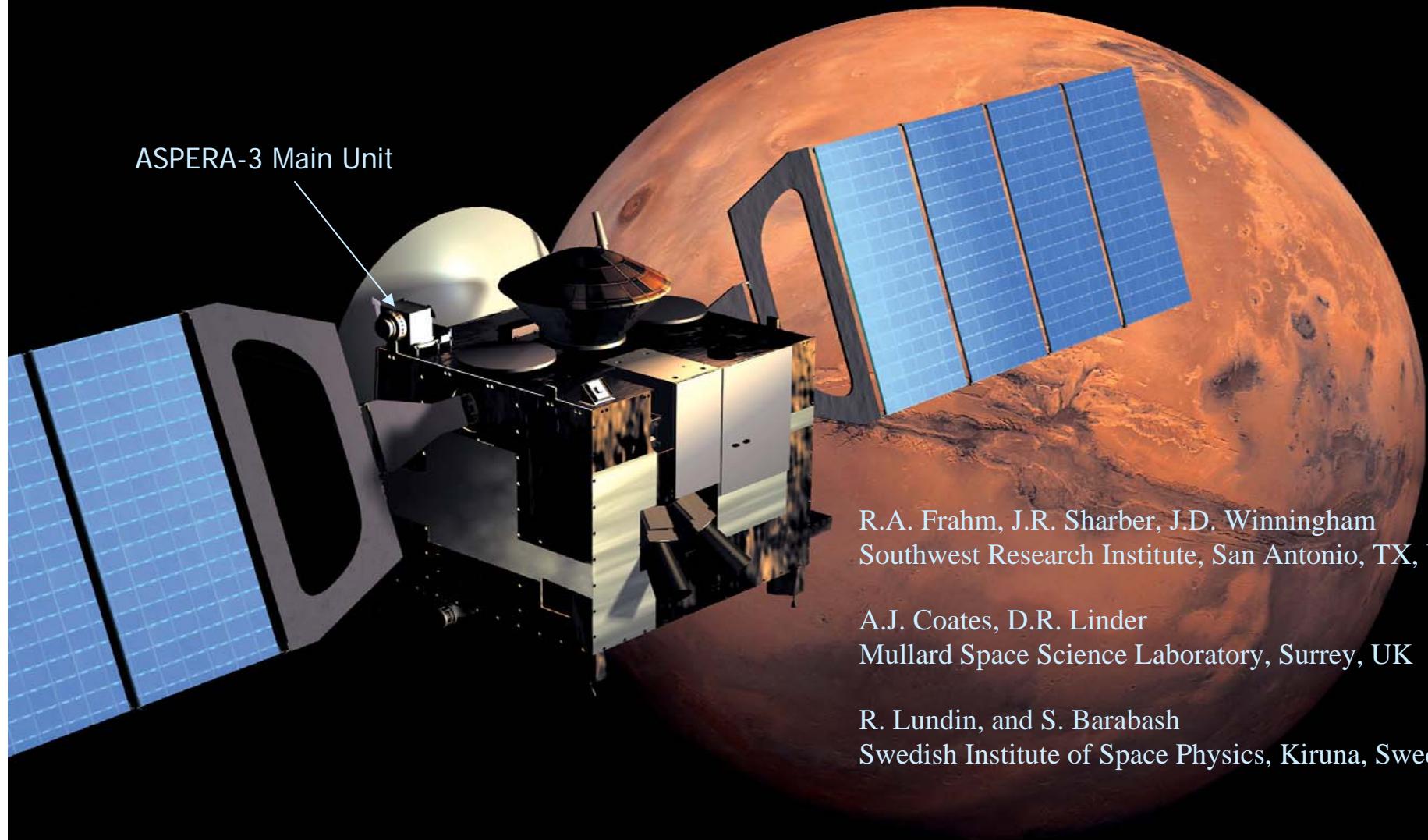


Mars Express Mission Overview and Initial Electron Measurements



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A.J. Coates, D.R. Linder
Mullard Space Science Laboratory, Surrey, UK

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Swedish Institute of Space Physics, Kiruna, Sweden

ESA Image: Mars Express Artist's View



The Mission Objectives

Mars Express is a mission of comparative planetology. It will make observations of the surface, atmosphere, surface - atmosphere and atmosphere - interplanetary medium interactions.



The MEX Payload

Instrument	Name	Principal Investigators	Institute
ASPERA	Energetic Neutral Atoms Analyser	R. Lundin	Swedish Institute of Space Physics, Kiruna, Sweden
HRSC	High Resolution Stereo Colour Imager	G. Neukum	Institut für Planetenforschung, Berlin, Germany
OMEGA	IR Mapping Spectrometer	J. P. Bibring	Institut d'Astrophysique Spatiale, Orsay, France
PFS	Atmospheric Fourier Spectrometer	V. Formisano	Istituto Fisica Spazio Interplanetario, Rome, Italy
RSE	Radio Science Experiment	M. Paetzold	University of Cologne, Cologne, Germany
SPICAM	UV Atmospheric Spectrometer	J. L. Bertaux	Serviced'Aeronomy, Verrieres-le-Buisson, France
SSRA	Sub-surface Sounding Radar / Altimeter	G. Picardi	University of Rome, Rome, Italy
Beagle 2	Lander	C. Pillinger	Open University, Milton Keynes, UK



The MEX Background History

Mars Express is the first 'flexible mission' (F1) in the revised ESA long-term scientific programme and was launched towards Mars on June 2, 2003 with a Soyuz/Fregat launcher.





Spacecraft Facts

Launcher

Soyuz-Fregat
Delta II

S/C Item

Spacecraft Bus
Lander
Payload
Propellant
Launch Mass
Spacecraft bus dimensions
Solar array area

Typical Mean Power

Spacecraft
Payload

LauncherrCapability

1060kg
1100kg

CurrentMasss

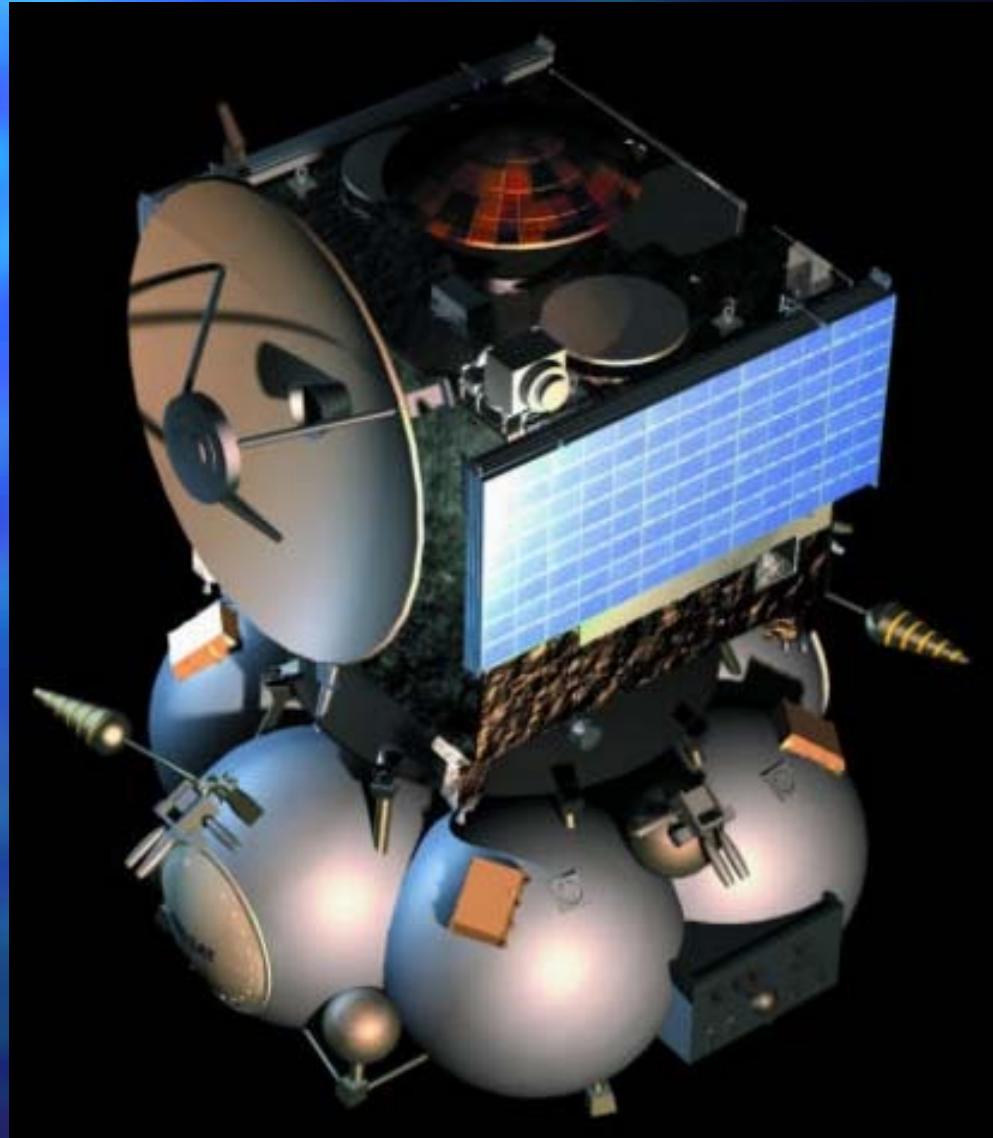
439kg
60kg
116kg
427kg
1042kg
1.5 x 1.8 x 1.4m
11.42m²

270 - 445 W
55 - 140 W

Built by Matra Marconi
Space (MMS) in Toulouse
and integrated at Alenia in
Italy



Mars Express on Soyuz Upper Stage



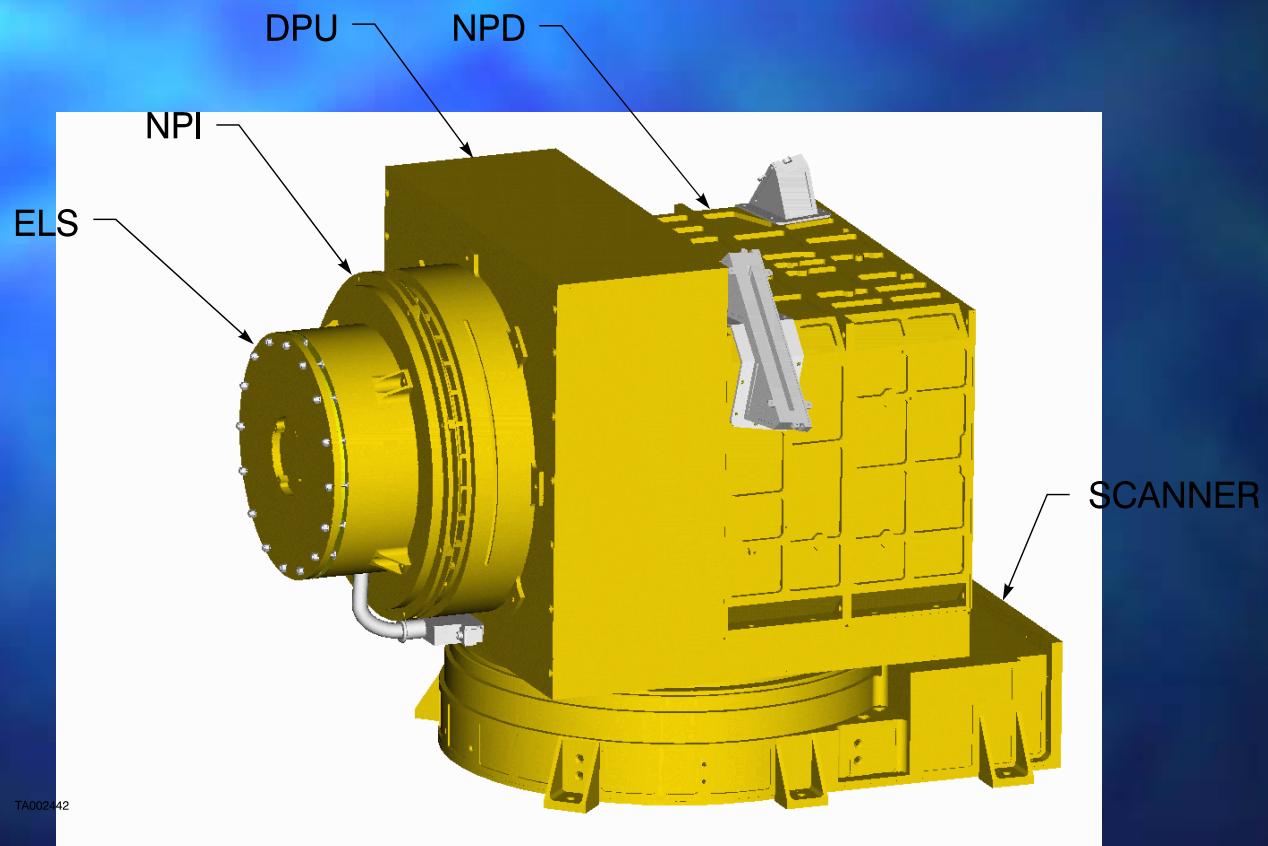


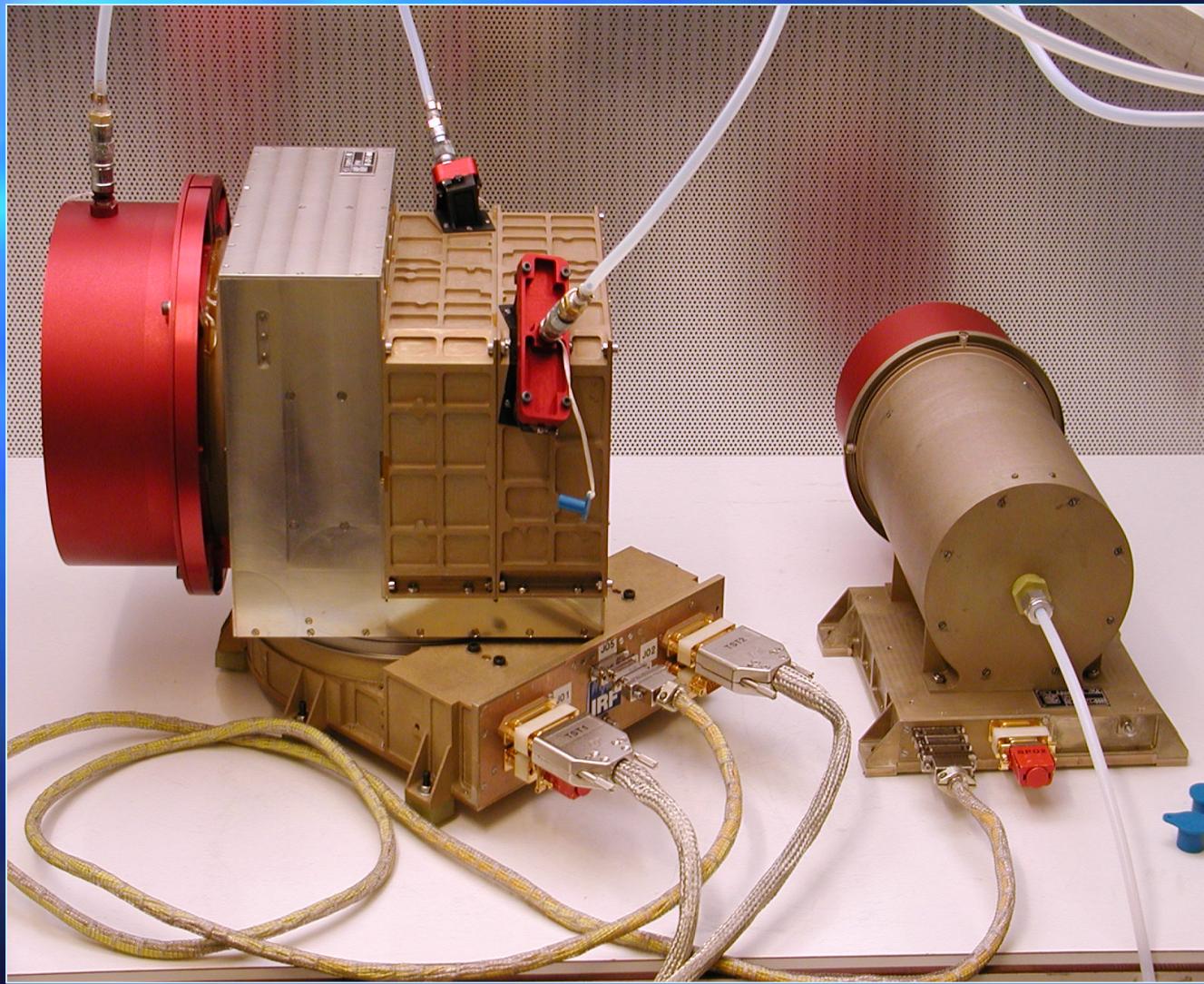
Mission Profile

Launch	2 June 2003
Near Earth Commissioning	30 days
Interplanetary cruise	146 days
Lander separation	20 December 2003
Mars orbit insertion	25 December 2003
Routine operation	696 days
End of the nominal mission	30 November 2005
Extended operations	1095
End of the mission	30 November 2008



ASPERA-3 SCANNER INSTRUMENTATION

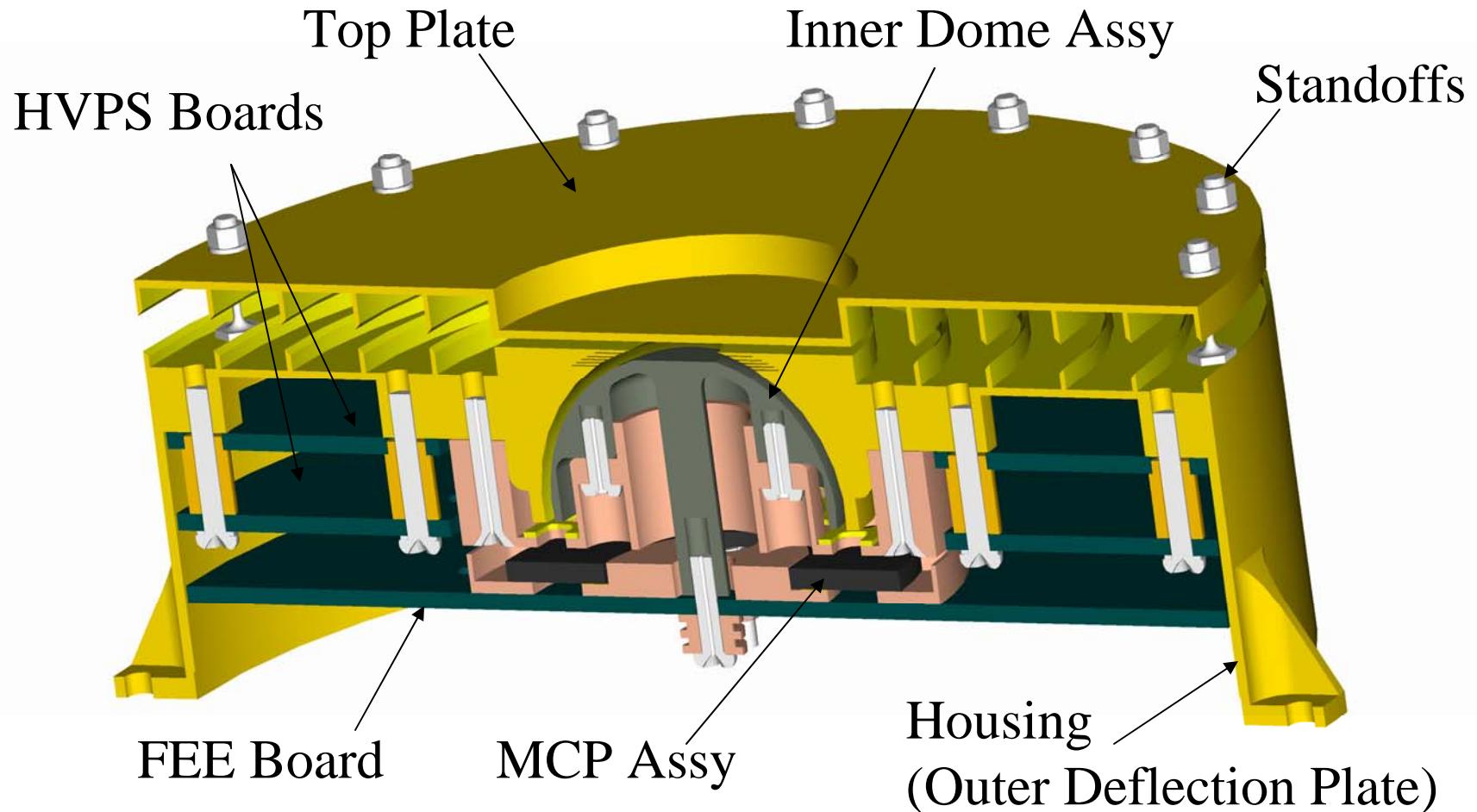






ELS Layout

ELS Overview



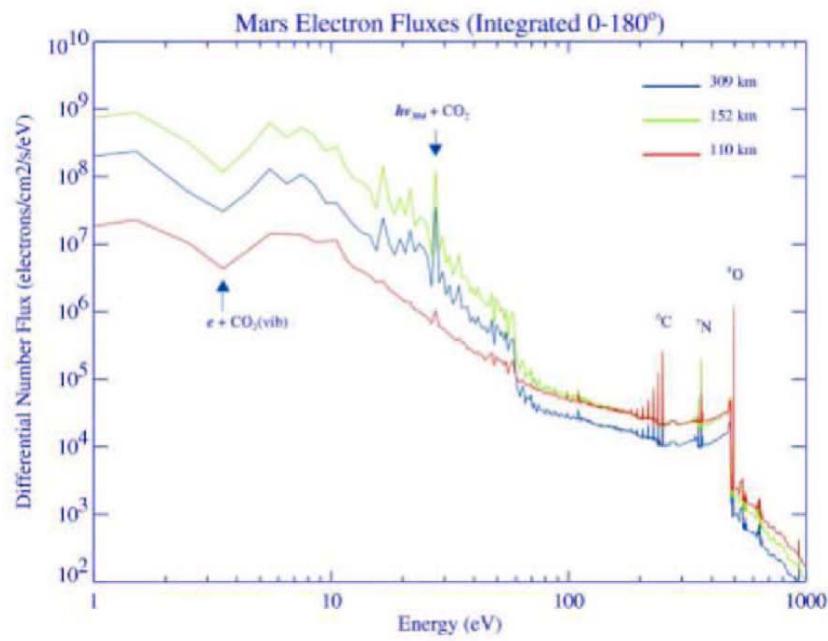


Location on S/C





Figure 2

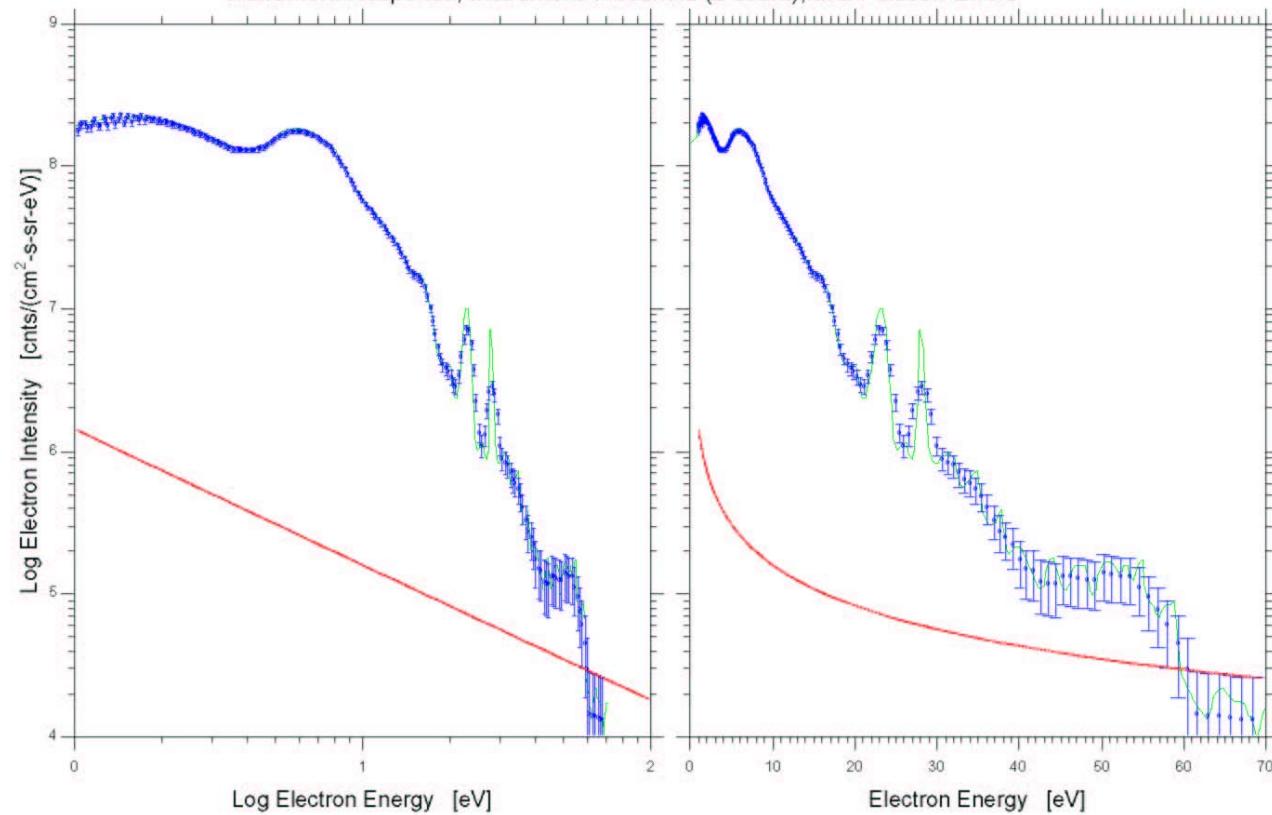




Contiguous Sampling Achievement

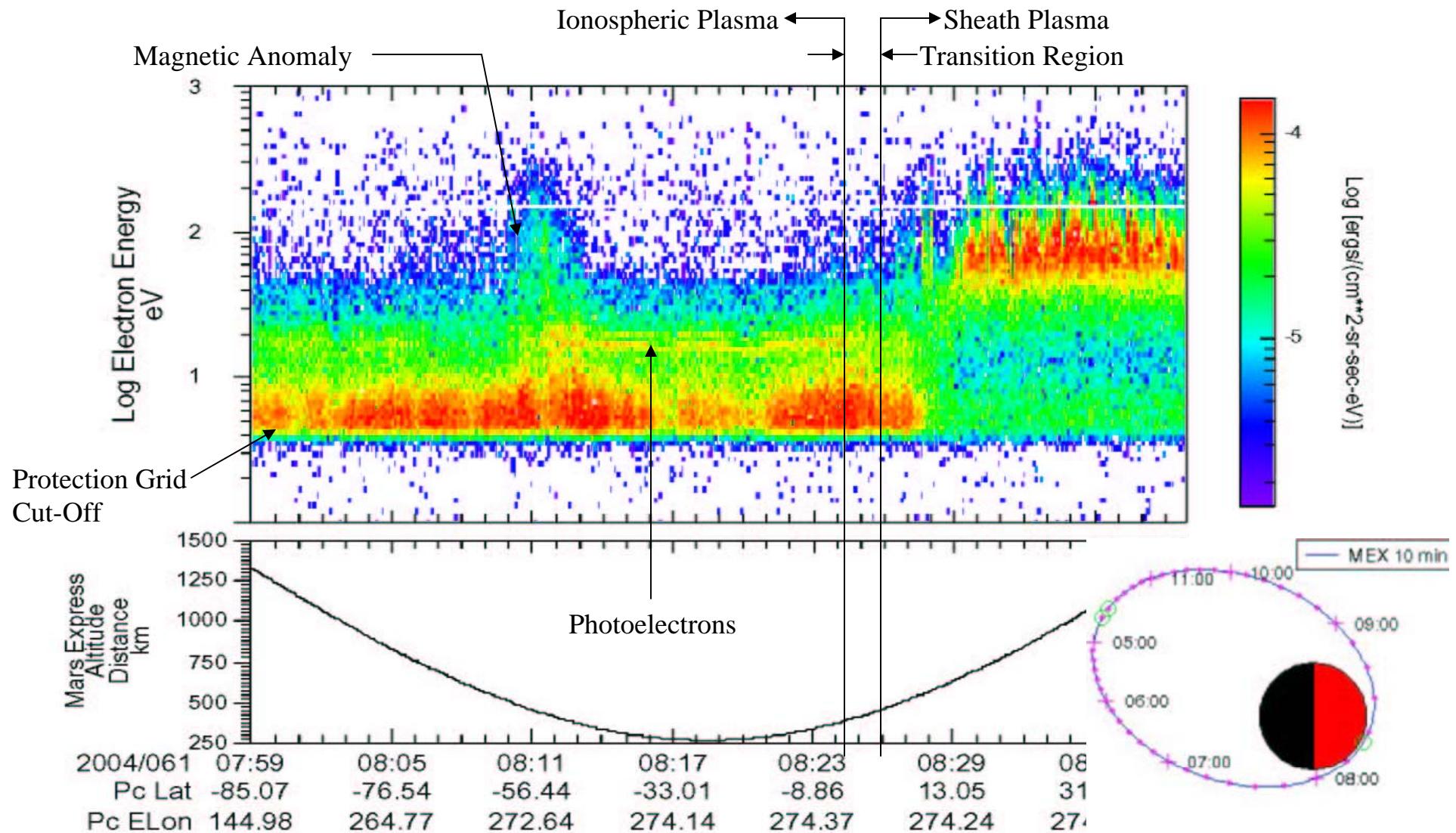
Expected Mars Photoelectron Spectrum at 145 km

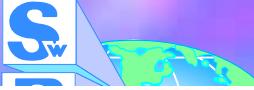
from the ASPERA-3 Electron Plasma (ELS) Instrument
Instrument Response, Instrument Threshold (2 count), and Poisson Errors





Electrons in the Mars Ionosphere





VENUS ELECTRONS

