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FUSE Spacecraft Will Search For 'Fossils' Of The Big Bang

Scientists will soon have a new tool to search for the "fossil record" of the Big Bang and uncover clues about the evolution of the universe.

Scheduled to launch June 23, NASA's Far Ultra-violet Spectroscopic Explorer (FUSE) will observe nearby planets and the farthest reaches of the universe and will provide a detailed picture of the immense structure of our own Milky Way galaxy.



The FUSE spacecraft in a clean room at Orbital Sciences Corporation.

The FUSE mission's primary scientific focus will be the study of hydrogen and deuterium (a different form of hydrogen), which were created shortly after the Big Bang. With this information, astronomers in effect will be able to look back in time at the infant universe.

By examining these earliest relics of the birth of the universe, astronomers hope to better understand the processes that led to the formation and evolution of stars, including our solar system.

Ultimately, scientists hope data from FUSE will allow them to make a huge leap of understanding about how the primordial elements were created and have been distributed since the beginning of time.

"We think that as stars age deuterium is destroyed," said NASA's Dr. George Sonneborn, Goddard Space Flight Center, (Greenbelt), the FUSE project scientist. "Mapping deuterium throughout the Milky Way will give us a better understanding of how elements are mixed, distributed and destroyed."

Among the cosmic questions FUSE will tackle are:

—What were conditions like in the first few minutes after the Big Bang? Will studying the "fossil remnant" deuterium

change current theories of the Big Bang?

— How are the elements dispersed throughout galaxies, and how does this affect the way galaxies evolve?

— What are the properties of the interstellar gas clouds out of which stars and planets form?

— Does the Milky Way have a vast galactic fountain that gives birth to stars, spews hot gas, circulates elements and churns out cosmic material over and over?

FUSE was developed for NASA by Johns Hopkins University (JHU), which has the primary responsibility for all aspects of the project. NASA is responsible for the launch. FUSE is the first NASA mission of this scope that has been developed and operated entirely by a university. Dr. Warren Moos, Professor of Physics and Astronomy at JHU, is Principal Investigator for FUSE.

The Wallops 5 meter LEO-T (Low Earth Orbiter Terminal) system will be used as a backup tracking system for the mission. The FUSE primary tracking system is a LEO-T that was acquired through the Wallops LEO-T contract. The system is in place at the University of Mayaguez in Puerto Rico.

The 3,000-pound FUSE satellite consists of two sections: the spacecraft and the science instrument. The spacecraft, built by Orbital Sciences Corp., Germantown, MD, contains all elements necessary for powering and pointing the satellite.

FUSE will be launched from Cape Canaveral Air Station, FL, on a Boeing Delta II. The three-year FUSE mission costs \$204 million.

Information on the FUSE mission and NASA's Origins program can be found at: <http://fuse.pha.jhu.edu>
<http://fusewww.gsfc.nasa.gov/fuse/>
<http://origins.jpl.nasa.gov/>

Wallops Shorts.....

Fire Department — Wallops Fire Department Emergency Medical Technicians responded to a request for assistance for a medical emergency from Accomack County 911 on June 3. A patient was transported to Pocomoke from Shore Medical Center, Chincoteague to meet the Pocomoke Fire Department unit with advanced life support equipment.

Firefighters responded with one piece of equipment to a mutual aid request from Accomack County 911 to the scene of a large wheat field fire on Route 13 south of Nelsonia on June 7.

At the request of Accomack County 911 on June 10, the Wallops Hazmat Team with a crash truck stood by at the scene while 8,700 gallons of gasoline were off-loaded from a tractor-trailer in a ditch near Tasley.

"Mission Success Starts with Safety"

Safety plays an integral role in NASA's quest to expand frontiers in aeronautics and space. As we move into the 21st century, safety and health have been designated as NASA's highest priority.

NASA will not compromise the safety and health of people and property nor harm the environment. NASA is working to achieve zero mishaps in its workplace, keeping in mind that every employee's safety and health, both on and off the job, is a concern.

"We have begun an Agency Safety Initiative with the goal of making NASA the Nation's leader in the safety and occupational health of its workforce and the safety of the products and services we provide," said Dan Goldin, NASA Administrator. "I expect a firm resolve and commitment by everyone in the Agency to achieve this goal including zero tolerance for mishaps in the NASA workplace. Keep in mind that safety is everyone's responsibility and that it should never be regarded as the job of the Safety Office or someone else."

The four areas on which NASA needs to focus to ensure safety and health are:

- * The Public
- * Astronauts and Pilots
- * Employees and
- * High Value Equipment and Property

For more information on the ASI visit: <http://www.hq.nasa.gov/office/codeq/safety/index.htm>



*June 14
is
Flag Day*

Wallops Provides Support for X-33 Testing



Wallops personnel have been at NASA Dryden Research Center supporting testing for Phase IV of the X-33 Range Integration and Test Program. The X-33 mobile range system (pictured above) was set up to track a NASA F-18 that was equipped with the X-33 avionics subsystem.

Wallops provided Mobile Radar #11, a mobile generator system and a mobile command system. During July, the system will be moved to a location near the U.S. Army's Dugway Proving Grounds in Utah for the final phase of the Range Integration and Test Program. This location is the planned landing site for the X-33.

A 9-meter telemetry system has been installed at the Utah site by Wallops personnel. This Redstone system was given to NASA DRC to support their extended range operations. Two other systems have been installed at White Sands Missile Range, NM and Poker Flat Research Range, AK to support the NASA Sounding Rocket Program.

Health Hints by Betty Jackson, R.N. **Lawn Mower Safety**

As summer approaches, the chance of an accidental injury from operation of a lawn mower is a risk that may be overlooked. The most common injuries include damage to eyes, hands and feet.

Many people think severed fingers or toes can be reattached. Unfortunately, this is not always possible. They may be mangled beyond repair. Since injuries generally affect the dominant hand, even if a reattachment is possible, patients face a long, painful period of rehabilitation.

Lawn mowers pose other hazards that are often not thought about. Injuries could include burns from heated engine parts, electrical shocks from frayed cords on electric mowers, hearing loss or damage and eye injuries from debris discharged through the chute.



By exercising common sense and good judgement, a trip to the emergency room can be avoided.

For additional information contact the Employee Assistance Program (EAP) on x66-4600.

Sympathy is extended to the family, friends and co-workers of
Gerald L. Martin, III
who died June 6
at Shore Memorial Hospital.
Martin was employed as a guard
by Omne of New Jersey.

Test Pilot Leaves Legacy

Pioneering NASA Langley test pilot John P. "Jack" Reeder died Sunday, May 23 leaving an aviation legacy that spanned a half-century. The Newport News resident was 82.

Reeder's extensive career with NASA and the agency's predecessor, the National Advisory Committee for Aeronautics began in 1938 and ended when he retired in 1980. Along the way, he captained more than 235 airplanes, 61 helicopters and eight vertical takeoff and landing aircraft.

During his tenure, Reeder rose from junior aeronautical engineer at the full-scale wind tunnel, to test pilot, to head of flight operations and chief test pilot, to assistant chief of flight mechanics and technology.

Reeder was NASA's first helicopter test pilot and was best known for his pioneering work in helicopter and vertical takeoff and landing aerodynamics and handling. He was a member of the team that drafted the original military specifications for the flying qualities of helicopters, and a founding member of the Twirly Birds.

Reeder's most important and last contribution to aviation may have been convincing NASA management to pursue advanced transport operating systems that identified, evaluated and demonstrated systems and concepts to enhance airport runway capacity and all-weather flight.

He was instrumental in Langley's acquisition of the 737 "flying laboratory" that flew from 1974 until its decommissioning in 1997. Reeder and the 737 conducted many missions from Wallops.

As part of that program, Reeder led the team that won a NASA Group Achievement Award for demonstrating the capability of the microwave landing system. For his efforts, Reeder received the NASA Outstanding Leadership Medal.

Skillsoft Training

Goddard Space Flight Center has launched a pilot program with SkillSoft Corporation, the leading developer of interactive web-delivered training of professional effectiveness and business education.

Over 75 courses covering subject areas like management, leadership, communication skills and project management are now available to Wallops civil service employees.

Features of the SkillSoft courses include: rich interaction, high quality graphics, prescriptive assessments that allow learners to avoid course content already mastered, job aids for post-training support and topic search capability to quickly locate topics of interest.

To learn more about this web-based pilot program, SkillSoft Corporation will be available to demonstrate the desktop training courses on Monday, June 21, 1999 in Building E-104, Room 308. The demonstrations will be conducted in 15-minute intervals from 10 a.m. until 2 p.m. No registration is required.

For further information, contact Kimela Ouakil (GSFC, Code 114), x66-5087 or: kouakil@pop100.gsfc.nasa.gov.

Sincere sympathy is extended to the family and friends of
Joseph Peter Smolinski, Jr.
who died at his residence
in Onancock on June 7.
Smolinski was employed by
Computer Sciences Corporation
as an aeronautical engineer
working in the
Sounding Rocket Program Office
for many years.

For Sale

Registered Pug Puppy, born April 19, 1999. First shots and wormed—\$375.00. Call Sandy Bowden, (757) 824-0046.

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