Objectives for Human Missions to NEOs

Moon/Mars Synergies
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Magnitude of Findings

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• Overarching observations
• Objectives
  – Demonstrating a Sustainable Deep Space Transportation Architecture
  – Demonstrating Technologies needed for Deep Space Exploration including Radiation Shielding / Hazards, Closed Loop Eclss, Power, ISRU, Microgravity Effects
  – Demonstrating Operational Capabilities needed for Deep Space Exploration
  – Advancing a Political Agenda
  – Investigate/Assess Potential for Commercial Activity
  – Understand the Psycho-Social Interactions
  – Micro-Meteorite Environment
  – Resources
  – EPO/Participatory Exploration

• Activities
  – ISRU Demonstration
  – Stay Alive
  – Local Decision Making to ensure Tech Demos and demonstrate Autonomous Operations
  – Demonstrate Teleoperations
  – Public Engagement / PSA
  – Vehicle Inspection and Maintenance

• Target Characteristics
  – Good Resource Characteristics (water and metal)
Scientific Research Theme: Key Observations

• Objectives
  – Sample Return
  – Internal Structure Assessment
  – Space Environment Assessment
  – Total Global Geologic Context (provenance)

• Activities
  – Emplacement of Instruments on Surface (EG Seismic Net)
  – Sampling of Asteroid in various locations
  – Tele-robotic Operations
  – Geologic Mapping
  – Localized Remote Sensing
  – Site Selection (fine and gross)

• Target Characteristics
  – Primitive, Volatile, Rich
  – Big
  – Slow spin
Planetary Defense Theme: Key Observations

• Objectives
  – Orbit Dynamics Pre and Post Mitigation Activities
  – Composition and Internal Structure
  – Experiments for Deflecting NEO
  – Telescopic Survey of Population
  – Correlate in situ measurements with Earth based Remote Sensing

• Activities
  – Measure orbit of NEO BEFORE and AFTER Kinetic impact
  – Measure Internal Structure
  – Measure Effectiveness of Mitigation Strategies
  – Public Outreach to Communicate Relevance of Objectives

• Target Characteristics
  – Potentially Hazardous Asteroid
Backup
Parking Lot

• Optional chart
Possible Breakout Discussions for Tomorrow

• Optional Chart