

Triton Fun Company

Science Newsletter May 2008

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May 2008

Landfall on Mars ! The flight of Phoenix J. Sheepshead

Special points of interest:

[Viking 2008](#)

[Triton Fun stuff](#)

[Superfluous questions](#)

NASA has done it again. They have sent a spacecraft to the distant planet Mars and landed it successfully in the cold Arctic plains of that far-off world. I watched the entry, descent and landing activities of this tiny craft called *Phoenix* on the screens in a large auditorium in Pasadena with thousands of others on March 25, 2008. We were watching the live feed from the control room at the Jet Propulsion Laboratory that manages the mission. The controller was announcing the different stages of the mission as Phoenix approached Mars after a 9 month journey. The heat shield had to come off on time, the back shell had to release the lander, the parachute had to deploy at the right moment, the thrusters had to start firing at the right moment. Everything had to go perfectly or else the spacecraft would crash and a mission (not to mention millions of dollars and years of hard work) would be lost.

But everything worked as it was designed to do. The parachute deployed about 7 seconds late due to different pressures in the atmosphere than were expected. But the jets started firing and landed the craft even more gently (at a slower speed, 2 mph, rather than 5 mph) than was expected. The software adjusted to environmental conditions just as it was supposed to do.

When Phoenix was minutes from landing, the controller counted down the altitudes: "80 feet, 60, 40, 30..." The thousands of people in the auditorium were hushed with expectation (you could have heard a pin drop in there).

When Phoenix finally touched down at 4:53 p.m. Pacific time, the controller said "Landing confirmed. Welcome to the northern plains of Mars." The crowd went wild, cheering and applauding with incredible exultation. We had done it ! This next mission in the NASA Mars Exploration program had succeeded in the 2007 launch opportunity. Now Phoenix was ready to start exploring, examining the soil with chemistry experiments and microscopes and other instruments to look for water and habitability.

The types of experiments and goals of the mission are similar to the earlier Viking missions. These two extraordinary missions consisted of two landers, *Viking 1* and *Viking 2*, that reached Mars in the summer of 1976. They touched down in a more equatorial region of Mars and did many chemistry and geology experiments to look for organics in the soil. These types of molecules were not found. However, Viking found a wealth of information about the conditions on Mars and were very successful missions.



**Phoenix landing on Mars
March 25, 2008**

The Phoenix mission will do chemistry experiments in its *Microscopy, Electrochemistry and Conductivity Analyzer* (MECA) instrument which will dissolve the soil in water and check for minerals, acidity and conductivity. The *Thermal and Evolved Gas Analyzer* (TEGA) instrument will cook the soil sample and check the evolved gases that come off with a mass spectrometer. Phoenix also has 3 cameras, one for close-up imaging and 2 for panoramic and descent views of the landscape. It also has a weather station onboard. The spacecraft has gone where no other spacecraft has gone before, to the high north polar region of Mars at 63 degrees north latitude. The analogous latitude and location on Earth would be in the Yukon territory of Canada (cold indeed).

continued, pg 2 —>

We are always looking for **contributors** to the Science Newsletter. If you would like to write an article about a science subject you are excited about, or contribute a superfluous question, or if you would like to be on our **mailing list** for future newsletters, please e-mail us at:

info@tritonfun.com

Mars landing: continued

Photos/Info: NASA/JPL/University of Arizona

Phoenix science operations will now be controlled from the University of Arizona in Tucson. Phoenix will operate on the Mars surface all summer of 2008, running its experiments during the 24 hour daylight hours. However, by September, the sun will drop down below the horizon and Phoenix will be experiencing the winter chill of the Arctic regions. It is expected that carbon dioxide will condense out from the atmosphere and cover Phoenix with frost. Its electronics will probably not run in such cold temperatures and Phoenix will go into hibernation. JPL will try to wake up the spacecraft next year when the sun comes up but there are doubts about whether the electronics will be functional. So Phoenix will spend its summer vacation on Mars and be a robot chemist/geologist, giving us valuable information that future explorers can use to figure out whether Mars is or was habitable for microbes and Man.

The following are some photos from that exciting landing:

Resources:

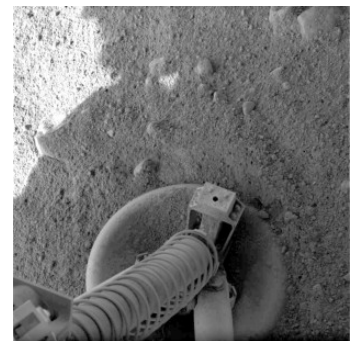
- 1) **Viking missions:**
<http://nssdc.gsfc.nasa.gov/planetary/viking.html>
- 2) **Phoenix mission (JPL):**
<http://www.jpl.nasa.gov/news/phoenix/main.php>
- 3) **Phoenix mission (NASA site):**
http://www.nasa.gov/mission_pages/phoenix/main/index.html
- 4) **Phoenix mission (U of A):**
<http://phoenix.lpl.arizona.edu/>



Exultant flight controllers celebrate the Phoenix landing



**Footpad of Viking lander
First picture from Mars 1976**



**Footpad of Phoenix lander
First picture from Mars 2008**

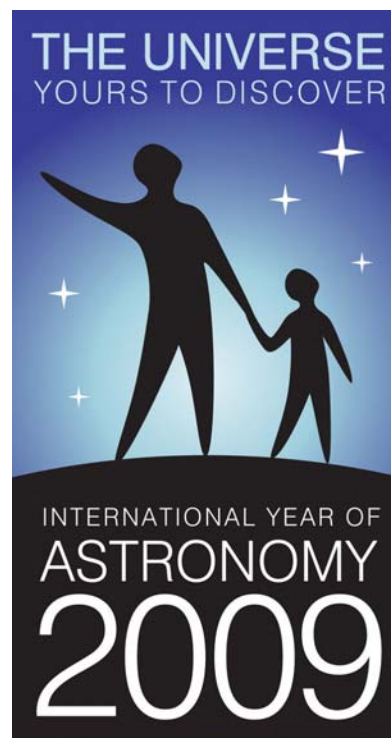
TRITON FUN PRODUCTS

2009 has been declared the "International Year of Astronomy". Events and activities to further the excitement of astronomy are being planned by IYA committees in over 100 countries. The logo for the IYA2009 is shown below. For more info on upcoming IYA2009 events, go to: <http://www.astronomy2009.org>

Triton Fun is an authorized distributor of T-shirts, sweatshirts and long-sleeve tees sporting this new logo. Part of the proceeds from the sale of these shirts will go to support astronomy clubs and astronomy activities connected with IYA2009 in California.

These shirts can be ordered online on our website:
<http://www.tritonfun.com>

Or, order by phone (toll-free) : 800-778-0560



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** Send us your superfluous questions for a future issue ! They can be on any subject. The funnier, the better. M.D., our editor, appreciates the help and will send you a free Triton Fun coffee mug as compensation for your question. Or write an article for us and be read by professional and amateur astronomers and scientists in the U.S. and Canada ! **

Superfluous Questions:

- 1) In the TV show *Becker*, which borough of New York City does Dr Becker have his medical practice in ?
a) Brooklyn b) Bronx c) Queens d) Staten Island
- 2) The next solar eclipse (in August 2008) will pass over which of these countries ?
a) Morocco b) Australia c) Mongolia d) Gambia
- 3) In the film *North by Northwest*, in what city on Long Island did Cary Grant end up in the police station ?
a) Syosset b) Westhampton c) Glen Cove d) Montauk
- 4) James Herriot was the veterinarian in England who wrote *All Creatures Great and Small*. Thirsk was the real name of the Yorkshire village he lived in. What fictional name for the town did he use in his books ?
a) Harrogate b) West Tanfield c) Northallerton d) Darrowby

→ ANSWERS in next months issue of the Science Newsletter ! ←---

** ANSWERS to April's Superfluous Questions: 1. c) Liverpool 2. c) Philip 3. c) 1918 4. c) epilepsy