Mars: Exploring the Red Planet
Tom Percy, Ph.D.

October 18, 2017
1 Martian Day (Sol) = 24 hrs 40 min
1 Year = 687 days

Avg Temp = -80 °F
Atm. Density ~ 1% Earth
Mars Gravity = 3.71 m/s² (38% Earth)
Robotic Missions to Mars

- Soviet Union
- United States
- Russia
- Japan
- ESA
- India
- United Arab Emirates

- Mission Success
- Mission Failure
- Future Destination
8,000 miles
250 miles
240,000 miles
93 million miles
147 million miles
12 months
22.5 months
Round Trip Communication Time
7 - 45 minutes
Max Distance = 252 million miles
Min Distance = 39 million miles
200-300 days Earth to Mars  
350-500 days at Mars  
200-300 days Mars to Earth

Typical Mission is nearly 3 years away from Earth

Crew will travel 2000x farther and 200x longer than Apollo
Launch from Earth
In-Space Transportation

Nuclear Thermal Rockets

Chemical Propulsion

Solar Electric Propulsion
Living in Space
Landing on Mars
Launching from Mars

Mars Ascent Vehicle (MAV) is a launch vehicle landed on Mars to put crew back into orbit.

- Largest Indivisible Cargo Element
- Highest Gear Ratio Item in Architecture
Living and Working on Mars
QUESTIONS?
Contact Information

Tom Percy, Ph.D.
National Aeronautics and Space Administration
Marshall Space Flight Center
Bldg 4601, Room 1318
MSFC, AL 35812

thomas.k.percy@nasa.gov
Office Phone: (256) 544-0397