

## MARS EXPRESS: EXPLORATION OF PHOBOS

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The ESA Mars Express Orbiter will be nearly polar and have an initial orbital period of 7.6 hours for the 1st 440 days and then will reduce its period to 6.7 hours. As periapsis of the elliptical orbit walks around Mars every 2 years, the ascending and descending nodes of the Mars Express orbit on the Mars equatorial plane (~Phobos orbit plane) will have the same radius as the orbit of Phobos and close encounters of Phobos will occur when Phobos is near the node as Mars Express passes.

Hundreds of these close encounters will occur over the mission lifetime, allowing the orbiter payload package (High Resolution Stereo and Super Resolution cameras, OMEGA multi-spectral imager, MARSIS ranging and sounding radar, Planetary Fourier Spectrometer, SPICAM spectrometer, MaRS radio science and ASPERA plasma analyzer) to produce global, high resolution surface, sub-surface, mass and plasma environment datasets that could surpass those obtained on both Viking and Phobos 88.

The Mars Express orbit is well within the Deimos orbit, providing no close encounter opportunities.