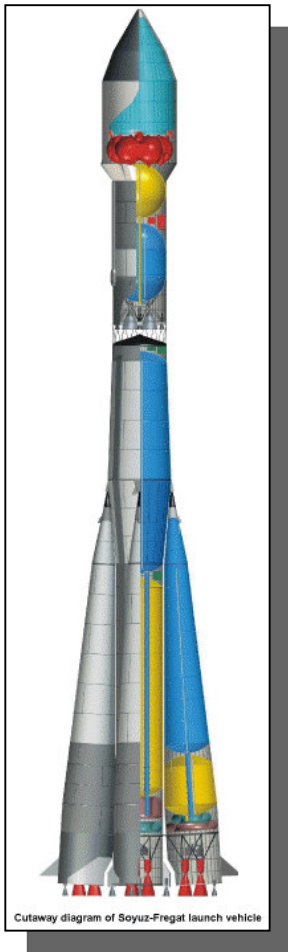


MARS EXPRESS IS ON ITS WAY!

By Alan Anderton



In August 2003, Mars will be at its closest for over two years and during the course of this year a veritable fleet of robot explorers are set to take advantage of this. 2003 may well go down in the history of Space Exploration as the "Year of Mars"! This year marks the entrance of a new player in Mars exploration, the European Space Agency. The ESA as it is known is a multicultural organisation pooling the research and manufacturing capabilities of many nations including Canada.

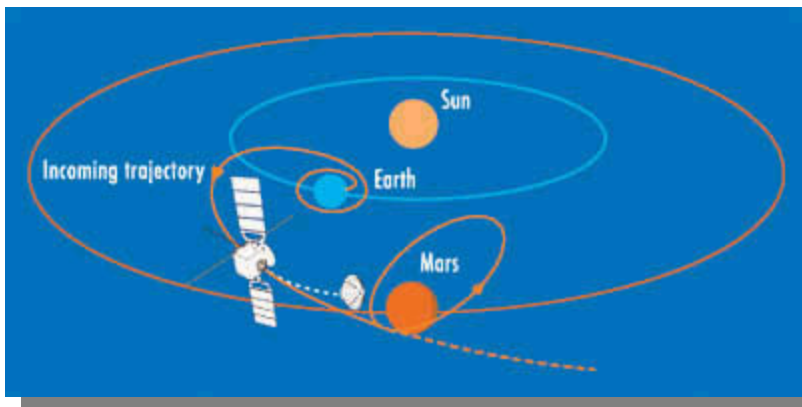
The ESA, in an amazingly short time frame, has designed and built an intrepid spacecraft called Mars Express which started its six-month journey to Mars from Earth on Monday, June 2nd. Mars Express consists of an orbiter and lander - the 'Beagle 2' - which together will gather data concerning the planet's evolution, & internal activity, the presence of water below its surface and the possibility of life.

The spacecraft was launched on a Soyuz-Fregat rocket from the Baikonur Cosmodrome in Kazakhstan, a part of the former Soviet Union. The rocket is a product of Starsem, a European-Russian company that is marketing Soyuz launchers outside Russia. 1,500 Soyuz rockets have been launched since November 1963 and the design has proven itself to be very safe and reliable. Soyuz has four stages. The first stage consisting of four conical boosters grouped around the second stage, the central core, ignite at the same time at lift off. After the first

stage boosters have used all their fuel, they separate and the second stage continues to burn. Stage three - above the lattice framework - completes the thrust required to put the payload into orbit and the fourth stage, the Fregat engine, is used to push Mars Explorer out of Earth orbit and on its way to Mars.



All is going as planned so far. Contact with Mars Express has been established by ESOC, the European Space Operations Control Centre in Darmstadt, Germany. The probe is orientated correctly towards the Sun and has deployed its solar panels with all on-board systems operating faultlessly.



Now that the launch is over, the Beagle-2's launch clamps - to secure it during the violent climb out of the atmosphere - have been released. The probe has performed a corrective manoeuvre to place it in a Mars-bound trajectory, while the Fregat stage, trailing behind on the uncorrected course, will vanish into space to ensure it does not crash into and possibly contaminate the Red Planet.

FIRST MER, "SPIRIT" SUCCESSFULLY LAUNCHED

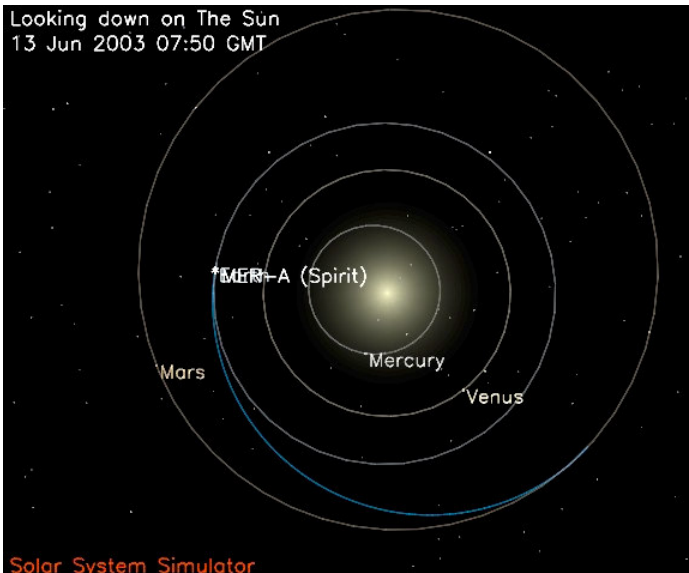
By Alan Anderton



NASA is sending *two* robot explorers to Mars this year as the Mars Exploration Rover mission or MER for short. MER A "Spirit" blasted off Tuesday, June 10th and MER B "Opportunity" due for launch in the last week of June.

The launch vehicle chosen for the MER mission is the Boeing Delta II. This family of launch vehicles has been in service for over 10 years and has successfully launched 90 projects including the last five NASA missions to Mars. The particular unit used for the 'A' Rover, which was renamed "Spirit" upon launch after a competition, was a Delta II 7925 Standard

NASA has had some spectacular successes in Mars exploration. Building on the early Mariner programme, their first landmark was the landing of the Viking probe in 1976, when we received the first pictures of the surface of Mars. More recently, in 1996, who could forget the Mars Pathfinder mission and the little Sojourner robot, crawling amongst the rocks like some kids' RC toy? Well, this is what Sojourner wanted to be when it grew up!



Delta has three stages, not including the strap-on boosters. At launch the Stage I motor, in the central core fires up, along with six of the nine Solid Rocket Motors used to increase engine thrust. Three minutes after lift-off, the remaining three ignite.

Stage II fires up 4 minutes 37 seconds after ignition for 5 minutes to complete the insertion of the payload into Low Earth orbit and again at 28 minutes 46 seconds to orient the third stage prior to it firing. The third and final stage is a solid fuelled motor which provides the boost needed to leave Earth orbit and inject the spacecraft on a trajectory to Mars.