

National Aeronautics and Space Administration



A New Space Enterprise

NASA Advisory Council Exploration Committee

**Mr. Doug Cooke, Associate Administrator
NASA Exploration Systems Mission Directorate**

April 26, 2010



FY 2010 Activity



- Constellation is currently proceeding per the enacted FY 2010 appropriation
 - Program completed Preliminary Design Review and major test of the LAS ACM DM-2
 - Continue to complete scheduled tests for FY 2010 (e.g. Pad Abort 1 schedule for May), first stage DM-2 .
 - ESMD will continue funding of contracted tasks for existing contracts;
- Study teams are in place to plan transition from large, spacecraft/launch vehicle development program to a near term diverse technology development, demonstration, and precursor focus
- New programs will leverage work performed in Constellation, Exploration Technology Development, Human Research, and Lunar Precursor Robotic Programs
- NASA will maximize use of civil service workforce expertise as we shift roles of those currently supporting the Constellation Program

ESMD Approach to Budget Response



- Total of Ten Teams Stood Up
 - 6 pre-formulating new/expanded programs:
 - Commercial Crew and Cargo Development Program
 - Exploration Precursor Robotic Program
 - Flagship Technology Demonstrations Program
 - Enabling Technology Development and Demonstrations Program
 - Heavy Lift Propulsion Technology Program
 - Human Research Program
 - 1 team assessing transition of Constellation Program
 - 3 cross cutting for international, participatory exploration, integration
 - International - Seeking potential international opportunities within the content of new programs
 - Participatory Exploration – Standing up Agency-wide office to ensure maximum public participation of NASA missions
 - Integration – Internal team ensuring coordination across all ESMD programs

Agency Guidance on Constellation Program



- Proceed with work already underway unless it can be deferred and restarted without significant impact; proceed with work obligated, but not costed
- Continue incremental funding of existing contracts
- Coordinating with Office of Communication Planning (OCP) and OGC, ESMD is responsible for FY2010 disposition decisions regarding new scope, CofF, work extending beyond FY2010
- Continue to manage programs and projects
- Programs/projects will elevate urgent actions, issues, decisions when it cannot be resolved at Center level
- ESMD DPMC will concur on contract starts that have been awarded but where work has not begun prior to beginning the work

Constellation Program Status



- Constellation Program enters its 5th year and has five projects active for Human Space Exploration to the Moon, Mars, and Other Destinations
 - Orion Crew Exploration Vehicle
 - Ares I Launch Vehicle
 - EVA
 - Ground Operations
 - Mission Operations
- \$3.4B New Obligation Authority (NOA) in FY10, \$3.8B Cost Plan for content in FY10
 - FY10 PBS funding profile resulted in placing all HLR-related efforts into minimal study mode
- The Program has allocated content across all ten NASA Centers and a minimum of 23 states employing over 11,500 personnel
- Ares I, Orion, Ground Ops (GO), Mission Ops (MO), and EVA Projects major procurements are complete and agreements with strategic internal and external partners are in place
 - Five Prime Contractors; ATK, Lockheed, Boeing, Pratt & Whitney Rocketdyne, & Oceaneering, have been awarded contracts to design, manufacture, test and integrate the necessary hardware and software of CxP and over 160 related contracts (not including sub-contracts) are supporting these efforts
 - Prime Contractor Study Contracts Proposals for Ares V and Altair have expired as of 3/12/2010

Constellation Program Status



- Cx Initial Capability (IC) flight systems of Orion and Ares have surpassed a level of design maturity consistent with the NASA criteria for a Preliminary Design Review (PDR) during 3/2010.
- Orion and Ares I are well past their Project PDRs and are almost halfway in development towards their Critical Design Reviews (Commit for Production Milestone) scheduled for 2011
- Projects are currently building facilities, tooling, ground support equipment, transportation equipment and conducting developmental testing of flight prototype hardware to verify their designs
- Key development milestones slated for 2010 are the following but not limited to:
 - Ares DM-2 test firing (Sept)
 - Orion Integrated Pad Abort Test 1 (May),
 - Ares I-X Flight Test Data Reduction Complete (Summer) ,
 - VAB Highbay Turnover to Cx (July- September),
 - Command Module tooling Complete (Sept),
 - US MAF Const Complete (Oct)

Constellation Program Status



- Construction of key facilities initiated, currently fifty-seven facility projects either complete or under construction for CxP and the planned accretion of Shuttle assets in 2010
- The Program has hardware development underway in all elements
- Constellation Program is progressing, through the dedicated efforts of a nationwide NASA and industry team, in concert with the exertions of our international partners
 - Proceeding with the Program per Agency Guidance
 - Strategically rephasing near-term work as a result of FY10 budget impacts
 - Successfully completed technical aspects of PDR based on sound technical baseline
 - Approach under development to synchronize technical, cost and schedule baselines
- Constellation Program is attempting to walk a fine line between adjusting work in FY10 to meet the fiscal constraints of a very tight year and NOT have that be perceived as a step towards implementation of the proposed cancellation.

CxP FY10 Planned Events - As of March 2010



- NOTE: NASA is continuing to execute the FY 2010 baseline program. However, it is possible that changes could happen due to efforts by the Agency to fit within the constraints imposed by the FY 2010 budget.

Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<u>Programmatic Reviews</u>								
	3/3 CxTF PDR Kick off		5/13 Ares US FSW PDR2 Board		7/9 MO PDR			
		4/6-7 GO PDR Kickoff		6/2 u/r GO PDR Board				
	3/4-5 Cx PDR Board		4/12 Orion Software PDR Board					
<u>Development Events</u>								
2/11 Orion Parachute Drop Test @ Yuma Proving Grounds							Sep Ares I FS DM-2 Test	
2/25-2/26 EVA Prime IBR/EVA CSSSS ATP2								
3/2-18 Orion PA-1 LAS Softmate/Phasing Test							Sep CM GTA AIT Complete u/r	
3/15-17 Orion ACM DM-2 Test (Elkton, MD)	3/23-24 Orion PA-1 Pre-FTRR @ WMSR							
	4/1 Orion PA-1 FTRR @ JSC u/r						Sep – EVA Suit PD R	
		4/14 Ares FS Drogue Parachute Drop Test @ Yuma						
		4/15 Orion STORRM DTO FRR						
			5/6 Orion PA-1 Launch @ White Sands					