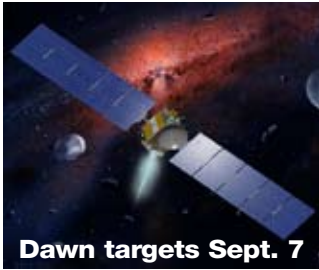


News Briefs



Dawn targets Sept. 7

A new target launch date of Friday, Sept. 7, has been set for JPL's Dawn mission to the asteroid belt. Launch date will be finalized by end of July.

Dawn Project Manager Keyur Patel said the launch window would extend through Oct. 15.

The mission will launch from Cape Canaveral Air Force Station, Fla. The primary reasons for the move were a combination of highly limited launch opportunities for Dawn in July and the potential impact to launch preparations for JPL's upcoming Phoenix Mars lander mission, set for an Aug. 3 liftoff. A September launch for Dawn maintains all of the science mission goals a July launch would have provided.

Patel said crews are already on hand in Florida to remove the Dawn spacecraft from its launch vehicle, return it to a clean room and connect it to support equipment in preparation for the new

launch date. He said the same crew that prepares the Phoenix launch would be involved in returning Dawn back from the launch pad.

"This will give our team a chance to take some time off and to complete some deferred work," Patel said. "So we can take it easy but at the same time we'll continue to make forward progress."

Dawn will explore Ceres and Vesta, the two largest objects in the asteroid belt, in an effort to answer questions about the formation of our solar system.

Small-business forum in August

JPL's Business Opportunities Office will host a small-business science forum and vendor fair on Tuesday, Aug. 21, from 8 a.m. to noon in von Kármán. JPL personnel are welcome to attend.

Twenty to 25 high-tech small businesses will exhibit their products and services to JPL science and technology staff and procurement representatives, and will have the opportunity to discuss future NASA and JPL subcontracting opportunities.

For more information, visit <http://acquisition.jpl.nasa.gov/boo> or call Jasmine Colbert, ext. 4-8689.



Duxbury leads hometown parade

Epoxi and Next Project Manager Tom Duxbury leads Fort Wayne, Indiana's Three Rivers Festival July 14. The festival's space-exploration theme commemorated the 50th anniversary of Sputnik and the follow-on Soviet and U.S. launches.

Duxbury is a Fort Wayne native who went on to Purdue University in Indiana before coming to JPL in 1966.

new life Continued from page 3

JPLers Steve Chesley, Don Yeomans and Ken Klaasen are on the Epoxi science team.

Klaasen is also deputy principal investigator for the other newly selected Discovery mission of opportunity, New Exploration of Tempel 1 (Next). The mission will reuse the Stardust spacecraft to revisit comet Tempel 1, which was encountered by Deep Impact on July 4, 2005. This investigation will provide the first look at the changes to a comet nucleus produced after its close approach to the sun and will mark the first time a comet has ever been revisited. Next also will extend the mapping of Tempel 1, making it the most mapped comet nucleus to date. This mapping will help address the major questions of comet nucleus "geology" raised by Deep Impact images of areas where it appears material might have flowed like a liquid or powder. Next is scheduled to fly by Tempel 1 in February 2011. ■

Jet Propulsion Laboratory

Universe

AUGUST
2007
VOLUME 37
NUMBER 8

Rather than sending rovers to examine craters, hills or rocks, JPL's next mission to Mars, now being prepared for an Aug. 3 launch, will for the first time examine a frigid Martian arctic landscape for conditions favorable to past or present life.

Continuing NASA's "follow the water" strategy for exploring the Red Planet's potential habitability, the Phoenix lander will dig into the icy soil of Mars' northern plains to investigate whether frozen water near the surface might periodically melt enough to sustain a livable environment for microbes.

Phoenix is scheduled to lift off from Cape Canaveral Air Force Station in Florida during a three-week launch window beginning Aug. 3. Landing would be in late May or early June 2008.

Although the mission is not designed to detect past or present life, Phoenix will look for other conditions favorable to life. For example, "If we detect organics on Mars that'll be a huge discovery," noted JPL's Leslie Tamppari, Phoenix's project scientist.

One of seven instruments on the spacecraft, the Thermal and Evolved-Gas Analyzer, will determine whether soil and ice samples contain any organic compounds. Finding any such compounds would be a key to interpreting the site's habitability.

In addition to determining if Mars' arctic soil could support life, Phoenix's other main science goals are to study the history of water in all of its phases and to study Martian weather from a polar perspective.

Besides the Thermal and Evolved-Gas Analyzer, to accomplish its objectives Phoenix will carry the following set of advanced research tools never before used in Mars exploration:

- The Mars Descent Imager will take a downward-looking picture during the final moments before landing, providing a bridge between orbiter-scale and lander-scale images. "It's very important to get an overhead image of our landing site at high resolution, because that will allow us to see smaller rocks and their distribution," Tamppari said.
- The Robotic Arm will dig trenches and deliver scooped-up samples to two instruments on the lander's deck. A team led by JPL's Robert Bonitz engineered and tested the 2.35 meter (7.7-foot) aluminum and titanium arm, which can dig up to about half a meter (20 inches) deep. However, Tamppari said, "We think the dry soil over-layer is about 2 centimeters thick, so it's very thin."
- The Robotic Arm Camera, fastened to the arm just above the scoop, will provide color images of soil at the landing site, of the floor and walls of trenches dug up by the arm, and of ice and soil samples before and after they are in the scoop. Information from the images will help the science team select what to pick up as samples for analysis.
- The Surface Stereoscopic Imager will record panoramic views from atop a mast on the lander. Its twin cameras—which will see with about the same resolution as human eyes—will provide three-dimensional information to aid scientists in operating the robotic arm and in choosing where to dig.

• The Microscopy, Electrochemistry and Conductivity Analyzer experiment represents the first time wet chemistry will be performed on Mars. Water brought from Earth will be mixed with soil samples in four separate beakers to study soluble chemicals in the soil. Also, the robotic arm will deliver soil samples to a wheel that will in turn bring them to both atomic force and optical microscopes for analysis. The biggest particles the optical microscope can see are just over a millimeter long; the smallest it can view are about 500 times smaller, or about 2 microns across. The atomic force microscope will map out the three-dimensional surfaces of particles down to about 100-nanometer resolution, one one-hundredth the width of a human hair.

• The Meteorological Station, with a laser for assessing water and dust in the atmosphere, will monitor weather throughout the planned three-month mission during Martian spring and summer. The information collected will aid understanding of how water is cycled seasonally between ground ice and atmospheric vapor. The laser is an atmospheric-sensing lidar, for "light detection and ranging," designed to see clouds and dust in the boundary layer, a mixed layer in the atmosphere in which convection takes place, Tamppari said.

For the final stage of landing, Phoenix is equipped with a pulsed thruster method of deceleration. An ultra-lightweight landing system allows the spacecraft

to carry a heavier scientific payload. Like past Mars missions, Phoenix uses a heat shield to slow its high-speed entry, followed by a supersonic parachute that further reduces its speed to about 217 kilometers per hour (135 mph). The lander then separates from the parachute and fires pulsed descent rocket engines to slow to about 9 kilometers per hour (5.5 mph) before landing on its three legs.

Researchers evaluating possible landing sites have used observations from JPL's Mars Global Surveyor, Mars Odyssey and Mars Reconnaissance Orbiter to find the safest places where the mission's goals can be met. Phoenix will land in area with few boulders at a latitude equivalent to central Greenland or northern Alaska.

"Landing safely on Mars is difficult no matter what method you use," said Phoenix Project Manager Barry Goldstein. "Our team has been testing the system relentlessly since 2003 to identify and address whatever vulnerabilities may exist."

Phoenix's principal investigator is Peter Smith of the University of Arizona; the Tucson campus will host the mission's science operations center. Tamppari, in her first position as a project scientist, leads the efforts of 25 co-investigators worldwide, in addition to a number of other collaborators. In addition, about 25 people from JPL will support Phoenix operations in Tucson.

For more information on the mission, visit http://www.nasa.gov/mission_pages/phoenix/main/index.html. ■

Phoenix launch approaches

By Mark Whalen

"We think the dry soil over-layer is about 2 centimeters thick, so it's very thin."

LESLIE TAMPPARI
Phoenix project scientist



Dutch Sager / JPL PhotoLab

Passings

Retiree **Benjamin Thomas**, 96, died June 14. Thomas worked at JPL from 1955 to 1979. He is survived by sons Ben Jr. and Jerry, and daughter Patricia Gordy. Services were held in Palm Desert.

James Bennett, 87, a retired test specialist engineer in Section 382, died June 20. Bennett joined JPL in 1963 and retired in 1984. He is survived by his son, Dale, and granddaughter Emily. Funeral services were held July 5 at the Riverside National Cemetery.

James Hix, 70, a retired senior software engineer in Section 351, died June 21. Hix worked at JPL from 1959 to 2001.

Irving Bengelsdorf, 84, retired from Section 648, died June 22. Bengelsdorf worked at JPL from 1971 to 1988.

Tuan Tran, 46, a senior radio frequency subsystem engineer, died June 25. Tran had worked at the Laboratory since 2001. He is survived

by his wife, Phuong Thao Hoang. Services were held at Rose Hills Mortuary in Whittier.



Thomas Hill, 59, a senior engineer in Section 3537 and head of JPL's mechanical testing lab, died July 8.

Hill had worked at JPL since 1979. He is survived by his wife, Ruth, daughter Jennifer and son Brian. Services were held July 13 at Luyben's Family Mortuary in Long Beach.



Mark Gutheinz, 50, manager of the Facilities Engineer-

ing and Construction Section, died July 23.

A 15-year JPL employee, Gutheinz served as supervisor of the Energy Management System/Heating, Ventilation and Air Conditioning Group and as manager of the Facilities and Maintenance Operations Section before his most recent position.

Among his achievements, Gutheinz was instrumental in facilitating the beginning of the construction of the new Flight Projects Center building.

Gutheinz also spearheaded efforts to help JPL reduce its energy consumption, particularly during critical periods of high heat requiring power curtailments as requested by state and local agencies. He recently accepted a "Flex Your Power" award on JPL's behalf for the Laboratory's successful efforts in energy conservation.

Gutheinz is survived by his wife, Sandy, a sister-in-law and a stepdaughter.

Letters

Thank you to the ERC for the lovely plant and the wider JPL community for the outpouring of

support after the sudden passing of my mom. She left behind five surviving kids, four grandchildren and incredibly a thriving tax business at the age of 79. She was active till the end, gardening, reading, fishing, writing letters and the occasional battle with the IRS, which she relished taking on for her clients. We are grateful that all of her kids and grandkids were able to be with her at the end, to wish her love and a well-deserved rest . . . and one more very special fishing trip. Miss you, mom.

Alice Sarkisian Wessen

I want to express sincere appreciation to my 5X friends for your kind expressions of sympathy and the beautiful floral plant arrangement you sent with the passing of my father. Your support has made a difference. God bless.

Gary McCutcheon and family

Retirees

The following JPL employees retired in August: Hartwell Long, 41 years, Section 353; Peter Wannier, 31 years, Section 3266; Martin Buehler, 26 years, Section 384; Cary Fox, 17 years, Section 220.

READ AND SUBMIT CLASSIFIED ADS
AT JPL'S ONLINE NEWS SOURCE
<http://dailyplanet>

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Universe is published by the Office of Communications and Education of the Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109.



On Halloween Day 1936, the leader of the “suicide squad” that carried out the rocket engine tests that led to the founding of JPL was Frank Malina, then a 24-year-old Caltech graduate student. A protégé of professor Theodore von Kármán, Malina served as JPL’s director during the 1940s during the development of jet-assisted takeoff rockets for airplanes and early missiles such as the Private and WAC Corporal. He and several colleagues including von Kármán also founded the Aerojet Corp. to manufacture rocketry hardware that JPL pioneered.

After leading the organization that was to become JPL to key achievements in his 20s and early 30s, Malina left JPL in 1947 at the age of 34 and moved to Paris to help set up the United Nations’ Educational, Scientific and Cultural Organization, or UNESCO. In 1953 he left that organization to devote himself as a studio artist. In 1967 he founded the international organization and journal Leonardo, devoted to interactions between the arts and science and technologies. He died in suburban Paris in 1981.

Roger Malina, the elder of his two sons, pursued a career in astronomy, specializing in extreme ultraviolet observation of the universe. He is currently an astrophysicist with France’s National Center for Scientific Research in Marseille and is working on the proposed Supernova/Acceleration Probe, or Snap, a dark-energy cosmology satellite. He continues to run the Leonardo organization that his father founded. He chatted with Universe on a recent brief visit to JPL.

WHAT WAS GOING ON WITH YOUR FATHER AT THE TIME HE DECIDED TO LEAVE JPL AND JOIN THE UNITED NATIONS?

At the end of the war he was part of the American teams that were touring Europe, visiting scientific facilities and so on. When he was in London he saw an announcement for a talk by Julian Huxley (a well-known British biologist). I think the UNESCO founding meeting was in the end of ’46 sometime. So he went to the lecture by Huxley and introduced himself afterwards. And Huxley said, “Why don’t you come help set up UNESCO?” So he moved to Paris and started off as deputy director for science and then the director for the science program at UNESCO. In that capacity, he worked on projects in the Negev Desert, which actually picked up from his work when he was at Caltech. He worked in the

wind tunnel at Caltech on soil erosion projects at one point. But then when he was in Paris he also helped set up with [Theodore] von Kármán the International Academy of Astronautics, which is still the premier international academy in the fields. He had left UNESCO by the time I was old enough to remember. So, in fact, when I grew up, my dad was a full-time, professional artist. He was working out of a studio in our home, building technological art with motors and electronics.

YOU HAVE ONE BROTHER.

My brother, Alan, lives in Portugal, and his specialty is water engineering in developing countries. He’s sort of picked up the second part of my father’s work through the UNESCO side, I guess, and he’s spent all his life working in rural communities and cities in Africa on water supplies, irrigation, water supplies in general.

THERE’S A STORY THAT WHEREAS JACK PARSONS AND OTHERS WHO HAD FOUNDED AEROJET WERE INDUCED TO SELL OUT RELATIVELY EARLY ON, YOUR FATHER HELD ON TO HIS SHARES. I GATHER THAT GAVE HIM A BASE WHILE HE WAS PURSUING HIS ART CAREER.

Yes, that’s right. Indeed, when he was in Europe, General Tire had acquired Aerojet and was trying to buy out all the founders. They managed to buy everybody out except my father. And the story was that they couldn’t reach him—he was in Paris, nobody had his phone number. They sent a telegram with whatever the offer was for the shares, and I think he talked to [a friend] and said, “This doesn’t sound like a very good deal to me,” and he hung on to them. And as a result he was able to live off the Aerojet dividends.

WHERE DO YOU SEE HIS ARTISTIC INTERESTS HAVING COME FROM? I UNDERSTAND THAT WHEN HE WAS A CALTECH STUDENT HE HAD A BENT FOR ILLUSTRATION.

Well, both his parents were music teachers. Originally they were shopkeepers and butchers, but they both worked in Brenham, Texas as music teachers. So my father certainly grew up in a home where music as a career was a strong thing, and certainly, unlike most children, he kept on drawing and sketching even after the age of 12 or 13. After he received his bachelor’s degree at Texas A&M and came to Caltech for graduate school, he had to earn money to pay for his living expenses, and so he got a job working for von Kármán doing the illustra-

tions for some of von Kármán’s textbooks. And then indeed his first wife was an artist here in Pasadena. So my father, I think from childhood, had a very integrated view of the world, of how the arts and sciences played together.

WHICH WOULD TIE IN WITH THE CONCEPT FOR THE JOURNAL LEONARDO, WHICH HE FOUNDED SOME YEARS LATER.

I think it was sort of a deep understanding also about the nature of creativity, whether it’s in engineering or in the arts, which is that creative people get ideas wherever they can find them. You don’t just stick to the textbooks and the math section if you’re going to have a math idea. I think from very early on, his view of engineering was that if you really wanted to be inventive you had to be aware of the world in the larger sense and get ideas in different places. The “suicide club” that led to the founding of JPL was a very diverse group of creative and inventive people, socially engaged and culturally involved. My dad and Jack Parsons wrote a film script they shopped around Hollywood to try and raise money for their rocket work before the government funding came through.

As he started working as an artist, he found out first that in the art world artists were not allowed to write about their own work. Now, scientists and engineers write about what they’re doing, but they’re not trained as writers. They didn’t go into science to be writers. But to communicate their discoveries, scientists and engineers document their work through publications and so on. And so he got very frustrated because he was not allowed to write about his own inventions, and he was inventing things, he filed patents on his art devices.

Secondly, he discovered that artists tended to be very isolated. There was the New York art world and the Paris art world, whereas in science there was sort of a network of people. An expert in rocketry knew what was going on in different countries and so on. It led him to start an organization called Leonardo, which is now 40 years old. And the first project, indeed, was a scholarly journal where artists could write about their own work, both technically and also in terms of the ideas they were having and so on, in an international context. So these things all kind of meshed together.

SOME HISTORIES STATE THAT ONE OF THE REASONS FOR YOUR FATHER’S DECISION TO LEAVE JPL AND MOVE TO EUROPE WAS THAT HE WAS DISHEARTENED BY THE PROSPECT OF DEVELOPING MORE MISSILES TO CARRY ATOMIC WEAPONS. AROUND THIS TIME,

From left: Roger Malina at JPL in July; Frank Malina and the WAC Corporal at White Sands, N.M., circa 1946; the 1936 “nativity scene” photo with Frank Malina third from left; the first rocket motor test in the Arroyo Seco, with Malina at right; Malina, right, and sons Roger, 16 (second from right) and Alan, 14, chat with JPL Director William Pickering in April 1966.

LIKE SOME OF THE OTHER JPL FOUNDERS, HE WAS ALSO BEING INVESTIGATED BY THE FBI, WHICH WAS MAKING ALLEGATIONS ABOUT COMMUNIST CONNECTIONS. CAN YOU SET THE RECORD STRAIGHT ON THIS? WHAT WERE YOUR FATHER’S POLITICS LIKE?

It is true that he stated that at the end of the war he found himself involved in discussions on how to put nuclear bombs on rockets, and the military was preparing for World War III—and those discussions made him break out in a sweat and sick to his stomach. But I think that fundamentally he chose to go to work for UNESCO because, after 10 years of working non-stop for the war effort, he was exhausted and ready for a new challenge, and wanted to contribute to the rebuilding of Europe and creating new international organizations for peace.

He left the U.S. to work for UNESCO before the FBI started bothering him seriously—his real problems with the FBI did not really start until 1952 or 1953. His passport was taken away until 1960. The allegations about his joining the Communist Party are hearsay as far as I am concerned. I have no doubt that at some of the parties or social events at the time, there may have been people who were communists. During the 1930s, he certainly participated in solidarity efforts for the Spanish civil war. According to the FBI files there are claims that he failed to declare membership in the Communist Party in his security clearance forms. I doubt it, but when I knew him he was in his 40s and 50s and not a 23-year-old politically involved student.

The man I knew was perhaps at the left end of the Democratic Party, and anti-capitalist he certainly wasn’t. Indeed, he was living happily off his Aerojet dividends. After the war, my father was in close contact with his Czech cousins. During the Cold War, he sheltered some of them who had gotten out from behind the Iron Curtain.

During the Vietnam War—while I was demonstrating at MIT in 1969 against the war—we had long, heated discussions. He had a much more nuanced view, basically that nation-states had led to repeated world wars in Europe, and new structures were needed. He just felt that governments had a real difficulty behaving in an intelligent manner for the benefit of all humankind. ■

—An expanded version of this interview is available online at <http://dailyplanet/malina>

Lab to co-develop key Orion device

JPL’s partnership with the Johnson Space Center to support NASA’s Exploration Systems Mission Directorate activities was significantly strengthened last week when the crew exploration vehicle/Orion project selected a team from Johnson’s Avionics System Division and JPL’s Telecommunication, Tracking and Radar Division (33) to provide a critical communications adapter between NASA’s new Orion crew exploration vehicle and the International Space Station.

The Orion project issued a Request for Government Furnished Equipment—a call for proposals open to all NASA centers—in March. The JPL/Johnson Space Center team was formed and a proposal was submitted to Orion in less than four weeks. The JPL proposal team was led by Proximity Radios group supervisor and proposal manager Ann Devereaux and Tom Jedrey, deputy manager of the Flight Communication Systems Section.

“Our JSC partners were very pleased with JPL’s ability to support them by responding so rapidly and thoroughly to such a request and produce a winning proposal product,” said Division 33 Manager Kent Kellogg.

The two NASA centers will jointly develop the Communication Adapter Assembly, which will reside inside the space station. The device will match the communications protocols of Orion and the space station.

JPL will design, build and test the hardware, providing four flight models and five engineering models for various Orion testbeds, said Mike Sander, manager of JPL’s Exploration Systems and Technology Office.

“The box is based on a design for the software radio [Electra] that is flying on Mars Reconnaissance Orbiter and will be flying in variations on Mars Science Laboratory,” noted Sander. “This was the compelling advantage for us in producing this new device for the crew exploration vehicle.”

The utility of the Electra Sparc-based processor as a powerful mid-range communication processor is being increasingly appreciated by flight project customers across NASA. Kellogg said. Besides the communications adapter, the architecture is now being used as the instrument controller for M3, the Mars Science Laboratory motor controller, and most recently for NASA’s space-based Communication Navigation and Networking Reconfigurable Testbed to develop software-defined radio technology.

Approximately 25 JPL employees will participate in the development of the communications adapter, with most work planned to be performed at JPL. In addition to personnel from Division 33, Divisions 34, 37 and 51 will provide critical support. Work will begin in fiscal 2008 and is scheduled for completion in fiscal 2011.

The project’s initial budget is \$35 million, with about \$26 million of that total going to JPL. Johnson Space Center will manage the project and provide technical details for the space station interface. Johnson will conduct final validation tests and deliver the hardware to the Russian Space Agency for transfer to the space station.

“We are really delighted with this great partnership with JSC,” said Sander, “and we look for it to be a forerunner to similar ventures in the future.” ■

New life for Deep Impact, Stardust

Two JPL spacecraft now have new assignments after successfully completing their missions. Deep Impact and Stardust will use their flight-proven hardware to perform new and previously unplanned investigations. The duo will make new observations of comets and characterize extrasolar planets.

JPL’s Tom Duxbury, the Stardust project manager, will oversee the new missions for both resurrected spacecraft. He said the project organizations at JPL are being staffed with the same people as deep into the projects as possible for cost savings and efficiency.

Duxbury said some budgetary and risk-management issues remain to be resolved. “We are working to a schedule that will complete cost reductions and risk identification by about Aug. 3,” he said. “The project will work hand in hand with the technical divisions to meet our commitments and objectives.

“These spacecraft are still alive and healthy,” he added. “JPL and NASA have seen the wisdom of building upon our recent successes to have these spacecraft go to new worlds.”

Deep Impact, which finished its prime mission in 2005, will perform a pair of compelling science investigations together known as the Epoxi mission—the Deep Impact Extended Investigation (Dixi) and the Extrasolar Planet Observation and Characterization (Epoch).

Dixi will involve a flyby of comet Boethin in December 2008. Boethin, which has never been explored, is a small, short-period comet, or one that returns frequently to the inner solar system, from beyond Jupiter’s orbit. This investigation will allow the recovery of some of the science lost with the 2002 failure of the Comet Nucleus Tour mission that was designed to make comparative studies of multiple comets.

Epoch will observe several nearby bright stars, watching as the giant planets already known to be orbiting the stars pass in front of and then behind them. The collected data will be used to characterize the giant planets and to determine whether they possess rings, moons or Earth-sized planetary companions. Epoch’s sensitivity will exceed both current ground- and space-based observatory capabilities. The investigation also will measure Earth’s mid-infrared spectrum, providing comparative data for future efforts to study the atmospheres of extrasolar planets. This search for extrasolar planets will be made during the first half of next year, en route to comet Boethin.

“Boethin was last seen, from Earth-based telescopes, in the early 1990s,” said Duxbury, who noted that Dr. Karen Meech of the University of Hawaii, an astronomer and co-investigator on Deep Impact, is working to observe the comet. “We expect to recover it by September and update its ephemeris to target the Earth flyby,” he said. “But if not, we will explore the option with NASA to target comet Hartley 2, which would be encountered in 2010.”

Continued on page 4