CONFIGURATION CONTROLLED DOCUMENT

Document # MPIM-rev-FY2008-Q3

revised April 29, 2008

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Multi-Program Integrated Milestones

Legend

- Shuttle Flight
- uncrewed COTS flight
- uncrewed/crewed Constellation Flight
- X — no further facility utilization identified

CY 2007 (Q4–Q1) | CY 2008 (Q2–Q4) | CY 2009 (Q1–Q4) | CY 2010 (Q1–Q4) | CY 2011 (Q1–Q4) | CY 2012 (Q1–Q4) | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020

FY 2008 (Q1–Q4) | FY 2009 (Q1–Q4) | FY 2010 (Q1–Q4) | FY 2011 (Q1–Q4) | FY 2012 (Q1–Q4)

Moon

Lunar Reconnaissance Orbiter

VSE Milestone: Human Lunar Return

International Space Station

International Partners: Soyuz, Progress, ATV, HTV

Int'l Partners: Soyuz, Progress, ATV, HTV

Six person crew capability

Russian crew-cargo purchasing authority ends

NOTE: Orions 7 and 8 and COTS are contingent on ISS end-of-life date and potential for continuing U.S. ISS ops

NOTE: Orions 9 and 10 and COTS are contingent on continuing U.S. ISS ops

NOTE: Orions 11 and 12 and COTS are contingent on continuing U.S. ISS ops

NOTE: Orions 14 and 16 and COTS are contingent on continuing U.S. ISS ops

NOTE: Orions 18 and 20 and COTS are contingent on continuing U.S. ISS ops

NOTE: The potential for ISS operations after 2016 is under review

LEO / Space Shuttle

10A, 1E, 1J/A, 1J, HST SM4, ULF2, 15A, 2J/A, 17A, ULF3, 20A, 19A, ULF4, ULF5

120, 122, 123, 124, 125, 126, 119, 127, 128, 129, 130, 131, 132, 133

NOTE: ULF4 and ULF5 are manifested as contingency ISS logistics flights.

Last SSME on-dock at KSC

NOTE: *Atlantis* retirement under review.

Last ET on-dock at KSC

Atlantis retired

Discovery retired

Endeavour retired

Commercial Cargo Capability to ISS

COTS

SpaceX: Demo 3 SRR, Demo 3 PDR, Demo 2/3 CDR, Financing round 2, Financing round 3, Demo 2 PDR

Demo 1, Demo 2, Demo 3

RpK / OSC: Demo Mission SRR, Demo Mission CDR, Unpress. Cargo PDR, Press. Cargo PDR, Demo Mission PDR, Unpress. Cargo CDR

Demo Mission

COTS Phase I – Cargo Demonstration

COTS Phase II – Cargo Services

Facilities

VAB HB 3 and 4 loaned to Cx for Ares I-X, then returned to SSP

HB 4, HB 3

SSP last –need for A-2

J-2X testing modifications begin

SSP last-need for MLP 2; **no Cx requirement**

SSP last-need for MLP 3; **no Cx requirement**

LC-39A configuration for last SSP flight off pad

SSP last-need for VAB HB 1 and 2 **TBD use for Ares I vs. Ares V processing**

SSP last-need for VAB HB 3 and 4

OPF 1, OPF 3, OPF 2

SSP last-need for OPF 1, 3, and 2; **no Cx requirement**

A-3 ready for Cx testing

LC 39A configuration for Ares V

SSP last-need for MLP 1

LC-39B configuration for last SSP flight off pad

LC-39B and MLP 1 configuration for Ares I-X

SSP last-need for CT 1

SSP last-need for CT 2

LC-39B configuration for Ares I-Y

Constellation

Sub-Orbital: Pad Abort 1; Ares I-X *4 seg. 1st stage, dummy u/s*; AA-1 *transonic*; Pad Abort 2; AA-2 *max-q*; AA-3 *tumble*; Ares I-Y *5 seg 1st stage, dummy u/s*

NOTE: Sub-orbital test flights prior to Orion 1 subject to change with test experience and funding requirements.

Orion 1 *5 seg 1st stage, active u/s, active Orion capsule*; Orion 2 *IOC test flight, LIDS*; Orion 3 *test flight, LIDS*; Orion 4 *FOC*; **Orion** *IOC*; Orion 5, Orion 6, Orion 7, Orion 8, Orion 9, Orion 10, Orion 11, Ares V-Y, Orion 12, Orion 14, Orion 16, Orion 18, Orion 20

Altair 1 / Orion 13, **Altair 2 / Orion 15**, **Altair 3 / Orion 17**, **Altair 4 / Orion 19**

IC Level 1 SDR, IC Level 1 PDR 1, IC Level 1 PDR 2, IC Level 1 CDR, IC Level 1 SAR

Orion pre-NAR, Orion NAR and PDR, Orion CDR, Orion DCR and SAR

Ares I U/S SDR, Ares I SDR and pre-NAR, Ares I-X CDR Part 1, Ares I-X CDR Part 2, Ares I PDR and NAR, Ares I 1st stage PDR, Ares I U/S PDR, J-2X CDR, Ares I 1st stage CDR, Ares I U/S CDR, Ares I CDR, Start of J-2X testing on A3, J-2X MPTA U/S need date, Ares I U/S DCR, J-2X DCR, Ares I 1st stage DCR, Ares I DCR

NOTE: The shadowed Orion 2 IOC flight in 2013 is the programmatic manifest date at the 33% confidence level. The bold Orion IOC in 2015 flight is the current Agency commitment at the 65% funding confidence level for the flight manifest.

Lunar Capability (LC) Level 1 SRR, LC Level 1 SDR, LC Level 1 PDR, LC Level 1 CDR, LC Level 1 SAR

Ares V project SRR, Ares V project PDR, Ares V project CDR, Ares V project DCR

Altair project SRR, Altair project PDR, Altair project CDR, Altair project DCR

RSRM

5 Constellation 35 Shuttle | 10 Constellation 35 Shuttle | 10 Constellation | 12 Constellation | 13 Constellation | 15 Constellation | 15 Constellation | 15 Constellation | 19 Constellation | 27 Constellation | 31 Constellation | 36 Constellation | 41 Constellation