



Mission: FAST on Pegasus XL.

Launch date, time: Aug. 18 at 2:42 a.m. PDT from Vandenberg Air Force Base, Calif.

Primary payload: The Fast Auroral Snapshot (FAST) Explorer satellite will probe the physical processes that produce auroras, while adding significantly to the understanding of the Earth's environment in space.



Mission: STS-79 on Atlantis.

Launch date, time: Target date of Sept. 12, 6:26 a.m. from Launch Pad 39A.

Mission Synopsis: STS-79 is the fourth in a series of NASA docking missions to the Russian Mir Space Station, leading to the construction and operation of the International Space Station. As the first flight of the Spacehab Double Module, STS-79 encompasses research, test and evaluation of ISS as well as logistics resupply for the Mir Space Station. STS-79 is also the first NASA/Mir American crew member exchange, with astronaut John Blaha replacing Shannon Lucid aboard the Mir.

Landing date, time: Target date of Sept. 21, 11:30 a.m. at KSC's Shuttle Landing Facility.

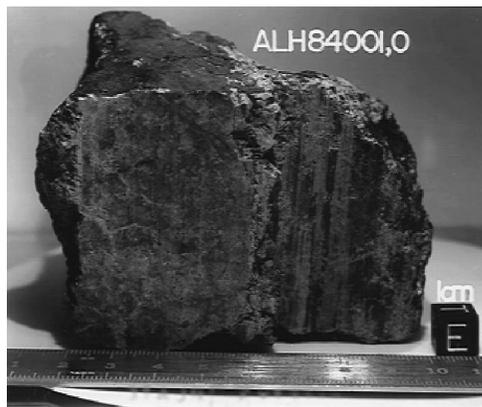
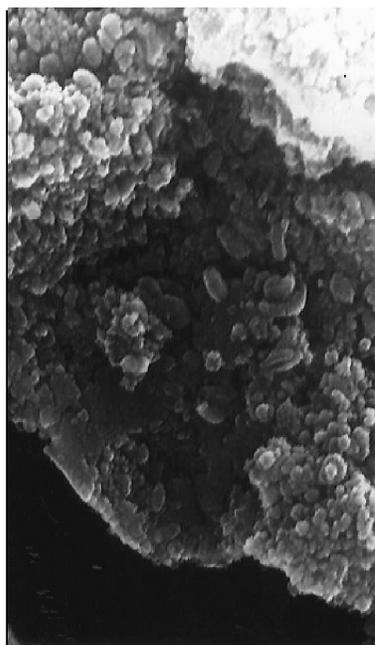
Spaceport News

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John F. Kennedy Space Center



Hardware arrival to herald NASA's new Mars initiative



THIS 4.5 BILLION-YEAR-OLD rock, labeled meteorite ALH84001, is believed to have once been a part of Mars and to contain fossil evidence that primitive life existed on the planet. The rock is a portion of a meteorite that was dislodged from Mars by a huge comet or asteroid impact about 16 million years ago and fell to Antarctica 13,000 years ago.

AT LEFT is an electron microscope image showing egg-shaped structures, some of which may be microscopic fossils of Martian origin. The largest possible fossils are less than 1/100th the diameter of a human hair, while most are ten times smaller. Hardware for the next two missions to Mars, scheduled to be launched from Cape Canaveral Air Station later this year, was scheduled to arrive at Kennedy Space Center this week. The Mars Global Surveyor, set for a Nov. 6 launch, will carry out an extensive study of the planet using its suite of sophisticated remote-sensing instruments. On Dec. 2, the Mars Pathfinder is scheduled to lift off on a mission to release an autonomous rover to explore the planet's surface. For more, see page 2.

Morgan, Breakfield receive appointments

New position is created for safety, shuttle upgrades

A new position created at Kennedy Space Center to oversee infrastructure and operations support for future Shuttle upgrades represents a renewed emphasis on the longevity of the program, said JoAnn Morgan, newly named associate director for Safety and Shuttle Upgrades. Center Director Jay Honeycutt last week announced the appointments of Morgan to the new position and P. Thomas (Tom) Breakfield, III as director of Safety and Mission Assurance. The appointments were made

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Endeavour undergoing modifications



THE ORBITER ENDEAVOUR departs KSC atop the Shuttle Carrier Aircraft on its way to California for its first Orbiter Maintenance Down Period on July 30. Endeavour will spend about eight months at orbiter manufacturer Rockwell's Orbiter Assembly Facility, undergoing routine inspections and checkout and a series of modifications to prepare Endeavour for its role in the International Space Station program. The first space station flight is scheduled for late 1997.

NASA scientists combine findings to uncover evidence of life on Mars

Last week's announcement that NASA scientists had discovered evidence strongly suggesting primitive life may have existed on Mars made headlines around the world.

The NASA-funded research team at the Johnson Space Center (JSC), Houston, TX, and at Stanford University, Palo Alto, CA, found the first organic molecules thought to be of Martian origin; several mineral features characteristic of biological activity; and possible microscopic fossils of primitive, bacteria-like organisms inside an ancient Martian rock that fell to Earth as a meteorite.

This array of indirect evidence of past life is reported in the Aug. 16 issue of the journal *Science*, presenting the investigation to the scientific community at large for further study.

Investigation invited

"The evidence is exciting, even compelling, but not conclusive. It is a discovery that demands further scientific investigation," NASA Administrator Dan Goldin said in announcing an Aug. 7 news conference in which scientists would discuss the discovery.

"NASA is ready to assist the process of rigorous scientific investigation and lively scientific debate that will follow this discovery," he said.

The two-year investigation was co-led by JSC planetary scientists Dr. David McKay, Dr. Everett Gibson and Kathie Thomas-Keptra of Lockheed-Martin, with the major collaboration of a Stanford team headed by Professor of Chemistry Dr. Richard Zare, as well as six other NASA and university research partners.

"There is not any one finding that leads us to believe that this is evidence of past life on Mars. Rather, it is a combination of many things that we have

found," McKay said.

"They include Stanford's detection of an apparently unique pattern of organic molecules, carbon compounds that are the basis of life. We also found several unusual mineral phases that are known products of primitive microscopic organisms on Earth. Structures that could be microscopic fossils seem to support all of this. The relationship of all of these things in terms of location - within a few hundred thousandths of an inch of one another - is the most compelling evidence."

Burden of proof

"It is very difficult to prove life existed 3.6 billion years ago on Earth, let alone on Mars," Zare said. "The existing standard of proof, which we think we have met, includes having an accurately dated sample that contains native microfossils, mineralogical features characteristic of life, and evidence of complex organic chemistry."

The igneous rock in the 4.2-pound, potato-sized meteorite has been age-dated to about 4.5 billion years, the period when the planet Mars formed. The rock is believed to have originated underneath the Martian surface and to have been extensively fractured by impacts as meteorites bombarded the planets in the early inner solar system.

Between 3.6 billion and 4 billion years ago, a time when it is generally thought that the planet was warmer and wetter, water is believed to have penetrated fractures in the subsurface rock, possibly forming an underground water system.

Since the water was saturated with carbon dioxide from the Martian atmosphere, carbonate minerals were deposited in the fractures. The team's findings indicate living organisms also may have assisted in the formation of the carbonate,

Incubation center opens doors



THE DOORS of the Florida/NASA Business Incubation Center (FNIBC) opened with a ribbon-cutting ceremony Aug. 6. The cooperative venture is sponsored by NASA, the state of Florida's Technological Research and Development Authority (TRDA) and Brevard Community College. Located on BCC's Titusville campus, the facility is designed to nurture fledgling businesses. From the left are, Frank Kinney, executive director, TRDA; Sen. Charlie Bronson; Dr. Maxwell King, president, BCC; Maria Clark, executive director, FNIBC; U.S. Rep. Dave Weldon; Lt. Gov. Buddy MacKay; Sen. Patsy Kurth; Rep. Randy Ball; KSC Associate Director Al Parrish; and Dr. Robert Norwood from NASA Headquarters.

and some remains of the microscopic organisms may have become fossilized, in a fashion similar to the formation of fossils in limestone on Earth.

Then, 16 million years ago, a huge comet or asteroid struck Mars, ejecting a piece of the rock from the planet.

For millions of years, the chunk of rock floated through space.

It encountered Earth's atmosphere 13,000 years ago and fell in Antarctica as a meteorite.

Carbonate holds key

It is in the tiny globs of carbonate that the researchers found a number of features that can be interpreted as suggesting past life. Stanford researchers found easily detectable amounts of organic molecules

called polycyclic aromatic hydrocarbons (PAHs) concentrated in the vicinity of the carbonate.

Researchers at JSC found mineral compounds commonly associated with microscopic organisms and the possible microscopic fossil structures. The largest of the possible fossils are less than 1/100 the diameter of a human hair, and most are about 1/1000 the diameter of a human hair.

The meteorite, called ALH84001, was found in 1984 in Allan Hills ice field, Antarctica, by an annual expedition of the National Science Foundation's Antarctic Meteorite Program. It was preserved in JSC's Meteorite Processing Laboratory and its possible Martian origin was not recognized until 1993.

KSC BIOLOGIST NAMED TO HEAD MANATEE WORKING GROUP

Newcomers to Florida sometimes have trouble understanding the fascination many residents hold for manatees -- those bulbous creatures that congregate in the state's waterways and can make boating down a channel comparable to negotiating an obstacle course.

Jane Provancha, an ecologist with Kennedy Space Center's (KSC) Life Sciences Support Contractor, the Dynamac Corporation, has a message for those people -- protecting the manatee is an essential part of preserving the resources that drew them here.

Provancha, who was recently selected to lead a Manatee Geographic Information System (GIS) Working Group to coordinate information on manatees for the public and private sector, preaches a simple message.

Every part of the circle of life makes a vital contribution to the whole. When manatees, which are currently categorized as endangered, become extinct, the waterways that now contain them will also be at risk.

"Manatees are a small part of the big picture," said Provancha, who leads KSC's Aquatics Group.

KSC has an advantage in conducting research on the mammals because they are naturally drawn to the warm waters of the Indian and Banana rivers. "This is the most



JANE PROVANCHA says the manatee working group she is heading will assist conservation efforts through shared resources.

important hub for manatees on the east coast of Florida," Provancha said.

A manatee rehabilitation program, which was started in 1994 in the Banana River off the NASA Causeway, gave the biologists a chance to learn more about the mammals and the seagrasses they live on. The death

of seagrass in the pens has resulted in the cessation of the project but it offers researchers the opportunity to gain valuable information about the interdependence between the grass and its surroundings.

Florida residents need to realize the fragile state of the ecosystem and the toll years of development and neglect have taken, she said.

She said the Manatee GIS Working Group, formed in 1989, will help conservation efforts through rapid communication and data sharing among scientists from federal and state agencies, academia and the boating industry. The group works with the Florida Department of Environmental Protection and uses the GIS computerized method for analyzing the ecology of any given area. All the known data that affect an area's health are combined on a high resolution map allowing scientists to show how a combination of factors affect interactions.

The group is planning an Internet web site and will soon publish a CD-ROM that will serve as an atlas of marine resources. It provides a service to any group concerned with the manatee problems through its network of contacts in the field. "We're hoping the information we generate can help other agencies and individuals protect all our valuable resources," Provancha said.

Goldin appreciative of KSC's Olympic effort

Editor's note: The following letter was received by Center Director Jay Honeycutt in appreciation for Kennedy Space Center's contribution to the Olympic Torch Relay.

Dear Jay:

I would like to commend you for your Center's efforts in supporting the Olympic Committee and for the July 7, 1996, ceremony commemorating the Olympic torch's return with the STS-78 crew and the torch's route through KSC. The entire event was extremely well organized and representative of the professionalism that



Atlanta 1996

this nation has come to expect from NASA and KSC. Due specifically to the enthusiasm and dedication of the KSC team, the Olympic torch run was made even more memorable by scenes of this ancient ritual passing in front of Atlantis, one of America's national assets.

Please extend my appreciation to your team for doing such a spectacular job in representing all of NASA.

Sincerely,

Daniel S. Goldin

Employees invited to view Rolling Stones IMAX film

Kennedy Space Center employees will get the satisfaction of seeing The Rolling Stones "At the MAX" at the Visitor Center IMAX 1 Theater.

Delaware North, the KSC Visitor Center concessioner, is providing special free showings for KSC employees and their families from Sept. 5 - 8 at 7 and 9 p.m. each evening.

Tickets for the employee showings will be distributed through Space Flight Awareness representatives the week of Aug. 26.

Shot on location in Turin,

Berlin and London, the film features the electrifying Rolling Stones during the band's record-breaking 1989/90 Steel Wheels/Urban Jungle tour.

The Rolling Stones movie is the not only the first IMAX concert film but is also the first feature-length film in the format which provides an overwhelming 90-minute experience.

Shows will be available to the general public for the three remaining weekends in September each Friday, Saturday and Sunday at 6:30 p.m. for a ticket price of \$9.