

DATE: September 10, 2012

LOCATION: Regents Park III

SUBJECT: HSF NSG CCDev Overview Splinter Minutes

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INTRODUCTION

Mr. Hung Tran convened the September 10, 2012, Network Support Group (NSG) Commercial Crew Development (CCDev) office overview splinter meeting to provide an overview of the office and recent activity (refer to the presentations, *Program Forum and CCiCAP Announcement Summary Base Period Contract*).

MEETING

- A. Mr. Tran opened by stating that CCDev was a term used for a phase of development. The program is referred to as the Commercial Crew Program (CCP). The program has two major objectives; getting multiple commercial companies involved and providing a commercial Low Earth Orbit (LEO) capability to get to the International Space Station (ISS).
- B. NASA needs to make the public aware of the program and its goals. CCP will provide competed, funded Space Act Agreements (SAA) to advance industry Crew Transportation System (CTS) capabilities. SAAs are not contracts. During CCDev Phase 1 five companies were funded (Blue Origin, Boeing, Paragon, Sierra Nevada, and ULA). During CCDev Phase 2 four companies were funded (Blue Origin, Boeing, Sierra Nevada, and SpaceX) and three more were not funded (ATK, ULA, and EAI). Contracts were to be let in December 2011; however funding was below the required level and the program entered another round of SAAs. An Integrated Capability (iCAP) Request For Proposal (RFP) went out in February 2012. Selections were announced in August 2012. NASA wants deliverables so that progress can be watched; however, NASA cannot push for specific deliverables as the companies are not under contract.
- C. Mr. Gary Morse stated that it would be helpful if the companies would choose to use the 5th generation Tracking and Data Relay Satellite System (TDRSS) transponder. Mr. Kent Gaylor stated that NASA cannot provide guidance. Mr. Morse stated that NASA has asked to consider its use. It is needed for crossover with the Space Launch System (SLS). Mr. Tran stated that the decision is up to the companies; they are aware of the available services.
- D. Certification Products Contracts (CPC) will be put in place for the interim period. These ask the companies to provide their future plans for certification. The Phase 1 period of performance is 15 months. NASA wants to see product plans for certification and process details. No design or development work is funded via CPC. Mr. Joe Aquino stated that there would be no implementation support until the final selection(s). Mr. Bob Marriott asked if communications requirements are part of the certification and Mr. Tran replied that there will be some requirements. Mr. Aquino stated that there is a list of high-level requirements. Mr. Tran stated that there are two public documents (ISS 50808 and CCT-1130). The companies do not have to meet the document requirements, but it would be a good idea for them to review the documents as NASA is a potential future customer of their services.
- E. Mr. Morse stated that there is a lot of pressure on the agency in regards to the use of the S-band spectrum. This is a concern on interfaces for communications.
- F. Mr. Tran provided an overview of three companies with an SAA (Sierra Nevada, Space Exploration Technologies [SpaceX] and Boeing).
 1. Sierra Nevada. Dream Chaser is a reusable, piloted, lifting body spacecraft that is derived from the NASA HL-20 concept. It will be launched on an Atlas-V and has

- multiple landing site options. Sierra Nevada has a base period with funding for nine milestones. A Preliminary Design Review (PDR) was completed in May 2012. Drop tests are scheduled for late 2012 through early 2013. The Technology Readiness Level (TRL) is low for many of the products at this time. Mr. Aquino asked if the vehicle will be used for crew return and Mr. Tran responded that it will depend on the rotation but the goal is for a 210 day stay capability at ISS so the vehicle must be able to return the crew anytime during that time frame.
2. SpaceX. The spacecraft will use a crewed version of the Dragon capsule. It will be launched on an upgraded Falcon-9. The SpaceX base period has funding for 14 milestones. SpaceX has successfully flown its cargo version of the spacecraft. SpaceX needs to work on crew accommodations, suits, displays, etc. The Falcon-9 needs more flights for characterization.
 3. Boeing. The CST-100 is a reusable capsule design using many proven flight components. It will be launched on an Atlas-V with the dual-engine Centaur upper stage. The Boeing base period has funding for 19 milestones. An option period is possible. What is to be done in the option period is part of the RFP.
- G. Mr. Morse stated that it is hoped that there will be Explorations Systems Development (ESD), HQ, and commerce collaboration. The Commerce Dept wants to get through certification. These organizations need to come together and work infrastructure. Only using TDRSS is fine for un-crewed vehicles, but with crews, autotrack capability will be needed. NASA is letting each company know what was done for Space Shuttle and why.
 - H. Mr. Bangerter stated that work has begun on the SAAs. The SAAs should be complete in the next few months or as soon as possible. All companies are discussing TDRSS use. Some companies are discussing ground station use as well
 - I. Mr. Morse stated that there could be a cost savings with SLS, Multi Purpose Crew Vehicle (MPCV), and CCDev syncing up their needs.
 - J. Mr. Tran stated that the companies are on limited funds compared to the traditional development. The contract needs to go out for Certification plans and several companies need to be brought to the Critical Design Review (CDR) stage during CCiCap.
 - K. Mr. Daryl Hester stated that JSC resource scheduling will be a concern. JSC will need advance notice of the timeframe the commercial companies will want JSC's help with for testing. Mr. Brian Smith stated that JSC cannot help the companies unless they sign a contract with an organization. The companies have done this on a case-by-case basis.

ACTION ITEM REVIEW

No formal action items were assigned at the September 10, 2012, HSF NSG CCDev overview splinter meeting.

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