



Commercial Space Committee
Update



Presented to the NASA Advisory Council
August 4, 2011

Overview

- ▶ Commercial Space Committee met at NASA Ames on August 2
- ▶ Attended by:
 - ▶ Bretton Alexander, *Chair*
 - ▶ Lon Levin, *Vice Chair*
 - ▶ Patricia Smith
 - ▶ Bernard Harris
 - ▶ Will Trafton
- ▶ Agenda:
 - ▶ Commercial Reusable Suborbital Research (CRuSR) Program
 - ▶ Innovative Lunar Demonstrations Data (ILDD) Program
 - ▶ Hosted Payloads Activities
 - ▶ Commercial crew and cargo programs – *jointly with Space Ops and Exploration Committees*
 - ▶ Deliberations
 - ▶ Meeting with Administrator Bolden

Commercial Reusable Suborbital Research (CRuSR) Program

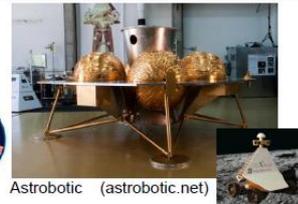
- ▶ Authorized by Congress in 2010
- ▶ \$15 million appropriated to *prime the pump* for vehicle flights and experiments
 - ▶ Majority goes to vehicle flights, with “a couple million” for development of payloads
 - ▶ Most payloads to come from other OCT, NASA and non-NASA federal programs
- ▶ First flight awards made in August 2010
 - ▶ \$475,000 total for 7 flights from Armadillo Aerospace and Masten Space Systems
- ▶ Second round of awards to be made shortly
 - ▶ Evaluating proposals now



Innovative Lunar Demonstrations Data (ILDD)

- ▶ Purchase of data from private lunar landing missions
 - ▶ Complements Google Lunar X Prize
- ▶ \$30 m total
 - ▶ Up to \$10 m for each of three companies
- ▶ Data purchased for:
 - ▶ Design
 - ▶ Critical Component Demonstrations
 - ▶ Ground Test of Flight Hardware
 - ▶ In-flight Activities
 - ▶ Lunar Landing
 - ▶ Enhanced Capabilities, such as:
 - ▶ Human Mission Landing Profile
 - ▶ Precision Landing

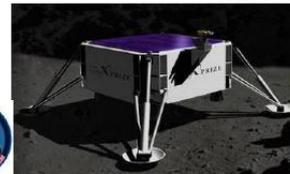
ILDD Contractors (2 of 2)



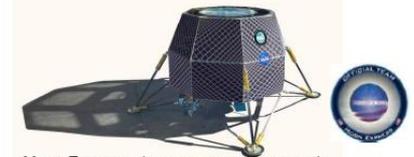
Astrobotic (astrobotic.net)



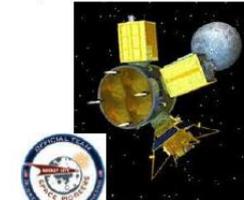
Earthrise Space (www.omegaenvoy.org)



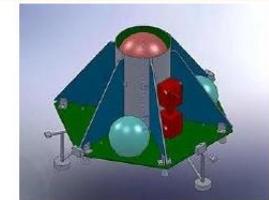
Draper Lab (www.nextgiantleap.com)



Moon Express (www.moonexpress.com)



Dynamics (www.dynamics.com)



Team Frednet (www.frednet.com)

Hosted Payloads

- ▶ NASA flight of instrument or technology demonstrator on commercial spacecraft
 - ▶ Example – flight of an Earth observation sensor on commercial GEO comsat
- ▶ National Space Policy of June 2010 encouraged pursuit of hosted payloads where cost effective
 - ▶ Hosted payloads have been conducted and are being pursued by DoD and other entities
 - ▶ NASA has not done a commercially hosted payload
- ▶ NASA incorporating lessons learned from FAA experience hosting two WAAS payloads on commercial comsats
- ▶ Benefits:
 - ▶ Lower cost
 - ▶ No need to develop dedicated spacecraft
 - ▶ Frequent opportunities for access to space

Commercial Cargo (COTS and CRS)

- ▶ Reviewed progress of COTS providers
 - ▶ SpaceX – C2 demonstration mission scheduled for November 2011
 - ▶ May include berthing to ISS planned for C3 mission in March 2012
 - ▶ Orbital – First Taurus II launch scheduled for December 2011 (no Cygnus)
 - ▶ First Cygnus cargo module launch to ISS scheduled for February 2012
 - ▶ Instituting recovery plans from AJ-26 engine failure on test stand; may impact schedule
- ▶ Reviewed ISS integration activities leading to Commercial Resupply Services missions
 - ▶ Integration activities “progressing as expected”
- ▶ Commercial cargo resupply of ISS needed by end-2012 before impacting ISS operations
 - ▶ “STS-135 brought consumables sufficient to provide considerable margin”

Commercial Crew Program

- ▶ NASA rolled out proposed Acquisition Strategy July 20
 - ▶ Uses modified FAR-based contract instead of Space Act Agreements (SAAs)
 - ▶ SAAs were used for COTS and CCDev1 and 2
 - ▶ NASA planning to significantly modify the FAR-based contract to minimize bureaucratic burden on industry
- ▶ Draft RFP scheduled for release by end-August
 - ▶ Expect to receive industry comments on draft
 - ▶ Final RFP expected in December
- ▶ Expected budget considerably lower than originally planned
 - ▶ Original proposed program \$1.2 b in FY12 (\$5.8 billion over 5 years)
 - ▶ President's FY2011 Budget Request \$850 m/yr (\$4.5 billion over 6 years)
 - ▶ Authorization Act \$500 m/yr (next two years)
 - ▶ House Appropriations markup (July) \$312 m in FY12

Proposed Finding – *Progress of the Commercial Crew Program*

- ▶ The Council appreciates NASA's efforts to develop an acquisition strategy for the Commercial Crew Program that addresses industry concerns with traditional FAR-based contracting approaches. The Council is concerned, however, that the proposed Commercial Crew Program may not be able to achieve its stated goal of developing one or more commercially viable crew transportation systems in a timely manner. Funding for the Commercial Crew Program as authorized by the Congress does not appear to be sufficient to meet the timetable laid out by NASA, making the business case more difficult for commercial companies to achieve.



Back-up Charts



Observations / Findings / Recommendations

▶ Observations

- ▶ *Progress of the COTS Program* – “moving forward at a deliberate pace”

▶ Findings

- ▶ *Use of Space Act Agreements* – “is appropriate for the proposed Commercial Crew Transportation program “

▶ Recommendations

- ▶ *Defining the NASA Market* – “assess and clarify NASA’s expected traffic model”
- ▶ *Concept of Operations and Acquisition Approach* – “specify the minimum and maximum number of seats to and from the ISS NASA would purchase”
- ▶ *FAA Licensing* – “engage the FAA as soon as possible...with the goal of providing clarity to potential offerors regarding the regulatory framework “
- ▶ *Business Case* – “continue to develop internal metrics and milestones to oversee...Commercial Crew “
- ▶ *Public Outreach for Commercial Activities* – “encourage existing [COTS] contractors to work with NASA’s Office of Communication to integrate public outreach into mission planning and operations” and NASA draft a recommended commercial partner public outreach and participatory exploration policy

Definitions

▶ Observation

- ▶ Something seen, discovered, witnessed, or learned by the NAC committee during the course of fact-finding or public meetings
- ▶ A PASSIVE outcome or output
- ▶ Example: “The Committee discovered that there is an unfunded mandate that NASA must comply with in the area of X.”

▶ Finding

- ▶ An observation about which the NAC committee wishes to state an opinion
- ▶ A SEMI-ACTIVE outcome or output
- ▶ Example: “The Committee concurs with the current approach NASA is taking to do X.”

▶ Recommendation

- ▶ A course of action being proposed by the NAC committee for NASA consideration and/or implementation in the future
- ▶ An ACTIVE outcome or output
- ▶ Example: “The Committee recommends that NASA form a tiger team to address a critical issue in the area of X.”

Work Plan (Draft)

1. Review and advise on how best to optimize NASA's organizational elements and address cultural issues to effectively encourage and promote the development of a commercial space industry.
2. Review NASA's strategy and plans for stimulating a commercial space industry, and provide advice on effective and appropriate methods for NASA to stimulate, encourage and partner with commercial space. What is the logical progression for developing a commercial capability for transportation to ISS and LEO?
3. Review and advise on NASA's strategy for partnering and cooperating with other federal agencies on commercial space.
4. Provide advice on how NASA should define "commercial space" to effectively implement "commercial space" programs and policies.

Commercial Committee Members

- ▶ **Bretton Alexander, Chair**
 - ▶ President of the Commercial Spaceflight Federation
- ▶ **Lon Levin, Vice Chair**
 - ▶ Co-founder of XM Satellite Radio and other satellite businesses
- ▶ **Maj Gen Donald Hard (USAF, Ret.)**
 - ▶ Independent consultant to government and industry
- ▶ **Bernard A. Harris, Jr., (M.D.)**
 - ▶ CEO of Vesalius Ventures, former NASA astronaut, and former SPACEHAB executive
- ▶ **Patti Grace Smith**
 - ▶ Former FAA Associate Administrator for Commercial Space Transportation and consultant/advisor to space and aerospace companies
- ▶ **Wilbur C. Trafton**
 - ▶ Former NASA Associate Administrator for Space Flight and executive at ILS and Kistler Aerospace
- ▶ ***John Emond, Executive Secretary***
 - ▶ *NASA Innovative Partnerships Program, Office of Chief Technologist*