



The saucer-shaped Low-Density Supersonic Decelerator test vehicle is lifted aboard the Kahana recovery vessel following the June 28 test off the coast of Kauai.

Carbon satellite heads to space

California's central coast may have been cloaked in fog, but the late-night ride into space was essentially flawless for JPL's Orbiting Carbon Observatory 2 as it launched July 2 from Vandenberg Air Force Base.

In the 10 days following launch, the spacecraft began a checkout process before going into three weeks of maneuvers that will place it in its final 705-kilometer (438-mile) near-polar orbit. It will be at the head of a string of Earth-observing satellites known as the Afternoon Constellation, or "A-Train."

The launch was "a perfect ride," JPL Project Manager Ralph Basilio enthused in a post-launch briefing.

Over the years several hundred JPLers have worked on the mission, and about 100 will continue supporting it during its operational phase, Basilio noted. The satellite's single science instrument—a group of three high-resolution spectrometers sharing a common telescope—was fabricated at JPL.

Putting on the brakes

Decelerator will benefit future heavier payloads at Mars

By Mark Whalen

Happy landings may await future Mars-bound payloads, thanks to a successful experimental test flight June 28 off the coast of Kauai, Hawaii.

The test of JPL's Low-Density Supersonic Decelerator project started with the early-morning launch of a balloon carrying the test vehicle to 119,000 feet above the Pacific Ocean. The test vehicle separated from the balloon and fired a rocket engine to begin powered flight, achieving Mach 4.1 at 191,000 feet about a minute later.

The vehicle splashed down at 11:35 a.m. Hawaii time. The vehicle and parachute were recovered from the ocean a few hours later, and returned to port the next day.

Although the mission's parachute failed to deploy as planned, Project Manager Mark Adler was happy with the test and expects to garner numerous lessons learned for further test flights next year.

"The test vehicle worked beautifully and we met all of our flight objectives," says Adler. "We have recovered all the vehicle hardware and data recorders and will be able to apply this information to our technology demonstration flights next year."

In the test, the flying saucer-shaped vehicle experienced rough aerodynamic conditions similar to what a Mars lander would encounter as it enters the planet's thin atmosphere. The goal is to develop atmospheric braking systems able to carry heavier, more sophisticated landers to the surface than current systems can handle.

The project has long planned two more supersonic flights next summer. Still, Adler says this first "shakeout flight" was critically important for the team to get information this year to feed into those future tests.

"We don't want to do these tests at the same time and not learn from one to the other," Adler says. His team's goal for the first test was "to be able to show that we know how to operate it, know how to get the data, and take that information that we learned."

Not only did the test determine the flying ability of the vehicle—which flew to required speeds and low atmospheric densities, returning all planned telemetry—it also deployed two new landing technologies as a bonus.

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Acquisition Division aims to save paper, time, money

By Mark Whalen



The Work Different team.

In the interest of creating a system that offers rapid access, accuracy, efficiency – not to mention saving trees – JPL's Acquisition Division has begun the process of going paperless.

On June 1, the division kicked off an initiative called "Work Different" to transition from a procurement system based on paper documents to an electronic system for subcontract documents.

Perhaps more than most JPL organizations, the Acquisition Division goes through a lot of paper. From small purchase orders of several pages to mammoth-sized, multimillion-dollar subcontracts, three-ring binders used for record keeping quickly fill up bookshelves.

A team led by Martin Johnson of the Institutional Services Support Section, working with support from the Office of

the Chief Information Officer, trained Acquisition Division staff in using software such as Microsoft OneNote, an information-gathering program that can be edited by multiple users.

When I first came here, I thought JPL Rules was fantastic. ... And our plan to go paperless will be similar.

— Karl Bird

One goal of the initiative is to foster quicker document reviews. The Office of the General Counsel has been the first

beneficiary.

"In the past, if a contract required review by the Office of the General Counsel, a subcontracts manager hauled a big binder up to Building 180 for the review," noted Acquisition Division Manager Karl Bird. "Now we send it to the General Counsel electronically. It's done very quickly and will cut down on the time needed for reviews. It also eliminates all of the trips up there and back."

Bird cited another example of paper overload that he expects will be avoided from now on.

"A subcontracts manager will have a very large contract for our desktop computers. The basic contract is probably a couple of large three-ring binders," said Bird. "But the modifications take up 79 large three-ring binders. So one subcon-

tracts manager has 82 binders in their office, a bookcase full. That's not unusual for a big flight project job. So the spinoff benefits are huge – of not handling, transporting and storing all these notebooks and papers."

"It's been an easy transition," said Bird. "I'm pleased that it hasn't been that hard for the folks who have been here for decades to adapt to it. It's like working on a paper file, except it's on your computer screen."

Bird, who previously worked for the U.S. military, is reminded of the creation of JPL Rules, the online repository for JPL documents that replaced countless binders of policies and procedures.

"When I first came here, I thought JPL Rules was fantastic," said Bird. "I had never been anywhere where they actually had these electronically available to everybody, and you knew you were looking at the current version. That impressed me. And our plan to go paperless will be similar."

While there's no official accounting for how many pounds of paper or the number of trees is consumed by JPL procurements, a tally of Acquisition's first month of creating electronic files, rather than paper, is telling.

"Through the first three weeks of June we entered 64,000 individual files in an e-share account," noted Bird. "So the overall numbers will be astounding. But look at the paper savings in less than a month's time."

Bird said the initiative is serving as a "proving ground" that could be adapted for use by others at JPL. The project is already drawing interest from procurement offices at other NASA centers.

The next level of the division's efforts will be the purchase of electronic signature software, expected by early July.

LDSD *Continued from page 1*

During the flight, the vehicle successfully deployed the Supersonic Inflatable Aerodynamic Decelerator, a large, doughnut-shaped inflatable drag device. The second new technology, the Supersonic Disk Sail Parachute, did not deploy as expected. Both technologies will be tested again off Kauai next summer.

One of the motivations for the project, says Principal Investigator Ian Clark of JPL, is "to take the next steps, to get the bigger and more efficient parachutes and decelerators to operate at higher mach, so that we can put bigger payloads on the surface of Mars."

Some 200 people NASA-wide have con-

tributed to the project, including about 100 from JPL. Currently, the equivalent of 50 to 60 full-timers at JPL support it.

"It's been a tremendous effort by the team," says Adler. "We developed not just the technologies but entirely new test architectures for these technologies, both on the ground using rocket sleds and in

the stratosphere with this balloon-lofted, rocket-powered entry vehicle. The supersonic test architecture worked perfectly on its very first flight."

For more information about the mission, visit: <http://go.usa.gov/kzZQ>

Paying it forward

By Mark Whalen

Former summer interns become mentors for new arrivals



Sarah Milkovich, second from left, with Mars Science Laboratory colleague Nicole Spanovich, left, joins interns Marie McBride and Genevieve De Mijolla, right, on landing night in August 2012.

With hundreds of interns now on-site at JPL, many unforgettable experiences are in store for the students taking part. But internship doesn't only benefit the students themselves—over the years it has changed JPL for the better.

Consider gravity assist, the technique that allows spacecraft to use one planet's gravity to reach another planet. It has been a major factor in missions ranging from Mariner 10 to Voyager to Galileo and Cassini. How did it first show up at JPL? Through a summer project by an intern in 1962.

Or there was the Grand Tour, the ambitious flight plan taking Voyager 2 to all of the giant gas outer planets. That too was the brainchild of an intern.

Even today, interns are playing an important role at JPL. Many students whose experiences were so highly treasured and memorable became JPL employees following the completion of their education. Some are committed to pay it forward to the next generation by guiding newcomers.

Sarah Milkovich, currently an investigation scientist on Mars Reconnaissance Orbiter and science systems engineer for the Mars 2020 rover, was a co-mentor for Mars Science Laboratory 2012 summer interns.

Herself a 1999 JPL intern with a focus on Team X (JPL's Advanced Projects Design Team), Milkovich recalls her valuable experiences of learning how JPL works.

"We presented to Team X what we had designed," said Milkovich. "I remember seeing how important the communication aspect of the presentation was, and how Team X poked holes in ideas as much as possible. It was very eye opening.

"You don't always have an opportunity in school to get that kind of experience and it's certainly something that will serve people well—whether they come here or not. Later on, it's a good life experience."

Milkovich also treasured JPLers' generosity with their time and, as a mentor, has followed in their footsteps, offering much of the same advice she had been given.

"A lot of times students think of their future careers

One of the big things about JPL is that science and engineering talk to each other and really become intertwined. And it's so important because so much of what we do at JPL is to have somebody with a science perspective working directly with the engineers.

—Sarah Milkovich

in terms of research science and only research science," said Milkovich. "One of the big things about JPL is that science and engineering talk to each other and really become intertwined. And it's so important because so much of what we do at JPL is to have somebody with a science perspective working directly with the engineers.

"It's like a whole new career path that a lot of people

with science interests didn't even know existed. And they think you have to be either a scientist or an engineer. But the idea that people here can do science *and* engineering is information that I want to make sure to give them."

Gregory Villar, who studied astrophysics during his 2008 internship, was hired as a full-time JPLer in 2010. He exemplifies those who have taken advantage of JPL's wide variety of career opportunities.

"My internship was in science, but I eventually got hired as a systems engineer," Villar said. An opportunity opened up on Mars Science Laboratory a year before launch so he joined the Mission Systems Verification and Validation Team.

Last summer, Villar was mentoring an intern for Mars Science Laboratory but took it upon himself to rally all of the MSL interns, about 15 of them. "When I started working on the project, I was fortunate to have 'implied mentorship' with senior engineers," he said. "I really appreciated them taking me under their wing. They were always there, sometimes without me having to ask. I realized that if I ever have a problem in the future, I can go to these people openly and ask for advice.

"I told myself that this is another reason I should pay it forward," he said. "They gave me the opportunity to work on a life-changing mission and I wanted to do the same."

When he first started his internship, Villar wasn't sure whether he wanted to stay. "The thing that really got me thinking that JPL was the place I wanted to work was being on a flight project. I love interacting with people and I really enjoyed MSL. At that point I realized, it's going to be pretty hard to take me out of JPL."

News Briefs

JPL in Computerworld top 100

Computerworld magazine has recognized JPL as one of the top 100 places to work in information technology, the second year in a row that JPL has received the honor.

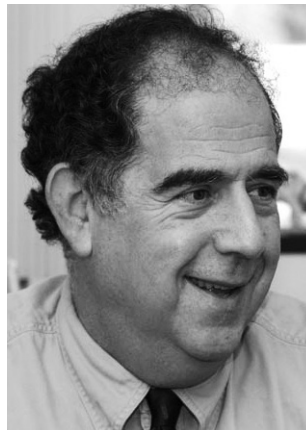
The list is compiled based on a comprehensive questionnaire regarding company offerings in categories such as benefits, diversity, career development, training and retention. In addition, Computerworld conducts extensive surveys of information technology employees and their responses factor heavily in determining the rankings.

JPL finished 19th among employers with 5,000 or more employees in the annual ranking.

To view the Top 100 list, visit http://www.computerworld.com/s/article/9248311/100_Best_Places_to_Work_in_IT_2014. For a profile on the JPL team, visit http://www.computerworld.com/s/article/9248903/Best_Places_spotlight_Independence_reigns_at_NASA_s_Jet_Propulsion_Laboratory.

Institute honors Werner, Spitzer

Spitzer Space Telescope Project Sci-



Mike Werner

entist Mike Werner has been selected to receive the American Institute of Aeronautics and Astronautics' 2014 Space Science Award.

Established in 1961, the award is given to an individual for demonstrated leadership of innovative scientific investigations associated with space science missions. The award cites "outstanding science producing over 2,000 papers, 50,000+ hours of observation, and significant findings such as the first telescope to directly detect light from

extrasolar planets."

Considered a cousin of the Hubble Space Telescope, Spitzer, launched in 2003, studies the early universe in infrared light. The first telescope to see light from a planet outside our solar system, Spitzer has also made important discoveries about comets, stars, exoplanets and distant galaxies.

In 2009, the telescope began its "warm" mission, which takes advantage of the still-working, shortest-wavelength



Christian Frankenberg

infrared channels on the observatory. Science operations are conducted at the Spitzer Science Center at Caltech.

Werner will receive the award on behalf of the team Aug. 7 at the AIAA Space and Astronautics Forum in San Diego.

Early-career honors for Frankenberg

Christian Frankenberg, a researcher in the Tropospheric Sounding, Assimilation and Modeling Group, has been named a recipient of the American Geophysical Union's James B. Macelwane Medal in recognition of "significant contributions to the geophysical sciences by an outstanding early career scientist."

Frankenberg joined JPL in 2010. His current studies include greenhouse gas retrievals from JPL's newly launched Orbiting Carbon Observatory 2 mission and the Japanese Greenhouse gases Observing SATellite (Gosat) mission. In 2012, he received NASA Early Career Achievement Medal.

Frankenberg will receive the honor at the American Geophysical Union's fall meeting in San Francisco.

Passings

Marilynn Davis, 76, a retired secretary, died Jan. 5.

Davis worked at JPL from 1990 to 2004. She served as project secretary on the Galileo and Mars Exploration Rover missions.

Davis is survived by her daughter Carolyn and granddaughter Ariel. Services were held at Forest Lawn, Glendale.



Gerhard Klement

Gerhard Klement, 84, a retired electrician, died Feb. 19.

Klement worked for 25 years for JPL. He was a contributor to the Voyager 2 Neptune Encounter project in August 1989.

He is survived by his wife, Helene, three children and six grandchildren.

Thomas Kehoe, 79, retired from JPL space station operations in Vir-



Tom Kehoe

ginia, died April 3.

Kehoe joined JPL in 1983 after retiring from the U.S. Army as a colonel. In 1986, JPL was tasked with performing systems engineering for Space Station Freedom, and established a field office in Reston, Va. for the activity. Kehoe also worked in the East Coast Defense Program Support Office and Flight Projects Administrative Office. He retired from JPL in 1994 when space station operations moved from Reston to Houston.

Kehoe is survived by his wife, Kay; children Katherine, Thomas and Kevin; grandchildren Cheyenne, Danielle, Lauren and Alyssa; and a great-grandson Cameron.

Kehoe will be interred at Arlington National Cemetery following Aug. 6 services at Ft. Myer, Va.



James Bryden

Retired supervisor **James Bryden**, 83, died April 15.

Bryden worked at JPL from 1961 to 1983. He held project management positions on the Ranger, Mariner and Surveyor programs, including supervisor of telemetry and command and data processing for Surveyor. He also managed several development projects in the Defense and Civil Systems Program Office.

Bryden is survived by his wife, Janice; children Nina and Philip; and grandsons Michael, Trevor, Paul and Viggo.

Jerry Love, 73, a ground support engineer in the Flight Electronics and



Jerry Love

Software Systems Section, died April 21.

Love supported JPL missions as a contractor from 1967 to 2005 and as a JPL employee from 2006-14. He started his career testing breadboard and flight radios for Mariner and most recently supported avionics test equip-

ment upgrades for Mars 2020.

Love is survived by his wife, Ann; son and daughter-in-law Christopher and Imelda Love; grandsons Jordan and Justin; granddaughter Chloe; sisters Patricia Love and Louis Stratton and brother Daniel Love.

William "Mel" Smith Jr., 84, a retired construction manager, died June 2.

Smith worked for JPL for 13 years, retiring in the mid-1980s. Among the construction projects he supervised was JPL's Microdevices Laboratory.

Smith is survived by his wife, Alice; children Steven and Carolyn; grandson Evan; step-granddaughter Holly and great-grandchildren Piper and Mitchell. A memorial service was held June 10 at First Congregational Church in Pasadena.

Letters

On behalf of myself and family we want to thank our JPL family, we are thankful for the beautiful plant on the recent loss of my mother. There are simply no words to express my heartfelt thanks for the sympathy you have extended toward me and my family during this time of our loss. We are deeply grateful to you all.

Greg Pruitt

My most sincere thanks and appreciation to my JPL friends and colleagues for the many expressions of sympathy and support for the passing of my father, Zivomir (aka Steve) Stefanovich on May 26. He was very proud of his employment at JPL from 1957 to 1997 in what today is the Facilities Maintenance and Operations Section. Thank you also to JPL for the beautiful terrarium sent in memory of my father.

Andre Stefanovich

I would like to thank the JPL community and in particular my friends and management in Section 333 for their kindness and support over the past few years during the decline and passing of my mother in May. I am touched by the words written on the card, and by the kindness people have shown me. It feels personal and I thank you all for your words and support.

Scott Allen

Retirees

The following employees retired in June: **Laura Hollis**, 43 years, Section 2143; **Kristine Blom**, 38 years, Section 9050; **Angela Belcastro**, 31 years, Section 3564; **Loretta James**, 30 years, Section 1163; **Mirna Roach**, 16 years, Section 8010; **Cynthia Heep**, 12 years, Section 2800.



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