



The Dryden XPRESS

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Mars Miracle

76 pyrotechnics, 500,000 lines of code and one perfect landing

NASA's most advanced Mars rover Curiosity has landed on the Red Planet. The one-ton rover, hanging by cables from a rocket backpack, touched down on Mars Aug. 5 to end a 36-week flight and begin a two-year geological investigation.

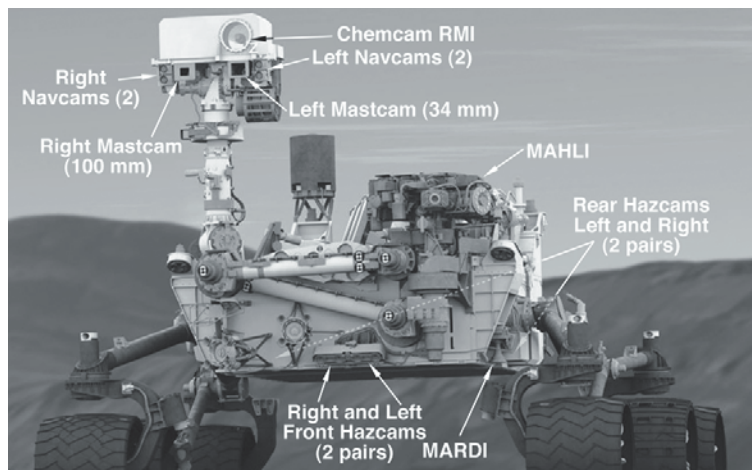
The Mars Science Laboratory spacecraft that carried Curiosity succeeded in every step of the most complex landing ever attempted on Mars, including the final severing of the bridle cords and flyaway maneuver of the rocket backpack.

"The wheels of Curiosity have begun to blaze the trail for human footprints on Mars. Curiosity, the most sophisticated rover ever built, is now on the surface of the Red Planet, where it will seek to answer age-old questions about whether life ever existed on Mars – or if the planet can sustain life in the future," said NASA Administrator Charles Bolden. "This is an amazing achievement, made possible by a team of scientists and engineers from around the world and led by the extraordinary men and women of NASA and our Jet Propulsion Laboratory. President Obama has laid out a bold vision for sending humans to Mars in the mid-2030s, and today's landing marks a significant step toward achieving this goal."

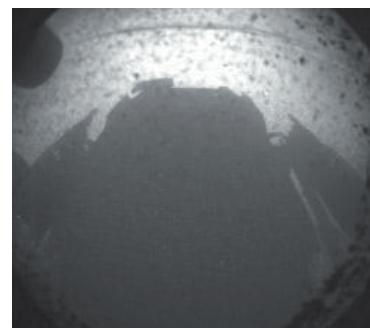


NASA/JPL photo

Jet Propulsion Laboratory personnel in the control room celebrate Curiosity's successful Mars landing Aug. 5.



NASA/JPL illustration



NASA/JPL photo

At left, the illustration shows the position of Curiosity's cameras. Above, one of the first images Curiosity took was of its shadow on Mars.

See Mars, page 2

Montgomery details Dryden MSL role

By Jay Levine

X-Press editor

When the Curiosity rover made its complex descent to Mars Aug. 5, it represented a moment of truth for researchers not only at the Jet Propulsion Laboratory in Pasadena, Calif., but for contributors across NASA and around the world.

Jim Montgomery, field test lead at JPL for the Mars Science Laboratory Terminal Descent Sensor, detailed Dryden contributions to flight testing the MSL's landing radar at a NASA Dryden colloquium July 25.

"JPL and NASA Dryden had a very strong partnership where we did some field testing of a core part of the Terminal Descent Sensor, or landing system," Montgomery said.

"When we land on Mars on Aug 5 at 10:31 p.m. local time, you all should be very proud of your role."

The flight testing at Dryden helped validate the MSL's Terminal Descent Sensor, or TDS, a sophisticated pulse-Doppler landing radar system. The TDS functions were verified during a series of field tests over Mars-like terrain and using flight-like conditions expected during the descent and landing of MSL.



ED12 0234-12

NASA/Tom Tschida photo

Jim Montgomery, JPL's field test lead for the Mars Science Laboratory's Terminal Descent Sensor landing radar, outlined the 2011 flight tests of the system housed in a Quick-Test Experimental Pod on one of Dryden's F/A-18 aircraft.

Because the TDS will operate over a large range of altitudes and velocities, different venues and methods were necessary to test it over a five-year period. From July 2006 to June 2011, those tests were ongoing at Dryden and other venues, including use of a commercial helicopter and the 100-meter tall Echo Towers at the Naval Air Weapons Station at China Lake, Calif.

Dryden hosted and supported two series of flight tests of the MSL rover's landing radar, the first under a helicopter in 2010 and a follow-on series with the radar housed in a Quick Test Experimental Pod mounted under the wing of a Dryden F/A-18 in June 2011.

"We would not have gone to Mars if we could not have made the F/A-18 campaign work. There were a lot of red flags and we

were able to reduce that risk to an acceptable level," Montgomery said.

The most recent tests last year focused on the on-chute acquisition portion of the MSL's entry into the Martian atmosphere, when the spacecraft is suspended from its parachute. Data collected from the flights were used to finesse the MSL's landing radar software to ensure that it was calibrated as accurately as possible prior to Curiosity's landing.

"We did a wonderful verification and validation campaign. We had simulation, we had analysis, we had lab testing and, of course, the field testing. All of those pieces together make us very confident, but not overly confident, that the radar is going to do its job on landing day," he said.

The Mars Science Laboratory was launched on Nov. 26, 2011, and began its two-year mission Aug. 5.

"We are landing in Gale crater, which is very interesting from the scientific perspective," said Montgomery. "We are landing in a very deep crater with a mountain in the center. What's great about this is

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Mars ... from page 1

Curiosity landed near the foot of a mountain three miles tall and 96 miles in diameter inside Gale Crater. During a nearly two-year prime mission, the rover will investigate if the region ever offered conditions favorable for microbial life.

"The Seven Minutes of Terror has turned into the Seven Minutes of Triumph," said NASA Associate Administrator for Science John Grunsfeld. "My immense joy in the success of this mission is matched only by overwhelming pride I feel for the women and men of the mission's team."

Curiosity returned its first view of Mars, a wide-angle scene of rocky ground near the front of the rover.

"Our Curiosity is talking to us from the surface of Mars," said MSL

Follow the Curiosity

For more information on the mission, visit: <http://www.nasa.gov/mars> and <http://marsprogram.jpl.nasa.gov/msl>

Follow the mission on Facebook and Twitter at: <http://www.facebook.com/marscuriosity> and <http://www.twitter.com/marscuriosity>

Project Manager Peter Theisinger of JPL.

"The landing takes us past the most hazardous moments for this project, and begins a new and

exciting mission to pursue its scientific objectives," he said.

Confirmation of Curiosity's successful landing came in communications relayed by NASA's Mars Odyssey orbiter and received by the Canberra, Australia, antenna station of NASA's Deep Space Network.

Curiosity carries 10 science instruments with a total mass 15 times as large as the science payloads on the Mars rovers Spirit and Opportunity. Some of the tools are the first of their kind on Mars, such as a laser-firing instrument for checking elemental composition of rocks from a distance. The rover will use a drill and scoop at the end of its robotic arm to gather soil and powdered

samples of rock interiors, then sieve and parcel out these samples into analytical laboratory instruments inside the rover.

To handle this science toolkit, Curiosity is twice as long and five times as heavy as Spirit or Opportunity. The Gale Crater landing site places the rover within driving distance of layers of the crater's interior mountain. Observations from orbit have identified clay and sulfate minerals in the lower layers, indicating a wet history.

The mission is managed by JPL for NASA's Science Mission Directorate in Washington. The rover was designed, developed and assembled at JPL. JPL is a division of the California Institute of Technology in Pasadena.

Thomson wins scholarship

Rachel Thomson is the Dryden Employee Exchange Council's 2012 John K. Russell Memorial Scholarship Award winner.

A 2012 graduate of Desert High School on Edwards Air Force Base, Thomson plans to major in kinesiology with an emphasis in pre-athletic training at California State University – Long Beach this fall. Along with her twin sister Katherine, Rachel was a co-valedictorian of her high school class, both having earned a 4.3 grade-point average during high school. Rachel was ranked third academically out of 103 students in Desert High's class of 2012.

The scholarship provides \$2,000 per year for up to four years for

See Scholarship, page 8



ED12 0206-2

NASA/Tom Tschida photo

Rachel Thomson, second from right, who was chosen to receive the Dryden Employee Exchange Scholarship, is congratulated by Dryden Flight Research Center Director David McBride, right. From left are her parents, Michael and Jennifer Thomson and her sister Katherine.

News at NASA

Contracts awarded

On Aug. 3 NASA announced new agreements with three American companies to design and develop the next generation of U.S. human spaceflight capabilities, enabling a launch of astronauts from U.S. soil in the next five years. Advances made by these companies under newly signed Space Act Agreements through the agency's Commercial Crew Integrated Capability initiative are intended to ultimately lead to the availability of commercial human spaceflight services for government and commercial customers.

The three partners and their award are \$212.5 million for the Sierra Nevada Corporation of Louisville, Colo.; \$440 million to Space Exploration Technologies, or SpaceX, of Hawthorne, Calif.; and \$460 million for The Boeing Company of Houston.

"Today, we are announcing another critical step toward launching our astronauts from U.S. soil on space systems built by American companies," NASA Administrator Charles Bolden said. "We have selected three companies that will help keep us on track to end the outsourcing of human spaceflight and create high-paying jobs in Florida and elsewhere across the country."

The agreements are an initiative of NASA's Commercial Crew Program and an administration priority. The objective is to facilitate the development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable and cost-effective access to and from the International Space Station and low Earth orbit.



ED12 0231-1

NASA/Tom Tschida photo

Brown gets a 'Snoopy'

Dryden's Alan Brown recently was awarded a Silver Snoopy pin by NASA astronauts Rick "C.J." Sturckow, left, and Jeff Williams, right. Brown was recognized "for professionalism, dedication and outstanding support that greatly enhanced space flight safety and mission success." As public affairs specialist and later as news chief, Brown coordinated visits, interviews and shared information with U.S. and international media during 10 space shuttle landings.

Put your dukes up

Tara McCoy, at left, and NASA Summer Picnic coordinator Stephanie Allison box at the employee event in Tebachapi's Central Park. Aside from the boxing ring, the other activities that packed a punch for attendees included a bounce house, volleyball, face painting, beanbag toss, tug-of-war and a relay obstacle course. Also on tap were a barbecue lunch, a sack race and piñatas.



ED12 0190-15

NASA/Tom Tschida photo

Rocket man

Engle and X-15 pilots verified, validated the methods to reach the space age

By Jay Levine

X-Press Editor

On the eve of one of NASA's major space science milestones – the landing of its Mars Science Lab Curiosity rover on the Red Planet – retired Air Force test pilot and NASA astronaut Maj. Gen. Joe H. Engle recalled his involvement in several earlier spaceflight milestones during a recent Dryden visit.

Milestones are something Engle understands as he frequently reached them during his experiences as an X-15 pilot, a pilot of the prototype space shuttle Enterprise during the 1977 Approach and Landing Tests at Edwards Air Force Base, and as commander of two space shuttle missions.

Engle attended a number of events in the Antelope Valley including a tour and colloquium at Dryden, a visit to XCOR Aerospace at the Mojave Air and Space Port and as an honoree at the Lancaster JetHawk's baseball team Aerospace Appreciation Night. Dryden pilot Troy Asher and Tom Jones, Dryden Supersonics project manager, provided another highlight of the event with two pre-game flyovers in a NASA F/A-18.

Engle had 16 flights in the rocket-powered X-15 as an Air Force pilot assigned to the joint NASA, Air Force, Navy and North American Aviation program. He flew the X-15 to an altitude of 280,600 feet and became the youngest pilot to qualify as an astronaut at age 32. Three of his X-15 flights exceeded the 50-mile altitude requirement for an astronaut rating.

"It was the ultimate flying machine. No airplane can live up to what the X-15 did," he said.

A key contribution of the X-15 was developing confidence that an unpowered spacecraft could glide to a safe landing. Also, the maneuvers to slow the X-15 were nearly identical to those of the space shuttle from Mach 6 to landing. Reaction controls, essentially small rockets used for directional control in space, also were proven on the X-15.

Engle was one of the beneficiaries of his X-15 work when he later piloted Enterprise and operational space shuttles.

The X-15 program's 199 flights during a nine-year period contributed to advances in aerospace technology such as materials, hypersonic aerodynamics, astronomy and spaceflight. Launched from beneath the wing of a modified B-52, the X-15 was the first piloted aircraft to exceed Mach 4, 5 and 6. Information from the X-15 program contributed to the development of the Mercury, Gemini, Apollo and the Space Shuttle programs.

Engle said he was impressed with the cooperation among partners during the X-15 program and that the X-15 flights were a highlight of his career.

"My first flight was a highlight. It was a relatively benign profile as far as speed and altitude, but benign in the X-15 was several orders of magnitude faster and higher than I'd ever been. All X-15 flights were as exciting and busy as can be. There just wasn't time to sit and look around much," Engle said.

From June to October 1977 he was the commander of one of two crews



ED12 0253-62

NASA/Tom Tschida photo

Retired test pilot and astronaut Maj. Gen. Joe Engle recounted the X-15's contributions to space flight during his Dryden colloquium.

that flew the Enterprise Approach and Landing Tests. The Enterprise was released from the back of a special modified NASA 747 Shuttle Carrier Aircraft and had a two-and-a-half minute glide test from 20,000 feet to landing.

Engle had another opportunity to validate the vehicle's landing characteristics in late 1981 during the second orbital space shuttle mission, STS-2. The mission was cut short and he was required to manually fly the orbiter from orbit to a landing – the first and only pilot to accomplish that task.

He would later command a second orbital mission, STS-51-I, on space shuttle Discovery that deployed three communication satellites and performed a successful on-orbit rendezvous and manual repair of a disabled communications satellite.

"STS-2 had a failure early on in its systems that required us to land after two days. We were totally busy and saturated with work and we didn't have time to look at or enjoy anything. In fact, we didn't have time to get any sleep. On 51-I there were times in the missions when you would be able to float over to a window and look out the window down on Earth. I think that was one of the most awesome sights," he said.

At XCOR, which along with the Mojave Air and Space Port sponsored the Aerospace Appreciation Night, he toured the facilities and sat in a mock up of XCOR's Lynx suborbital, reusable, launch vehicle. The Lynx



E-14198

NASA photo

Maj. Gen. Joe Engle flew 16 research flights in the X-15 rocket plane in the 1960s and went on to fly the prototype space shuttle Enterprise during the Approach and Landing Tests and two orbital space shuttle missions.



ED12 0253-147

NASA/Tom Tschida photo

Maj. Gen. Joe Engle sits at a mockup of the Lynx suborbital, reusable launch vehicle with Dan DeLong, XCOR Aerospace vice president and chief engineer.

is intended to be a highly reliable and safe mode of transportation to space. XCOR is a flight provider in NASA's Flight Opportunities program managed at Dryden.

The Mach 4, two-seat, Lynx launch vehicle looks similar to a high performance futuristic fighter jet and will take off from the runway like a conventional aircraft, but using four liquid oxygen and kerosene engines. The fully reusable rocket engines will propel the Lynx to the edge of space, where it will carry participants and/or scientific upper atmosphere and microgravity experiments. The company is ambitious and is planning for its flight tests to begin at the Mojave Air and Space Port next year and then produce additional Lynx vehicles for operations from other locations around the country – and the world.



NASA photo

Joe Engle, at lower left, led a five-member shuttle crew on STS-51-I in 1985, including pilot Richard Covey (lower right) and mission specialists (top row, from left) James van Hoften, Mike Lounge and William Fisher.



NASA photo

Astronauts Joe Engle and Dick Truly flew space shuttle Columbia on the second orbital shuttle mission in November 1981. They also were teamed up as one of two crews for Enterprise during the Approach and Landing Tests at Edwards.



ED12 0254-56

NASA/Tom Tschida photo

The Lancaster JetHawks had a bobble head of Maj. Gen. Joe Engle for the first 1,000 people at the game. Engle signs the bobble head for two kids.

Engle had suggestions and answered questions from company representatives.

Dan DeLong, XCOR vice president and chief engineer, agreed that talking to Engle was productive.

"Our hypotheses and estimates were corroborated. Nothing was surprising, but it feels good that there are no blind alleys. He also gave us a heads up on what to look for during the flight test program," DeLong said.

Engle also enjoyed seeing an entry into the next generation of spacecraft.

"I enjoyed seeing their approach. With a small company it's easier to engage the entire team in all the phases of development. Their jobs overlap and they help each other. It is a wonderful environment to ensure the most efficient and safest machine. I think they are doing some innovative and creative things with that vehicle. Of course, I enjoyed sitting in the [Lynx] cockpit and imagining what might be of value to look back to from previous programs like the X-15. The previous re-entry profiles I have flown are not that different from what they will be doing. The problems of re-entry are not that different and in some cases they are very similar," Engle said.

Engle's experiences bridge the X-15 and shuttle programs. Research from the X-15 and other experimental vehicles from Edwards and Dryden may help provide clues for solving some of the current and future mysteries uncovered by new vehicles that will expand people's views of Earth and beyond.

Last shuttle mission to land here detailed

By Jay Levine

X-Press editor and

Alan Brown

Dryden Public Affairs

When Space Shuttle Discovery touched down at Edwards Air Force Base on Sept. 11, 2009, to conclude mission STS-128, no one could have foreseen that it would be the last of 54 such landings at the famed desert air base.

NASA astronaut Rick “C.J.” Sturckow, who commanded the mission, returned to Dryden July 13 to recap the mission for employees. Sturckow recalled highlights of the 13-day supply mission to the International Space Station.

A veteran of four space shuttle missions, Sturckow had commanded the STS-117 shuttle mission in June 2007 that also concluded with an Edwards landing. Both landings were dictated by poor weather conditions at the primary landing site at the Kennedy Space Center.

Sturckow said launch of the space shuttle was exhilarating for the crew.

“It’s exciting riding a rocket. There is a lot of shaking and vibration that tapers off for the first two minutes of the flight. Then there was a bright flash (as the solid rocket boosters separate) and we continued on the liquid rocket motors for six more minutes,” he said.

The rendezvous with the space station was another highlight, he said. The underbelly of the orbiter was checked to ensure the heat shield tiles were intact and then came the docking.

Docking lights flashed as the



ED12 0218-13

NASA/Tony Landis photo

NASA astronaut Rick “C. J.” Sturckow, commander of space shuttle mission STS-128, recapped highlights of the 2009 flight. STS-128 was the last shuttle mission to conclude at Edwards. Discovery, shown on the screen in the background, is deploying its deceleration drag chute after touchdown.

astronauts made their way up the tunnel from the shuttle’s docking point into the ISS.

Discovery delivered about 15,200 pounds of supplies and equipment contained in the Leonardo Multi-Purpose Logistics Module – essentially a pressurized moving van – that was carried in the shuttle’s cargo bay. The space station’s robotic arm was used to move the Leonardo module from the shuttle to the station and then back to the shuttle once the supplies were unloaded.

The resupply from the module was the biggest part of the mission, as the combined crew moved large items that would be heavy on Earth with the ease of pushing pillows from person to person to move the supplies from the shuttle to the

station.

The module contained science and storage racks, a freezer for storage of research samples, a new sleeping compartment, an air purification system and the Combined Operational Load-Bearing External Resistance Treadmill, or COLBERT, so named after comedian and television host Stephen Colbert of Comedy Central’s “The Colbert Report.” Colbert had urged his viewers to post the name Colbert, which received the most entries, during NASA’s contest to name the space station’s Node 3.

Discovery’s mission included three space walks to replace experiments outside the European Space Agency’s Columbus laboratory. In addition, a new

ammonia storage tank was installed and the used one returned to Earth.

Sturckow noted that the station performs a two-fold role, contributing to both scientific understanding and future solar system exploration.

“If we hadn’t flown ISS we could have never accomplished whatever it is we do next,” he said. “I think that’ll be one of the biggest contributions, in addition to all the great science that’s going on up there.”

The Walt Disney Company’s Buzz Lightyear toy astronaut that had been taken to the station on Discovery’s STS-124 mission in May 2008 was also brought back to Earth on Discovery during STS-128. While on the station, the toy astronaut supported NASA’s education outreach with a series of online educational programs developed to capitalize on the Toy Story star’s appeal. The Lightyear toy is now enshrined in the Smithsonian National Air and Space Museum in Washington, D.C.

Currently deputy chief of the Astronaut Office at NASA’s Johnson Space Center in Houston, Sturckow officially retired from the United States Marine Corps as a colonel while on board the ISS during the STS-128 mission.

Fifteen of Discovery’s 39 missions landed at Edwards, the remainder at NASA’s Kennedy Space Center in Florida. The retired space shuttle is now enshrined at the Smithsonian National Air and Space Museum’s Udvar-Hazy Center near Washington, D.C.

Ride, first U.S. woman to fly in space, dies at 61

Sally Ride, the first American woman to fly in space, died July 23 at the age of 61.

Her website, Sally Ride Science, indicated her death was the result of pancreatic cancer.

Ride became the first American woman to fly in space when the space shuttle Challenger launched on mission STS-7 June 18, 1983.

Two years later, she flew again on the Challenger for the 13th shuttle flight, STS-41-G in October 1984. Her first shuttle mission



Sally Ride

landed at Edwards Air Force Base on June 24, 1983. Ride, along with her fellow STS-7 astronauts, received accolades from assembled news media personnel, Dryden and Air Force employees and members of the public at Dryden during and after the post-flight news conference.

Ride left NASA in 1989 to teach

physics at Stanford University and then at the University of California, San Diego. She founded Sally Ride Science in 2001, which creates classroom materials and training for teachers in science, technology, engineering and math.

NASA Administrator and

See Ride, page 7

Aerodynamic test bed returns to flight

By Gray Creech

Dryden Public Affairs

After a hiatus of about two years, Dryden's Gulfstream III aerodynamics research test bed aircraft, No. 804, was back in the air for a functional check flight.

The flight June 26 verified that the aircraft has maintained its basic mechanical and electronic functionality following completion of several minor modifications, such as wiring installation and upgrades. A series of research instrumentation checkout flights are scheduled, aimed at verifying the performance of newly installed instrumentation sensors, wiring, infrastructure, and power systems.

These upgrades are in support of its primary Adaptive Compliant



ED12 0191-12

NASA/Tony Landis photo

Dryden's Gulfstream G-III aerodynamics research test bed aircraft No. 804's landing gear retract after liftoff.

Trailing Edge (ACTE) project, a joint effort between NASA and the U.S. Air Force Research Laboratory.

For ACTE, both of the G-III's conventional 19-foot-long aluminum flaps will be replaced with

advanced, shape-changing flaps that form continuous bendable surfaces, improving the aerodynamics of the flaps. Made of composite materials by FlexSys, Inc., the improved flap should eliminate a major source of airframe noise generation.

When conventional flaps are moved, gaps exist between the forward edge and sides of the flaps and the wing surface. The ACTE flap will be gapless, forming a seamless transition region with the

wing while remaining attached at the forward and side. If successful, this experiment will enable aircraft to be significantly quieter during takeoff, approach and landing.

The check flight followed completion of preliminary design reviews on both the ACTE project and on the Discrete Roughness Element (DRE) Laminar Flow Glove Experiment.

The DRE glove is designed to test rows of very small bumps called discrete roughness elements located near the glove's leading edge. They are designed to maintain natural laminar flow over most of the glove's surface. Laminar airflow over aircraft wings increases fuel efficiency by helping to reduce aerodynamic drag.



ED12 0203-54

NASA/Tom Tschida photo

Kids take a look at where parents' work

Kids are curious and NASA works to reach them by providing inspiring projects and programs that generate awe of the results of science, technology, engineering and mathematics. That extended to children of Dryden employees. Take Our Children to Work Day June 28 attracted 237 attendees, who toured Dryden's main campus at Edwards and the Dryden Aircraft Operations Facility in Palmdale. Some activities included an F/A-18 aircraft simulator, as seen at left, a tour of a NASA 747 Shuttle



ED12 0203-15 NASA/Tom Tschida photo

Carrier Aircraft, above, the Discovery Dome, and a presentation on life support suits.

Ride ... from page 6

former space shuttle astronaut Charlie Bolden offered his personal remembrances of Ride.

"Sally Ride broke barriers with grace and professionalism – and literally changed the face of America's space program," said Bolden. "The nation has lost one of its finest leaders, teachers and explorers. Our thoughts and prayers are with Sally's family and the many she inspired. She will be missed, but her star will always shine brightly."

"Sally was a personal and professional role model to me and thousands of women around the world," added NASA Deputy Administrator Lori Garver. "Her spirit and determination will continue to be an inspiration for women everywhere."

Ride recalled her history-making space flight in an interview on the 25th anniversary of her flight in 2008.

"The fact that I was going to be

the first American woman to go into space carried huge expectations along with it," Ride related. "That was made pretty clear the day that I was told I was selected for the crew. I was taken up to Chris Kraft's office. He wanted to have a chat with me and make sure I knew what I was getting into before I went on the crew. I was so dazzled to be on the crew and go into space I remembered very little of what he said."

"On launch day, there was so much excitement and so much happening around us in crew quarters, even on the way to the launch pad," Ride said. "I didn't really think about it that much at the time – but I came to appreciate what an honor it was to be selected to be the first to get a chance to go into space."

For more on Sally Ride's life and career, visit: <http://go.nasa.gov/Ocn6h7>

Montgomery... from page 2

as you dig down though the surface you are digging backward in time. We are going to land back in time and slowly drive into the future looking at the history of Mars as we drive.”

This is the first rover that was not limited as to where it could go because of engineering constraints, he added.

“MSL is a roving science laboratory. It’s like we have our field geologist there with a really good laboratory. Other missions proved water existed on Mars in the past and that ice is on the surface now. This mission is focused on finding habitats that could have supported life,” he said.

The Mars Science Laboratory

builds on the success of the Spirit and Opportunity Mars Exploration Rovers during the past eight years. The rovers were intended to complete a 90-day mission, but continued to operate far longer than expected. In fact, Opportunity is still returning information from its continuing exploration.

Mars is a challenging destination where only a third of the missions have landed successfully. Mission planners intend for Curiosity to add volumes of new information to enhance humankind’s knowledge of Mars and answer some questions about its history.

Gray Creech of the Dryden Public Affairs Office contributed to this article.

Big wheels on Mars



ED12 0250-3

NASA photo by Tom Tschida

Dr. Kelly Fast, Mars program scientist at NASA Headquarters, shows what a Curiosity rover wheel looks like at the AERO Institute during the City of Palmdale’s Thursday Night on the Square Aug. 2.

Scholarship ... from page 3

attendance at a four-year college or university, or \$1,000 per year for up to two years for attendance at a two-year community college, providing the recipient maintains a minimum grade-point average of 3.0 or higher. Applicants for the annual scholarship are required to be high school seniors whose parents are among the Dryden civil service or contractor workforce.

Rachel Thomson is the daughter of Michael and Jennifer Thomson of Lancaster, Calif. Thomson, a career aerospace and flight test engineer and manager at Dryden, currently heads the Science Mission Directorate at the Dryden Aircraft Operations Facility in Palmdale, Calif.

In addition to excelling in advanced placement and honors classes during high school, Rachel was involved in numerous school and community activities, including Desert High’s Associated Student Body where she served as president her senior year and junior class president in 2011. She also participated in the California State and Kern County science fairs her junior and senior years, acted in several school drama productions, is a member of the National Honor Society and the California Scholarship Federation and was a member of the Seekers Bible Club.

Rachel also was involved in

athletics, participating in or managing Desert High’s volleyball, football and wrestling teams and running on the school’s girls varsity track team. As a member of the varsity track team she was named the team’s most valuable player for two years.

Rachel’s sister Katherine, who was second only to Rachel in the scholarship selection committee’s rankings, will also be attending Cal State – Long Beach, where she plans to major in nursing. The sisters said they are close and share many of the same activities and interests, and even plan to room together at college.

“We are ready to leave home,

but not each other,” said Rachel.

“They’ve both worked so hard. It will be nice that they are going together,” added her mom.

“It’s exciting,” agreed Mike Thomson. “I’m very proud of both of them, they knew only one scholarship would be awarded, and yet they both put the effort into applying for it.”

Dryden Exchange Council scholarships are named for former employees of the center on a rotating basis. Scholarship funds are raised from council activities, including proceeds from vending machines, the Dryden Gift Shop and the Flightline Eatery sales and fundraising events.

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