

FINAL Agenda for Target NEO 2: Open Community Workshop, July 9, 2013

National Academy of Sciences Building, Washington, DC

Main Auditorium

Version: 2 July 2013

Purpose and Workshop Outcome (Reference: Target NEO 1, February 2011):

Support the development of a robust human exploration program by ensuring that the technical viewpoints of experts in fields pertinent to robotic and human NEO exploration are provided and documented. Key questions: What are the technical challenges involved and what new capabilities are needed for the newly proposed Asteroid Retrieval Mission (ARM)? Are there any alternative approaches? What technical information is still needed to support and sustain a robust human exploration program to a NEO? Outcome: Public Report.

Light Continental Breakfast (No Charge) (30 min; 7:30-8:00)

Welcome - Moderator: Doug Stetson, Independent (5 min; 8:00-8:05)

Session 1 - Update to Flexible Path Vision (85 min; 8:05-9:30)

Co-Chairs: Doug Stetson, Independent; Cheryl Reed, APL

- Overview of NASA's New Asteroid Initiative, (William Gerstenmaier, AA HEOMD, NASA-HQs.)
- NRC Human Exploration Study Update (Michael Moloney, SSB)
- Global Exploration Roadmap Update, ISECG Perspective, (Kathy Laurini, NASA-HQs.)
- Q&A, discussion

Session 2 – The Small (< 10 meters) NEA Population (90 min; 9:30-11:00)

Co-Chairs: Mark Sykes, PSI; Don Yeomans, JPL; Dan Britt, University of Central Florida

- Population Estimates of Small NEAs (include any discussion of binary systems) – (Al Harris, More Data!)
- Small NEA Characteristics: Albedo, Composition (include percentage of C-types with hydrated minerals), Spin and Mechanical Properties – (Andy Rivkin, APL)
- Modeling Capabilities and Uncertainties: (Bill Bottke, SwRI)
- Estimated ARM Candidate Target Population and Projected Discovery Rate of ARM Candidates – (Paul Chodas, JPL)
- Q&A, discussion

Break (15min; 11:00-11:15)

Session 3 – Finding Small NEAs: Current Capabilities and Gaps (90 min; 11:15-12:45)

Co-Chairs: Rich Dissly, BATC; Paul Abell; NASA-JSC

- Tutorial on Process of Finding Small NEAs – (Tim Spahr, MPC)
- Follow-up Characterization Needs and Issues (RADAR & Optical) - (Lance Benner, JPL)
- Existing and Near-Term Ground-based Capabilities and Gaps - (Steve Larson, University of Arizona)
- Discovery Process for Finding ARM Targets Using Pan-Starrs and New Atlas Telescopes – (Eva Schunova, University of Hawaii)
- Existing and Near-Term Space-based Capabilities and Gaps - (Amy Mainzer, JPL)
- Q&A, discussion

Lunch (45 min; 12:45-1:30)

Session 4 – Small NEA Mission Design Challenges: (105 min; 1:30-3:15)

Co-Chairs: Brent Barbee, NASA-GSFC; Dan Scheeres, University of Colorado; Steve Chesley, JPL

- End-to-End Mission Design –Trajectory Optimization and Realization/Target Selection Criterion - (Damon Landau, JPL)
- Proximity Operations and Characterization/Navigation/Control – (Steve Broschart, JPL)
- Docking, Grappling, Capture, Control, and Alternative Approaches - (Carlos Roithmayr, NASA-LaRC)
- Maintaining a Safe, Stable and Human Accessible Parking Orbit - (Dave Folta, NASA-GSFC)
- Define Key Technology Requirements (Drivers, Uncertainties, Gaps) - (John Dankanich, NASA-MSFC)
- Q&A, discussion

Session 5 – Technical Value of ARM, Panel Discussion (75 min; 3:15-4:30)

Co-Chairs: Dan Mazanek, NASA-LaRC, Faith Vilas, PSI

Panelists:

Gentry Lee, JPL; Doug Cooke, AA NASA-Retired; Tom Jones, NASA-Retired; Jim Bell, ASU/Planetary Society

All panelists have been asked to address the following technical topics in 10 mins. slots:

- Asteroid Retrieval Mission
 - Human Exploration Return-On-Investment
 - Mission Success Criteria
- ARM Potential Augmentation/Return
 - Science
 - Planetary Defense
 - Planetary Resources
- What Mission(s) Post-ARM are Necessary to Realize Return-On-Investment?

- Cost/Technical Benefit
- Q&A, discussion

Break (15 min; 4:30-4:45)

Session 6 - Summary Session (75 min; 4:45-6:00)

Co-Chairs: Doug Stetson, Independent; Cheryl Reed, APL

- Each Session Co-chair(s) Summarizes Key Points
- NASA HQs. Feedback Statements/Go Forward Plan
 - AA HEOMD, William Gerstenmaier or designated representative
 - AA SMD, John Grunsfeld or designated representative
 - AA STMD, Michael Gazarik or designated representative
- Final Q&A Discussion
- Next Steps