significant

accomplishments that add to this NASA legacy. We are honoring these teams of women and men, along with their industry and university partners, for their contributions. Now NASA itself is transforming. The technologies recognized today, and the people behind them, strengthen our capability to achieve the Vision for Space Exploration."

A total of 17 teams received awards. At NASA Headquarters, 15 awards were made for accomplishments in the following areas: Aeronautics Technology, Space Launch Initiative, Mission Science Measurement Technology, Innovative Technology Transfer Partnerships, and Agency Education Outreach Goals.

Langley Research Center was credited on seven of the award-winning teams:

■ **The Shaped Sonic Boom**

■ **Demonstration Team** won an Aeronautics Technology Theme Award in the Partnerships for National Security Objective.

■ **The Abrupt Wing Stall (AWS) Team** won an Aeronautics Technology Theme Award in the Partnerships for National Security Objective.

■ **The Active Aeroelastic Wing (AAW) Program** won an Aeronautics Technology Theme Award in the Partnerships for National Security Objective.

■ **The Unmanned Aerial Vehicle (UAV) Team** won an Aeronautics Technology Theme Award in the Explore Revolutionary Aeronautics Concepts Objective.

■ **The Cooled Ceramic Matrix Composite Propulsion Structures Team**

won a Space Launch Initiative Theme Award in the Mission Safety and Reliability Objective.

■ **The Next Generation Launch Technology Systems Analysis Project Team** won a Mission Science Measurement Technology Theme Award in the Mission Risk Analysis Objective.

■ **The Composite Cryogenic Tank Team** won a Mission Science Measurement Technology Theme Award in the New Sources of Technology for NASA Objective.

Langley will host a ceremony to honor its TGIR Award winners later this year.

■ *For more information about the TGIR awards, visit: <<http://www.aeronautics.nasa.gov/events/tgir/2004/index.htm>>.*

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NASA Vision: To improve life here, To extend life to there, To find life beyond
NASA Mission: To understand and protect our home planet ● To explore the Universe and search for life
To inspire the next generation of explorers ... as only NASA can

Around the Agency

NASA SENDING A MESSENGER TO MERCURY

NASA's first trip to Mercury in 30 years — and the closest look ever at the innermost planet — starts in August with the predawn launch of the MESSENGER spacecraft from Cape Canaveral Air Force Station, Fla.

MESSENGER will conduct an in-depth study of the sun's closest neighbor, the least explored of the terrestrial ("rocky") planets that also include Venus, Earth and Mars. After a scheduled 2:16 a.m. EDT liftoff aboard a Delta II launch vehicle on Aug. 2, the first day of a 13-day launch period, MESSENGER's voyage includes three flybys of Mercury in 2008 and 2009 and a year-long orbit of the planet starting in March 2011.

"Our missions to Mars and Venus have produced exciting data and new theories about the processes that formed the inner planets," said Orlando Figueroa, director of NASA's Solar System Exploration Division. "Yet Mercury still stands out as a planet with a fascinating story to tell. MESSENGER should complete the detailed exploration of the inner solar system -- our planetary backyard — and help us to understand the forces that shaped planets like our own."

For more information about MESSENGER on the Internet, visit: <<http://messenger.jhuapl.edu>>. NASA HQ RELEASE: 04-215

STATES VOICE SUPPORT FOR NEW VISION

NASA Administrator Sean O'Keefe on July 14 expressed his appreciation as legislators in at least seven states have passed resolutions this summer in support of the Vision for Space Exploration.

Joint state senate and house resolutions have passed in Alabama, Mississippi and Louisiana, while measures of support have passed the state senates in Ohio, Texas and Kansas. In California, both houses have passed separate resolutions of support.

In addition, the Aerospace States Association, which represents 44 states and supports national aviation and space policy development, expressed support for the Vision by passing a resolution encouraging the exploration and development of space.

"I appreciate the willingness of state lawmakers to get involved and voice their support for NASA's ongoing missions of discovery and exploration," O'Keefe said. "History has demonstrated that space exploration benefits everyone through new technologies and products, and often leads to new jobs and economic growth and security."

Besides the local and national economic benefits realized by investing in the future of exploration, states that have expressed support for the Vision cite the importance of igniting students' interest in mathematics, science and technology as being vital to securing America's future. NASA HQ RELEASE: 04-220

News Researcher

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Managing Editor Keith Henry

Editor..... Jim Roberts
Planners Collaborative/
Science and Technology Corp.

Assistant Editor Bill Uher
Planners Collaborative/
Science and Technology Corp.

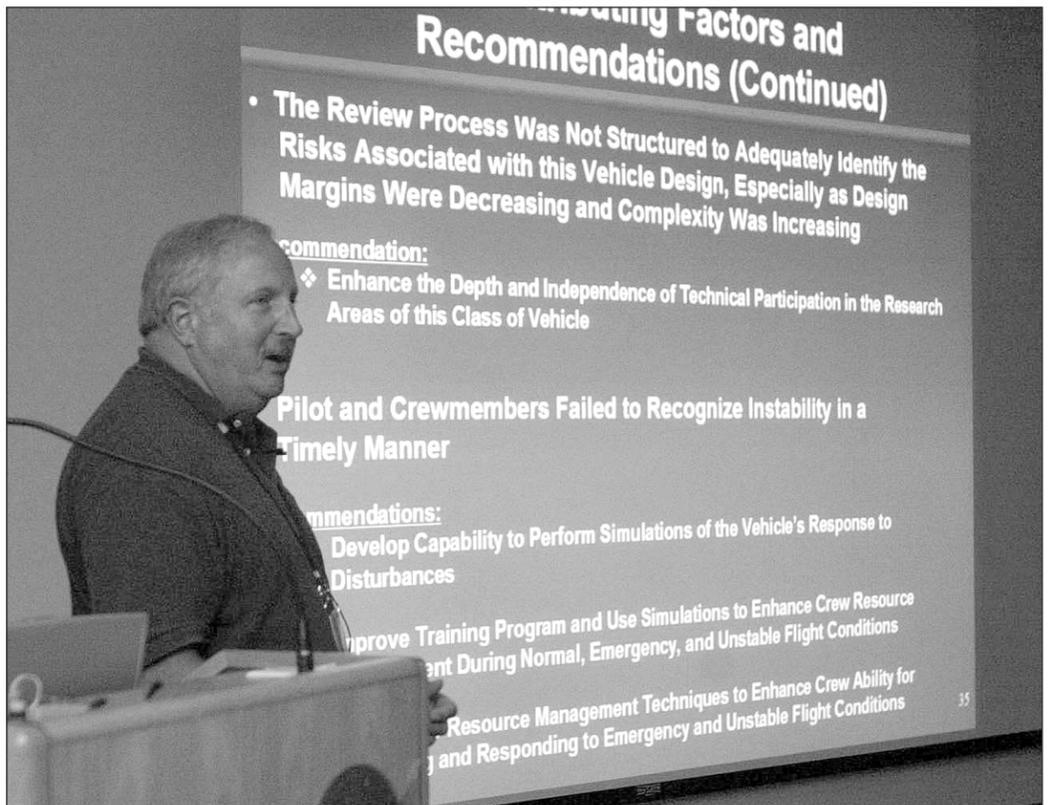
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The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

The Researcher News accepts signed letters to the editor from Langley Research Center employees, on-site contractors and retirees. Letters are limited to 250 words and will be edited only for grammar. When necessary, letters may be edited for space, but only with the author's approval. Letter-writers are limited to one submission on a topic every six months. Questions regarding this policy should be directed to Keith Henry, managing editor, at 864-6120 or <h.k.henry@nasa.gov>.

Read the Researcher News online at <<http://researchernews.larc.nasa.gov>>.

Helios Mishap Briefing



Thomas Noll, chair of NASA's Helios Prototype Aircraft Mishap Investigation Board (MIB), leads a briefing on July 21 in Langley's Pearl Young Theater. Noll, the deputy director of Langley Research Center's Structures and Materials Competency, was named to the MIB in June 2003 after Helios became unstable during flight testing and crashed into the Pacific Ocean. The MIB comprises representatives from AeroVironment Inc., the National Oceanic and Atmospheric Administration, NASA Headquarters and five NASA centers.

Photo by Jeff Caplan

Center Hosts HazMat Amnesty Days

Langley Research Center's Environmental Management Office and Safety Office hosted HazMat Amnesty Days on June 24 and 25. Facilities were given the opportunity to bring in expired chemicals for disposal without the paperwork typically required.

Personnel from Industrial Hygiene and EMO support contractor SAIC accepted, inventoried and packaged various chemicals including oxidizers, organic peroxide compounds, mercury switches, and flammable and corrosive solutions.

Approximately 600 items were packaged for disposal or transferred to another facility for reuse. Containers arrived by car, truck, van and bicycle.

The Center returned to normal waste disposal procedures on June 28. Facilities are encouraged to continue the chemical clean-up efforts jump-started by HazMat Amnesty Day, using the Chemical Material Tracking System (CMTS) for inventory management, and the Hazardous Waste Disposal System (HWDS) for waste disposal.

The HazMat Amnesty Days coincided with the Center's 2004 Safety Stand-Down Day.

research facilities for wind tunnels, drive systems, aircraft components, landing gear and flight instrumentation.

He retired from NASA as Special Assistant to the Director's Office in charge of Engineering Analysis.

Letter to the Editor

People Are Paying Attention

"I occasionally read through the comments that have been submitted by Langley Research Center employees to the Kickstart Team web sites. Each time I do so I am impressed by the depth of genuine caring that is conveyed. I am reminded that this Center is comprised of thousands of individuals who very quietly and competently do their jobs every day for 20 or 30 years or more. There are so many people here who care very deeply about their work, their workplace and their fellow employees.

"I hope that their comments are not provided in vain. I hope that the leaders at Langley are not so overwhelmed by their duties that they are rarely able to read the comments provided. It is important for them to understand the concerns expressed, even if each concern cannot be practicably addressed.

"I believe it is vital for everyone at Langley to find ways to express what is on their minds, whether they do so in person, in the Researcher News or through the Kickstart sites, anonymously or not. They just might find that many people like me are paying attention and that we care about what is written and said. It is important for each of us to learn to not keep our concerns buried, for NASA seems to suffer tragedy whenever too many people are too silent for too long."

Gordy Degear

Program Development and Management Office

In Memoriam

Herbert C. Emerson Sr.

Herbert Chester Emerson Sr. died on July 10, his 70th birthday. Emerson, a native of Norfolk, served in the U.S. Air Force for 20 years and went on to work as a security officer at Langley Research Center and several other government facilities.

Vernon L. Alley Jr.

Vernon Lynn Alley Jr. died on July 14 at the age of 79. Alley, a Peninsula native, worked at Portsmouth Naval Shipyard for six years before going to work for NACA and NASA for 30 years.

Alley's work included design, analysis and problem-solving for the Apollo, Viking and Skylab programs. He also worked on the design of

The Transformation Continues

Langley Hosts All-Day Briefing For Five Kickstart Teams



Mark Saunders briefs Langley Research Center employees about Exploration Kickstart Team activities during an all-day meeting on July 22 in the H.J.E. Reid Conference Center. Slides from all of the Kickstart Team presentations are available online at: <http://kickstart.larc.nasa.gov/>.

Photo by Jeff Caplan

By **JIM ROBERTS**
Researcher News editor

Langley Research Center continued briefing employees on its Kickstart activities with an all-day meeting on July 22 in the H.J.E. Reid Conference Center.

The meeting included presentations from five Kickstart team leaders: Mark Saunders, head of the Exploration Team (Team EX); Steve Sandford, head of the Planetary, Atmospheric and Flight Science Team (Team PF); Jerry Newsom, head of the Earth Air Transportation Team (Team ET); Mel Ferebee, head of the Agency Systems Analysis and Architectures Team (A Team); and Ed Waggoner, head of the Business Processes, Tools and Techniques Team (Team BP).

Center Director Roy D. Bridges Jr. formed the Kickstart Teams in February and charged them with expanding Langley's space and science capabilities and reinvigorating the Center's work in atmospheric flight and research.

Langley hosted a similar meeting on July 7 that included reports from Lesa Roe, head of the Reorganization and Culture Change Kickstart teams, and Doug Dwoyer, head of Langley's Institutional Transformation Kickstart Team.

Bridges opened the July 22 briefing by saying the all-day meetings are Langley's way of

Exploration Web Site Up

NASA's Exploration Systems Mission Directorate recently launched a new web site: <http://exploration.nasa.gov/>. The site includes information on directorate programs — including Constellation Systems, Technology Research and Development, Prometheus, and Centennial Challenges — and access to key documents, including Broad Agency Announcements, Intramural Call for Proposals, and Requests for Proposals. It also lists current and future procurement announcements and has a calendar of upcoming events.

meeting a commitment to involve as many employees as possible.

"It's the commitment we made to do things differently and have a lot of conversations about what we are doing," he said.

The team leaders' presentations are available on Langley's Kickstart web site: <http://kickstart.larc.nasa.gov/>.

Colloquium and Sigma Series Lectures

Wlezien On 'Optimism In Aeronautics'

Richard W. Wlezien will present a Colloquium lecture titled "Reasons to be Optimistic About Aeronautics" at 2 p.m. Aug. 18 in Langley Research Center's Pearl Young Theatre. (Please note change in day of the week and location.) No Sigma Series lecture is planned.

The Lecture

Much of our expectation of the future is based on linear extrapolation from the present state, but history tells us time and again that it's the non-linearities that make all the difference in predicting the future. A view of some new and exciting "game-changers" in aeronautics will be presented based on experience in NASA, industry and the Defense Advanced Research Projects Agency (DARPA).

The Speaker

Wlezien manages NASA's Vehicle Systems Program at NASA Headquarters. He is a Chicago native and earned his bachelor's, master's and doctoral degrees in



Wlezien

mechanical and aerospace engineering from the Illinois Institute of Technology in 1974, 1976 and 1981, respectively. He specialized in fundamental studies of turbulence.

From 1980 to 1990, Wlezien worked for McDonnell Douglas Research Laboratories, where he was responsible for noise research, working acoustic issues for aircraft — including the F-15 Eagle, F-18 Hornet, AV-8B Harrier and MD-80 — and special projects, including the F-15 STOL and Maneuvering Technology Demonstrator and the Ultra-High Bypass Engine Demonstrator.

Between 1990 and 1992, he was an associate professor at the Illinois Institute of Technology. In 1992, he moved to High Technology Corp., where he worked as a senior scientist in aeronautics research, focusing on the coupling between sound and laminar boundary layers.

Wlezien joined the staff at Langley Research Center in 1994 and has held a series of technical and management positions, progressing from project scientist to branch head. He formed the Active Flow Control Group and was the first manager of the Aircraft Morphing Project.

Future Lectures

- **Sept. 14:** Ranji Vaidyanathan on "Advanced Materials Research"
- **Oct. 5:** Bob Somerville on "A Century of Innovation — 20 Engineering Achievements That Transformed Our Lives"

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Internet.

He served as program manager at the DARPA from 1999 to 2002. While at DARPA, he ran the Quiet Supersonic Platform Program that culminated in the demonstration of the first supersonic aircraft to fly with a quieted sonic boom. He also managed the Micro Adaptive Flow Control Program, which demonstrated the first successful flight application of active flow control on the XV-15 aircraft and a program that developed the first hovering micro air vehicle based on flapping wing technology, the MENTOR.

Langley Active In INTEX Study

By **KATHERINE E. LORENTZ**
SAIC

More than 40 Langley Research Center employees and contractors are participating this summer in an air quality and climate study known as the Intercontinental Chemical Transport Experiment-North America (INTEX-NA).

INTEX-NA is an integrated atmospheric field experiment with a threefold mission: to identify the quantity of polluting gases and aerosols that flow from North America to the Atlantic Ocean, to understand the transport and chemical changes of these gases over the ocean, and to assess the global impact of this flow on air quality and climate.

"Understanding the transport and transformation of gases and aerosols on transcontinental and intercontinental scales is essential for the scientific understanding of air quality and its relationship to climate change," said Jim Gleason, INTEX-NA program manager.

The experiment, centered on NASA's DC-8 airborne laboratory, includes 20 instruments collecting observations of more than 100 chemicals found in the atmosphere over and downstream of North America, and of the composition of atmospheric particulate matter, or aerosols. Seven of the instruments are fielded by Langley researchers.

Another six investigations involve "chemical weather" forecasts dedicated to guiding the research flights which began on July 1 and will conclude Aug. 14.

Brad Pierce leads one of the investigations. With his colleagues, Pierce integrates information from forecast models with recent satellite observations (including NASA's Terra and Aqua satellites) and detailed meteorological observations used to develop flight plans, targeting

Proteus

Continued from Page 1

ordinarily flown by two pilots in a pressurized cabin. However, it also has the capability to perform its missions semi-autonomously or flown remotely from the ground.

The aircraft is designed to cruise at altitudes from 59,000 to more than 65,000 feet for up to 18 hours. It was designed to carry an 18-foot diameter telecommunications antenna system for relay of broadband data over major cities. The design allows Proteus to be reconfigured for a variety of other missions such as atmospheric research, reconnaissance, commercial imaging, and launch of small space satellites. It is designed for extreme reliability and low operating costs, and to operate out of general aviation airports with minimal support.

The instrument suite on Proteus includes the National Polar Orbiting Environmental Satellite System (NPOESS) Atmospheric Sounder Test-

bed Interferometer (NAST-I). The NAST-I instrument scans the atmosphere from beneath aircraft, providing detailed characteristics of the atmosphere and land surface, and atmospheric temperature and water vapor profiles. NAST activities prepare for operations of future Earth observing satellite instruments.

In addition, the MicroMAPS (Measurement of Air Pollution from Satellites) instrument that measures carbon monoxide in the atmosphere — a new instrument system from NASA Langley and a Virginia Space Grant Consortium (VSGC) team — is also on Proteus supporting INTEX-NA. MicroMAPS was recently flight-tested for the first time on Proteus and is a VSGC coordinated effort involving students and faculty from Virginia Tech, Old Dominion University and the University of Virginia.

Langley hosted an event on July 23 at which media could view the Proteus and interview Melvill, who flew SpaceShipOne to a record-breaking altitude of approximately 62 miles, making him the first private pilot to earn astronaut wings.

major pollution events as they build up over North America and are transported to the North Atlantic. Flights are also targeted to coincide with satellite observations for purposes of validation.

A typical INTEX-NA flight lasts eight to nine hours and will enter the airspace of as many as 20 states. As a deputy mission scientist, Jim Crawford is involved in the formulation of flight plans.

Vickie Connors fields the MicroMaps instrument onboard the Proteus aircraft. The instrument remotely senses atmo-

spheric carbon monoxide for comparison with both satellite and DC-8 observations.

Vic Delnore is responsible for maintaining the INTEX-NA data at Langley's Tropospheric Chemistry Integrated Data Center. This repository not only contains the INTEX-NA data, but also provides access to supplementary data collected from satellites and ground-based observation networks during the INTEX-NA sampling period.

INTEX-NA is a component of the International Consortium for Atmospheric

Research on Transport and Transformation (ICARTT), which takes advantage of the fact that several groups in North America and Europe will conduct concurrent field campaigns this summer with common goals.

NASA's North American partners in this consortium include: the National Oceanic and Atmospheric Administration; the Environmental Protection Agency; Harvard University; the U.S. Department of Energy, Brookhaven National Laboratory; California Institute of Technology; and the Meteorological Service of Canada. European partners from the United Kingdom, Germany and France will obtain measurements over the North Atlantic and western Europe during this time as part of a campaign called Intercontinental Transport of Ozone and Precursors (ITOP).

Additional Langley employees and contractors involved in INTEX-NA are Ali Aknan, Jassim Al-Saadi, Bruce Anderson, Melody Avery, John Barrick, Sandy Branham, Ed Browell, Carolyn Butler, Gao Chen, Yonghoon Choi, Ding-Chong Chu, Glenn Diskin, T. Duncan Fairlie, Johnathan Hair, Lisa Hawks, Charles Hudgins, Syed Ismail, Chieko Kittaka, Susan Kooi, William McCabe, Paul McClung, Ken Moore, Dan Norfolk, Anthony Notari, Don Oliver, Ali Omar, James Plant, Jim Podolski, Mario Rana, Glen Sachse, Tom Slate, Lee Thornhill, Stephanie Vay, David Westberg and Eddie Winstead.

■ *For more information on INTEX-NA, visit: <<http://cloud1.arc.nasa.gov/intex-na/index.html>>.*

Katherine E. Lorentz works for SAIC in support of Langley's Atmospheric Sciences Competency.

NASA To Decommission TRMM Mission

By **GRETCHEN COOK-ANDERSON**
NASA Headquarters

NASA announced on July 16 that it will decommission the Tropical Rainfall Measuring Mission (TRMM) later this year.

A highly successful scientific research mission, TRMM has provided data used worldwide in the monitoring and forecasting of hazardous weather on a demonstration basis. Originally intended to be a three-year mission when launched in 1997, TRMM is now in its seventh year of operation, having completed all of its research and technology objectives four years ago. The extension of mission operations for nearly four additional years was made possible through NASA's efficient management of available resources, technical innovations and substantial additional funding.

"TRMM has been an outstanding example of scientific success and U.S.-Japanese collaboration in conducting Earth observations from space," said Ghassem Asrar, NASA's Associate

Administrator for Earth Science. "The unique TRMM precipitation observations have led to new knowledge concerning the Earth's hydrological cycle and its variation. We now look forward to continued cooperation with our Japanese partners on the Global Precipitation Measurement mission, that will build on the TRMM legacy."

TRMM is the first mission dedicated to measuring tropical and subtropical rainfall through microwave and visible infrared sensors, including the first spaceborne rain radar. The Precipitation Radar aboard TRMM is the first rain radar ever to be launched into space. It measures precipitation distributions over both land and sea. TRMM has exceeded expectations for accuracy and resolution and has given unprecedented insights into rainfall-producing cloud systems over tropical land masses and oceans.

In 1998 TRMM observed Hurricane Bonnie and captured for the first time "sky scrapper" storm clouds towering some 59,000 feet above the ocean — an event scientists believe may have repre-

sented a precursor to storm intensification.

In August 2001, TRMM was boosted from an altitude of 350 km to a higher 402 km orbit to extend its life. This maneuver successfully reduced atmospheric drag on the spacecraft during a period of high solar activity and increased TRMM's life by two years while maintaining the high quality of its scientific observations. NASA also developed a technique to extend TRMM's life by using atmospheric drag, rather than fuel, to lower the spacecraft's altitude in the early stages of the controlled de-orbit process. This scenario has permitted TRMM to continue its normal operations since November 2003.

NASA and the Japanese Space Program will continue close collaboration by establishing a new advanced capability for the measurement of precipitation globally with the Global Precipitation Measurement mission (GPM). The partnership will launch GPM's Core Satellite by the end of the decade.

This complex and pioneering interna-

tional satellite constellation is a prototype for the comprehensive, coordinated and sustained Earth observation system envisioned by the international Group on Earth Observations (GEO) framework. The GPM main satellite is planned to carry advanced, dual-frequency radar that will exceed the capabilities of TRMM's radar. This radar will be capable of making measurements of light rain and frozen precipitation present in higher latitudes in addition to the heavier rain present in the tropics.

In addition, GPM will comprise an international constellation of satellites to measure precipitation globally approximately every three hours; TRMM is limited to conducting less frequent observations at tropical latitudes. GPM will use an extensive ground validation network to further improve the accuracy of its measurements compared to those made by TRMM.

■ *For more information about GPM on the Internet, visit: <<http://gpm.gsfc.nasa.gov/>>.*

'Hallmarks of Success'

Reaching For The Starsys

Small Colorado Company Playing A Big Role In Space Exploration

Editor's note: This is the fourth in a series of articles about small, high-tech, high-risk companies that have partnered with NASA through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. Each one is different — different sizes, different locations, different technologies — yet all have become successful and are considered to be "Hallmarks of Success."

By **SHERI BEAM**
Langley Research Center

Can you get to space with a water heater? Scott Tibbitts says you can.

Tibbitts is the president of a small, high-tech firm in Boulder, Colo., called Starsys Research Corp.

As a boy, Tibbitts was fascinated by NASA's space program. He watched all the Gemini launches with his father, who, by coincidence, was a horticulturist who became the first person to fly potatoes in space — on a NASA shuttle. Tibbitts wished that one day he, too, would somehow be involved in space exploration.

After working as an engineer for a company in Rocky Flats, Colo., Tibbitts partnered with a fellow inventor who had a device and a contract to develop new, efficient home water heaters. The device was a heat switch, and Tibbitts came up with an idea for a new space-based application for it. He then started making calls to sell his idea. One of the calls was to NASA's Jet Propulsion Laboratory in California.

"I've got this little water heater thing," he said. "I think you might use it on spacecraft to control temperatures."

Some JPL engineers gave him the go-ahead to come out and talk with them. Then, on his own nickel, Tibbitts flew to California with his "little cardboard box," thinking, "Wouldn't it be neat to be part of this stuff?"

That was 1986. What began with an idea for a water heater has grown Starsys into a successful designer and manufacturer of products for space systems and vehicles. Today, Starsys numbers about 100 employees.

In the early '90s, JPL awarded Starsys funding through NASA's SBIR Program to develop devices for spacecraft. The SBIR awards helped Starsys take its original heat switches to the commercial market.

"When we were done," Tibbitts said, "the industry was saying, 'Hey, we'll buy these things.'"

Those original devices became actuators that were first used on the international Cassini-Huygens spacecraft, which just rendezvoused with Saturn after years of travel across the solar system.

The Chandra X-Ray Observatory Center was actually the first NASA mission to widely use Starsys technologies. There are 13 different Starsys mecha-



Scott Tibbitts, president of Starsys Research Corp., stands in one of the company's testing facilities in Boulder, Colo. Tibbitts has theory on Starsys' success: "You need to develop relationships in particular areas that you're good at with your partners in the NASA centers that are also good at that."

Photo courtesy of Scott Tibbitts

nisms on Chandra, including several that are responsible for opening and closing various covers of the scientific instruments.

By the late 1990s, the firm was building motors for spacecraft and becoming involved with NASA's missions to Mars. The Mars Exploration Rovers are now using gearboxes, actuators and a thermal heat switch — all from Starsys.

"The product that we developed on this SBIR carried forward into another SBIR, carried forward and is now on the Mars Rover, controlling the temperature of the Spirit Rover," Tibbitts said of the heat switch development.

There's a connection between the Starsys-built components on the Rovers and Langley Research Center's contributions to the mission: Langley's MER

Team was involved with the development of the landing system for the mission. Since the weight of the Lander is a major driver for the design of the system, the size and weight of the Starsys components had an impact on the work of the Langley team.

"Due to the small size and weight of Starsys components, our job was made easier in the extent of designing the entry, descent, and landing system," said Prasun Desai, Langley's MER team leader.

Starsys already is working on other Mars missions.

For the 2007 Mars Phoenix Mission, the firm is building a Robotic Chemical Analysis Laboratory, otherwise known as "RasCAL." RasCAL will collect samples from the planet's surface, perform experiments and transmit the results back to

Earth while still on the planet. This project has also been funded through the SBIR program.

"If Langley's role on these types of missions should grow in the future to include this hardware role, then there would potentially be some interaction with Starsys," Desai said.

How Starsys manages so successfully to infuse its NASA research back into agency missions and commercial applications is no secret.

"You need to develop relationships in particular areas that you're good at with your partners in the NASA centers that are also good at that," Tibbitts said.

Starsys products are also currently flying on two other NASA missions — STARDUST and GENESIS — including their actuators and frameless motors.

The firm does have customers other than NASA.

Starsys licensed a technology from Lockheed Martin for a release mechanism. Using the technology and with Saab Ericsson Space as a partner, Starsys has developed and commercialized the devices, which will be installed on the next generation of release systems for spacecraft.

The company also is working on an Air Force Research Lab product called the Orbital Express Docking System. Culling from experience gained developing the products with Saab Ericsson, Starsys will produce a release system for the project.

With a renewed national focus on space exploration, Starsys is in an enviable position because of the type of work it does.

"If you build a spacecraft, we do all the stuff that moves," Tibbitts said.

And Starsys does it well. The firm prides itself on having 100 percent operational success in every single one of its endeavors. Tibbitts believes the success is due to the company's work philosophy.

"If one of our latches doesn't operate, a solar panel doesn't open, the mission is lost," Tibbitts said. "You recognize both what that means for the country, what that means for our company, what that means for everybody involved. You have 100 people in this company that all have this mindset of 'This has to be just right.'"

Tibbitts said he thinks his company will become even more involved in robotic work.

"I just look 10 or 20 years in the future and see people landing on the moon, maybe Mars, and just being a huge part of those missions," he said. "The timing to be where we are and have all these things going on, and be in the middle of it — to start from a water heater 15 years ago — pretty exciting stuff."

Sheri Beam is in charge of marketing and media relations for Langley's Small Business Partnership Team.

CLASSIFIED

FOR SALE: 1998 BMW 528i, white with black leather interior and wood trim, five speed, 74,828 miles, second owner, maintained regularly by dealer, Carfax Clean Title History Guarantee, \$18,000 negotiable. E-mail <babimitra@comcast.net>.

FOR SALE: 1992 Dodge Grand Caravan LE, blue/grey, 130,000 miles, automatic/V-6, built-in child-seats, \$3,000 or best offer. Call 867-9697

FOR SALE: 1984 Oldsmobile Cutlass Supreme Brougham, beige with quarter vinyl top, automatic, 3.8 litre V-6, power features, low mileage, garage kept, excellent condition, \$2,000. Call 877-9569.

FOR SALE: 1989 Ford Taurus SHO, 5 speed, 24-valve engine, power features, keyless entry, moonroof, partial leather seats, sporty, \$1,800 or best offer. Call 867-9697

FOR SALE: Used dryer, \$150 or best offer. Call 564-1593.



Send submissions for the Aug. 13 edition to <j.r.roberts@larc.nasa.gov>.

LAA To Meet On Aug. 10

Langley Research Center's Alumni Association (LAA) will meet at 11:30 a.m. **Aug. 10** in the Langley Room of the cafeteria. The program will feature Langley employee Mark Schenenberger, who will discuss the Center's involvement in Mars exploration activities, including the Spirit and Opportunity rovers.

For information about the LAA, call 864-7330.

J-Lab Hosting Summer Physics Fests

Jefferson Lab will host "Summer Physics Fests" from 10 a.m. to noon **Aug. 11** and **Aug. 25** in the CEBAF Center auditorium in Newport News.

The Physics Fests, designed for families and student groups, include an interactive summary of the research conducted at the Jefferson Lab followed by the popular "Deep Freeze" and "Hot Stuff" presentations.

The presentations are free and open to the public, but reservations are required. For reservations or more information, contact Stacy Ring at 269-7560 or <ring@jlab.org>.

Volunteers Needed To Stuff Bags

Langley Research Center's Public Services Office is recruiting volunteers to help stuff educator bags for state fairs. Sessions are scheduled **Sept. 8-9** in Bldg. 1212. Refreshments will be provided. To volunteer, call Jeane Shanks at 864-3293.

Blood Drive On Sept. 15

The American Red Cross will host a blood drive on **Sept. 15** in Langley Research Center's gymnasium. Langley employees,

Honor Awards Ceremony Aug. 13

Langley Research Center will host its annual Honor Awards Ceremony at 2 p.m. **Aug. 13** in the H.J.E. Reid Center.

Presentations will be made to eight teams and 37 individuals for various honor awards. Recipients of the 2003 H.J.E. Reid Award, the Paul F. Holloway Non-Aerospace Technology Transfer Award and the Richard T. Whitcomb Aerospace Technology Transfer Award also will be recognized.

All NASA employees and contractors are invited to attend. For more information, call Karen Ridlon at 864-3194.

contractors and retirees are invited to participate. Civil servants should charge their time to "Excused Leave."

The final blood drive for 2004 will be held on **Nov. 24**.

For more information, contact Connie Small at 864-2564 or <Connie.J.Small@nasa.gov>.

Nobel Laureate To Speak At ODU

Old Dominion University will host two lectures by Nobel Prize winner Carl E. Wieman in September. Wieman will speak about "Bose-Einstein Condensation: Quantum Weirdness at the Lowest Temperatures in the Universe" at 10 a.m. **Sept. 17** in the Constant Convocation Center and about "The Circuitous Route of a Scientific Discovery" at 10 a.m. **Sept. 18** in

Constant Hall. ODU and the lecture venues are located in Norfolk.

For more information, contact Amin Dharamsi at 683-4467 or <adharams@odu.edu>.

Special Activities Planned At VAM

A new exhibit titled "Lindbergh's Return to Richmond" opened in July at the Virginia Aviation Museum (VAM) and will remain on display through **Sept. 26**.

The VAM, located at Richmond International Airport, is open from 9:30 a.m. to 5 p.m. Monday through Saturday and from noon to 5 p.m. Sunday.

For more information, call 804-236-3622 or visit <<http://vam.smv.org>> on the Internet.

ODU Offering New Aero Course

Old Dominion University will offer the course, AE 684 "Virtual and Synthetic Environments and Applications," in the 2004 fall semester.

For more information, call the aerospace engineering department at 683-3720 or visit: <<http://www.aee.odu.edu/consortium/index.html>>.

Soccer Club Hosts Weekly Games

Langley Research Center's Soccer Club hosts co-ed games after work every Tuesday and Thursday. All levels are welcome; players are asked to bring a white T-shirt and a dark T-shirt for ease of team identification.

For more information or to be added to the Soccer Club's e-mail list, contact Mahyar Malekpour at 864-1513 or visit the club's web site: <<http://larc-exchange.larc.nasa.gov/lea/soccer/>>.

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Center Snapshot

Juliana Tassy, a second-year graduate student at the Illinois Institute of Technology, is working in Langley Research Center's Jet Noise Lab through the Langley Aerospace Research Summer Scholars (LARSS) program. She was born in Toronto but became a U.S. citizen five years ago and now lives in Chicago. After work, she enjoys working out at the gym, rollerblading, swimming and playing basketball. Why did she choose to work at Langley this summer? "I knew I would be able to learn from the experts in the field of aerospace engineering," she says.

Photo by Jeff Caplan