

Phoenix takes flight

By Wendy McCorry, Science Communicator

All being well, as you read this, NASA's latest mission to Mars – the Phoenix probe- should be heading towards the Red Planet to continue the search for alien life. Scheduled for an August 3rd launch, the Phoenix is due to land on the Martian arctic plain in late May 2008. It will then carry out a 90 day mission on the planet, digging beneath the soil and gathering ice samples to uncover the history of water on Mars and to explore the planet's potential for life.

Previous Martian missions have concentrated their search for life in the dry regions of Mars. Phoenix is unique in that it is going to touch down in a much wetter area, at the planet's unexplored North Pole. Satellite images have revealed that there are vast areas of underground ice at the polar regions, and there is some debate amongst scientists as to whether this ice is part of a widespread underground ocean of ice, or simply frozen atmospheric water vapour. Phoenix is expected to land just as the winter ice around the planet's North Pole is receding to expose the soil below. It is thought that underneath this soil is as much as 1 m (3 ft.) of carbon dioxide ice, into which Phoenix will use its 2.3m (7.7 ft) digging arm to drill and scoop out ice samples to find out if conditions here are suitable for sustaining life.

Although it may seem unlikely to find life in such cold conditions, microbes can actually survive in a dormant state frozen in ice. These dormant microbes can be activated and begin searching for food as temperatures increase and, in the right conditions, can grow and reproduce. Onboard Phoenix is a small laboratory where samples can be dissolved in water to find out the mineralogy of the soil. There are also small ovens which can use heat to investigate the presence of organic compounds – clear indicators of life.

Like its mythical namesake, the Phoenix has 'risen from the ashes' of two of NASA's previ-

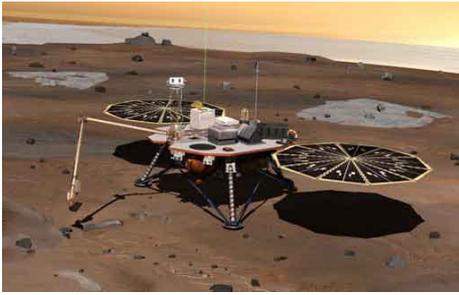


Image Credit: NASA

Preparing for Flight workers guide the Phoenix Mars Lander spacecraft (in its aeroshell) onto the upper stage booster. The protective clothing is for the spacecraft's benefit, not the humans.

ously unsuccessful Martian landers- the Mars Polar Lander and the Mars Surveyor. In 1999, the Mars Polar Lander was lost whilst trying to touch down on the Red Planet, and in 2001 the Mars Surveyor was abandoned after the loss of another Martian probe. The Phoenix has been constructed using the spare parts and some of the instruments from these failed missions. Although at \$420 million Phoenix is a relatively low cost mission, NASA is obviously still anxious to avoid another failure. They describe the probe's descent through the Martian atmosphere as 'seven minutes of terror', in which the Phoenix must decelerate from 20000 km/h to 0 km/h. There will be no airbags to cushion the touchdown, but a parachute and rocket thrusters will try to ensure a smooth landing. During this descent, the Phoenix will use temperature and pressure sensors and a camera on a 2m mast to probe the Martian atmosphere, and investigate

Image Credit: NASA



Stranger in a Strange Land This artist's impression shows Phoenix on Mars after a safe landing. During the harsh winter the probe may be buried in a drift of carbon dioxide snow.

its relationship with the planet's surface.

The mission is expected to last three months, after which the harsh Martian winter will return and the prospects for the Phoenix look bleak.

NASA is hopeful, however, that the probe will survive long enough for them to be able to see the formation of ice at the Martian North Pole once again.

Phoenix will also carry “the first library on Mars” to its destination. This is a silica glass DVD especially designed to last for hundreds of years or more. It contains the text of significant Mars-related fiction by writers HG Wells, Ray Bradbury and Kim Stanley Robinson and Percival Lowell’s ‘Mars as the Abode of Life’ complete with a map of the canals of Mars. The DVD also features Mars-themed artwork and music and recorded greetings from dignitaries for future visitors to Mars. Finally there are a quarter of a million names submitted through the internet to the Planetary Society, giving people all around the world the chance to join in the exploration of Mars.