

SOFTWARE UPDATED IN MAIN COMPUTER SUCCESSFUL

The ion propulsion system continued to push Dawn forward through most of January, with only two brief interruptions in the thrusting. The first on January 15 occurred when a cosmic ray hit an electronic component. The second, a week later, was a deliberate pause to allow the operations team to update the software in the main computer. The changes account for the increasing distance from Earth by lowering the speed of communications with Earth when the spacecraft enters “safe mode” – the configuration called by software to resolve certain errors. Following the software changes, thrusting resumed on January 25.

Be sure to check the Mission Status for the latest reports and updates
<http://dawn.jpl.nasa.gov/mission/status.asp>

WHERE IS DAWN?

On Wednesday, February 20, 2008, Dawn is about 57.5 million miles from Earth. On this day it is coasting (not thrusting with ion propulsion). Nevertheless, the Dawn spacecraft and the Earth are moving apart at more than 35,000 miles/hour, as their orbits around the Sun take them their separate ways. On February 20, Dawn is just over 129 million miles from the Sun. Thrusting is scheduled to resume Friday, February 22.

To see an image of the location of the Dawn spacecraft on its trajectory visit
http://dawn.jpl.nasa.gov/mission/live_shots.asp. The images are updated each hour.

COMMUNICATING IN DEEP SPACE

You may wonder how we know about the Dawn spacecraft when it is so far away from Earth. At Dawn’s current distance it takes approximately 5.2 minutes for signals to travel from Earth to the spacecraft and return from the spacecraft to Earth. It will take even longer once we get to Vesta and even longer when we get to Ceres. The signals are very weak and must be detected by very large dishes. These dishes, which are similar to satellite dishes you have seen on houses but are much larger, collect these weak signals and focus them to a receiver. The signals are then amplified and the information is gathered.

NASA developed a network of dishes that are located around the world for this purpose. This network is called the **NASA Deep Space Network** or **DSN**. It is an international network of antennas that supports interplanetary spacecraft missions and radio and radar astronomy observations for the exploration of the solar system and the universe. The network also supports selected Earth-orbiting missions.

The DSN currently consists of three deep-space communications facilities placed approximately 120 degrees apart around the world: at Goldstone, in California’s Mojave Desert; near [Madrid](#), Spain; and near [Canberra](#), Australia. This strategic placement permits constant observation of

spacecraft as the Earth rotates, and helps to make the DSN the largest and most sensitive scientific telecommunications system in the world.

Visit the DSN Web site, <http://deepspace.jpl.nasa.gov/dsn/> to find: games, projects, animations, cool subjects, and amazing facts.

MEET STEVE JOY

“My role at the Dawn Science Center is to work with the scientists to help them acquire the data that they need to understand the objects we’re studying—Vesta and Ceres, and Mars when we fly by.... Then, we help translate those desires into specific commands to instruments and spacecraft that will tell the spacecraft to turn this direction, point the camera over there, take the pictures, when exactly to take the pictures and in what sequences to take them in.” Learn more about Steve’s role as Manager of the Dawn Science Center, UCLA at http://dawn.jpl.nasa.gov/people/joy_steve/interview.asp

DAWN JOURNAL

“Though now in interplanetary cruise at a much more leisurely pace than the one it maintained during the initial checkout phase of the mission, the Dawn spacecraft’s ride was temporarily interrupted by an encounter with an ornery cosmic ray.” In his latest entry, Dr Marc Rayman explains how the software aboard Dawn reset the computer, and the mission controllers returned the spacecraft to its normal flight configuration. Read the full journal entry at http://dawn.jpl.nasa.gov/mission/journal_1_31_08.asp

DR. McFADDEN SEARCHES FOR PIECES OF ASTEROIDS IN ANTARCTICA

Dr. Lucy McFadden, Dawn Co-Investigator and E/PO Lead has returned from a search for meteorites in Antarctica. The Antarctic Search for Meteorites team found 710 meteorites, some as small as a little finger nail (about 1.0 cm x 0.5 cm x 0.5 cm), and others about 8 pounds and too big to hold in one hand (about 25 cm x 15 cm x 12 cm). The Dawn mission is interesting to scientists because many of the meteorites on earth appear to be from Vesta, one of the asteroids that Dawn will visit.

http://www.dawn-mission.org/feature_stories/antarctica.asp

CALLING PHYSICS TEACHERS: FIELD TEST A DAWN CONTENT MODULE

Would you like to field test a module that engages students with real-life applications of physics concepts? The *Ion Propulsion* module is aligned to the *National Science Education Standards* “Structure and Properties of Matter” standards for students in grades 9–12 and contains an interactive simulation in which students design their own ion engine.

Ion Propulsion is ready for field-testing during the Spring 2008 or Fall 2008 semesters. All materials have been thoroughly reviewed and modified based on pilot-test results. Field-test participants will have the opportunity to use and provide additional feedback on these innovative supplemental science materials.

To view the entire module visit
http://dawn.jpl.nasa.gov/DawnClassrooms/2_ion_prop/index.asp

To view the study description and to sign up, visit
<http://dawn.jpl.nasa.gov/getInvolved/index.asp>

DAWN E/PO PRESENTING AT UPCOMING CONFERENCES

National AfterSchool Association Conference
Wednesday, March 12, 3:00–4:30 EDT, Ft. Lauderdale, Florida
In Search of After School Activities

Learn about science activities appropriate for after school programs: In Search Of..., Dwarf Planet Vocabulary, Dawn Mission Video, Find a Meteorite, Ion Propulsion Interactive Simulation, Paper Spacecraft Model, and Where Are You?

Friday, March 14, 10:15–11:45 EDT
The Thrill of Discovery: NASA's Discovery Missions Deliver Solar System Science
NASA's 10 exciting Discovery missions provide high-interest topics for connecting standards-based science to after school programs. Hands-on, experiential science activities and current science mission information related to the Solar System and beyond make up this experience.

Lunar and Planetary Science Conference
Thursday, March 13, 1:00–5:00 CDT, League City, Texas
Dawn Educator Conference

Capture student interest by using the Dawn mission to asteroids as a real-world link. Aligned with the National Research Council content, instruction, and assessment guidelines, Dawn educational materials can be easily inserted in place of traditional units within a typical secondary school science, math, social studies, and language arts curricula. Educators can participate in hands-on activities on meteorites and asteroids.

National Science Teachers Association
Thursday, March 27, 2:00–3:00 EDT, Renaissance Boston Waterfront Hotel, Pacific H, Boston Massachusetts

Using Technology to Teach Charges and Relative Charges
Join Joe Wise and John Ristvey as they present an interactive simulation used to explore concepts of force that form between charged particles and the properties of ions in the plasma phase.

For more information on these conferences visit <http://dawn.jpl.nasa.gov/education/index.asp>

TELL US WHAT YOU THINK

Continually seeking ways to improve the mission Web site, the Dawn Education and Public Outreach team is eager to receive your feedback. Please share your thoughts by completing a brief survey at <http://survey.mcrcel.org/scripts/qweb.cgi?4CFEF46>

SUBSCRIPTION INFORMATION

Please forward this e-mail to others interested in NASA missions. We welcome new subscribers!

Visit our Web site and join the Dawn mission e-news mailing list at

http://dawn.jpl.nasa.gov/DawnMedia/e_news.asp

Dawn Mission Outreach E-News features information about the mission, its outreach Web site, and products, services, and materials available from the Dawn Education and Public Outreach (E/PO) team. Dawn is the ninth Discovery mission in NASA's Science Mission Directorate and is a collaborative partnership made up of the University of California, Los Angeles; Jet Propulsion Laboratory; Orbital Sciences Corporation; Los Alamos National Laboratory; German Aerospace Center; Max Planck Institute for Solar System Research; Italian Space Agency; and Italian National Institute of Astrophysics. Dawn outreach materials are developed under contract by Mid-continent Research for Education and Learning (McREL), Denver, CO.