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GODDARD

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Landsat 7 On Orbit, First Images Flow To Ground

After nearly one week of being on-orbit, NASA controllers report that the Landsat 7 operations are going according to plan with no problems.

“The spacecraft has been operating extremely well,” said **Phil Sabelhaus**, Goddard Landsat 7 project manager. “We have a very healthy spacecraft. We already have received our first images and they look great.”

The spacecraft’s first engineering images were taken three days after launch, on Sunday April 18, in a swath from the Dakotas to the Oklahoma/Texas panhandles. An image of the Southeastern South Dakota, Northeastern Nebraska region of the U.S. was released to the public on April 22 as part of NASA’s Earth Day activities.

During the past few days, the Flight Operations Team and the Flight Support Team have been verifying the performance characteristics and calibrating critical elements of all the spacecraft subsystems. The health of the spacecraft is excellent and the new technology solid state recorder has performed flawlessly. Engineering test burns of the reaction control system are being performed in preparation for underflying Landsat-5 to cross calibrate the instruments.

The spacecraft’s only instrument, the Enhanced Thematic Mapper Plus (ETM+) was put in the outgas mode the day after launch. The prime focal plane was activated and images were acquired on April 18.

Several images are acquired each day and processed through the Data Handling Facility at the EROS Data Center (EDC) in Sioux Falls, S.D. The images are being evaluated for radiometric and geometric quality, after processing by the Image Assessment System at EDC, by a team of U.S. Geological Survey (USGS) and Goddard personnel. Instrument performance has been exceptional. Upon completion of a three week outgasing period the cold focal plane will be cooled and all eight bands of the instrument will be



This is the first engineering image taken on April 18 by the new Landsat 7 spacecraft. Shown is the Southwest South Dakota area. This image can be found at the following web site: <http://pao.gsfc.nasa.gov/GSFC/EARTH/PICTURES/Landsat/first7.jpg>

operational.

The Landsat 7 satellite was launched April 15 aboard a Delta II launch vehicle from the Vandenberg Air Force Base, Calif. NASA will turn operational control of the spacecraft over to USGS on Oct. 1, 2000.

Goddard Sponsors Student SOHO Engineering Competition

On April 17 Goddard sponsored a Solar and Heliospheric Observatory (SOHO) related engineering competition at DuVal High School in Lanham, Md. which was designed to increase students’ knowledge of engineering, science and math.

The two winning teams were Springbrook High School in Montgomery County Md., coached by **Nazish Habib**, and Hermitage High School, Henrico County Public Schools in Va., coached by **Rachel Lawrence** and **David Smith**.

The competition focused on the student team’s knowledge of the engineering process to solve real-life problems that have been or may be encountered with SOHO.

The competition was held in two phases. Phase one involved coming up with a solution to protect SOHO from meteor showers. Phase two required the students’ to protect the science goals of the SOHO mission.

Each team had six students and one teacher. During the

competition, the teams were tasked to formulate a detailed plan to run SOHO for the next three years which was judged by SOHO team members. The judges included: **Art Poland**, **Terry Kucera**, **Craig DeForest** and **Jean-Philippe Olive**, as well as Eugene Hoffman from Morgan State University’s School of Engineering.

The other participating schools were: DuVal High School; Northwest High School in Germantown, Md. and Southern High School in Baltimore.

Hubble Ailing Gyroscope Fails

An ailing gyroscope on NASA’s Hubble Space Telescope that engineers had anticipated would fail since it first started behaving erratically in January 1999, stopped functioning April 20. The telescope continues to operate normally on its three good gyroscopes.

The telescope’s operators detected the failure when the No. 3 gyroscope’s motor current dropped instantaneously to zero. Gyroscopes 1, 2 and 5 are the three working gyroscopes remaining aboard Hubble and are functioning normally. The ailing gyroscope has not been used for pointing purposes since it began acting erratically. Because it was not active in the guiding loop, there is no impact to the science program.

Hubble requires three of its normal complement of six gyros to point accurately the telescope for science observations. The failure of number 3 means there are no available spares. Any further gyroscope failure will cause the observatory to go into a protective safe mode that gives ground controllers complete control of the telescope, but prevents its use for taking observations of the sky.

Hubble will be visited by a Space Shuttle crew in October during Servicing Mission 3A. Astronauts will replace all the gyroscopes, a fine guidance sensor, a transmitter, a spare solid state recorder and a high voltage/temperature kit for protecting batteries from overheating. Plus, the crew will install an advanced computer.



Area high school students participate in a Goddard sponsored engineering competition held at DuVal High School, Lanham, Md. on April 17.

Visit Goddard News on the web at <http://pao.gsfc.nasa.gov/gsf/gnews/gnews.htm>

Goddard's 40th Anniversary - One Week Away

Friday, April 30 — Exhibits highlighting Goddard's achievements over the past 40 years will be open for employee viewing in the Bldg. 28 Atrium from 10 a.m. to 2 p.m.

Sunday, May 2 — Community Day at the Goddard Visitor Center from 9 a.m. to 4 p.m. featuring Goddard jeopardy, NASA trivia, commemorative stamps, music, model rocket launch, Earth Science Gallery demonstration and activities, tours of Goddard, and much more!

Monday, May 3 — 40th Anniversary Symposium featuring a morning session from 9 a.m. to 11 a.m. in Building 8 auditorium. Keynote speaker for this event is Administrator Dan Goldin with remarks by invited members of Maryland congressional delegation.

An afternoon session is scheduled for 1 p.m. to 3 p.m. in the Building 8 auditorium that features talks by Associate Administrator for Space Science Dr. Ed Weiler, Associate Administrator for Earth Science Dr. Ghassem Asrar, Astrophysicist **Dr. John Mather** and Chief, Goddard

Solar Eruption Workshop to Be Held Next Week

Scientists specializing in studies of solar eruptions and the solar wind will gather at Goddard on April 27-30 for a workshop on the "Global Picture of Solar Eruptive Events."

The primary goal of the workshop is to obtain a broader, more comprehensive understanding of solar flares and coronal mass ejections, how they behave in interplanetary space, and how they affect Earth.

With the launch of several solar-observing spacecraft in the 1990s — including Yohkoh, Wind, the Advanced Composition Explorer, and the Solar and Heliospheric Observatory — a large number of solar eruptions have been observed in unprecedented detail. But in most cases, these events have been analyzed as individual, isolated occurrences. Next week's workshop will begin a more systematic and comprehensive study of 28 solar eruptive events. Scientists hope to develop a broad, generic picture of solar eruptions from their origins on the Sun to their arrival at Earth.

"What is unique about these 28 events is that they all produced radio emissions in the solar wind," said **Dr. Nat Gopalswamy**, a solar radio astronomer at Goddard and the Catholic University of America. "These radio signals are indicative of powerful shock waves."

"The questions that this workshop will address, and the ones that need to be answered in order to better understand space weather, all involve the interaction of solar eruptions with the steadier stream of the solar wind," said **Dr. James Green**, space physicist at Goddard. "With the data we have collected for this workshop and with the distinguished group of scientists attending the meeting, we should begin to formulate some of the answers."

Web Seminar Scheduled for April 29

These days just about everyone has created a website and we all know the level of quality varies dramatically. Why are so many web sites frustrating and hard to use? How did the good sites get that way? What are they doing differently? To create a clean, visually organized, tool for your users, a graceful and efficient interface to your data, more is needed than the basics of implementation.

The seminar will be held on April 29 in Building 22, Room 365 from 9:30 am - 2:30 p.m. The session will help webmasters take their site to the next level by introducing the basic concepts of usability and informational graphic design as they apply to web sites.

Space will be limited for this TEA Seminar. Therefore, we must ask that you reserve a space by calling 6-6034 or email tsa@pop500.gsfc.nasa.gov if you plan to attend.

ISO 9001

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With customer satisfaction as our primary goal:

- GSFC is committed to meeting or exceeding our customer's requirements.

- We achieve excellence in all of our efforts.



Visit ISO at <http://arioch.gsfc.nasa.gov/iso9000/index.htm>

Institute for Space Studies, **Dr. Jim Hansen**.

A special engineering colloquium is scheduled for 3:30 p.m. to 4:30 p.m. in the Building 3 auditorium with a presentation by Lane Wallace, author of "Dreams, Hopes, Realities--NASA's Goddard Space Flight Center, The First Forty Years" with a book signing opportunity at 3 p.m.

Tuesday, May 4 — Walk around informational tours with former Center Directors.

Wednesday, May 5 — Picnic on the mall area from 11:30 a.m. to 1:30 p.m. and a U.S. Postal Service 40th Anniversary commemorative stamp cancellation.

Thursday, May 6 — Library Open House, Building 21 Library from 10 a.m. to 2 p.m.

Friday, May 7 — Informal Employee Get-Together at the Goddard Visitor Center for employees and alumni from 4:30 p.m. to 7:30 p.m. Ticket price is \$5.00.

For more information about Goddard's 40th Anniversary special events, visit our Web site at: <http://pao.gsfc.nasa.gov/gsf/40th/40th.htm>

National Space Club Reception

Goddard Civil Service employees are invited to attend the National Space Club Reception at the Goddard Visitor Center on Monday, May 3. This special reception recognizes four decades of Goddard's achievements and contributions with special honors to all of the past Center Directors.

Tickets are available for Goddard Civil Service employees and spouses (or significant other) only, for \$25.00 per person. Limited tickets are available.

If you are interested in attending the reception, you will need to complete a form requesting tickets. The forms are available in the Office of Public Affairs. After completing the form, return it to the Office of Public Affairs, Code 130 with your check or money order, for forwarding to National Space Club. Make checks payable to: National Space Club. Tickets must be purchased by Tuesday, April 27.

North Pole Expedition To Field Test Communications Technologies

The North Pole will be the site for a unique technology demonstration showing how NASA-developed technology and the Internet have made it possible for scientists to work in very remote locations and share the results with students and the public around the world.

The scientific mission of the expedition is to take measurements of ozone levels and ice thickness, snow depth and temperature — important factors in monitoring the planet's health. NASA-developed technology will enable the team to correlate some of these measurements almost instantly with satellite observations.

"Monitoring our environment is becoming as simple as 'point & click,'" said the expedition's leader **Michael Comberiate**, an engineer at Goddard. "We hope to demonstrate that connectivity between satellites and scientific field parties is becoming practical and cost-effective, even in obscure locations."

The team departed this week and plans to spend a week at Resolute Bay, Canada before making their way to the North Pole where they will stay for two days.

Using sophisticated communications systems and NASA's Tracking and Data Relay Satellites, the expedition will coordinate and exchange data with a team of government researchers using six satellites that will fly over the Pole as they work on floating sheets of ice in the high Arctic Ocean.

For the complete story, check the following web address: <ftp://pao.gsfc.nasa.gov/pub/pao/releases/1999/99-046.htm>

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