CONFIGURATION CONTROLLED DOCUMENT

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Multi-Program Integrated Milestones

Legend

- Shuttle Flight
- uncrewed COTS flight
- uncrewed/crewed Constellation Flight
- ? facility utilization TBD
- X facility no longer needed

CY 2006 | CY 2007 | CY 2008 | CY 2009 | CY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020

FY 2007 | FY 2008 | FY 2009 | FY 2010

Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4

Moon

VSE Milestone: Human Lunar Return

International Space Station

International Partners: Soyuz, Progress, ATV, HTV

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

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 from 2016 – 2020 is under review

six person crew capability

assembly complete

Russian purchasing authority ends

LEO

Space Shuttle

12A.1, 13A, 13A.1, 10A, 1E, 1J/A, 1J, HST SM4, ULF2, TBD, TBD, TBD, TBD, TBD, TBD, TBD, TBD

116, 117, 118, 120, 122, 123, 124, 125, 126, TBD, TBD, TBD, TBD, TBD, TBD, TBD, TBD

last SSME build

Atlantis retired

NOTE: *Atlantis* retirement under review.

last ET delivered

Discovery retired

Endeavour retired

COTS Capability to ISS

COTS

SpaceX: Demo 1 PDR; financing round 1; Demo 2 SRR; Demo 1 CDR; Demo 3 SRR; financing round 2; Demo 2 PDR; Demo 3 PDR; Demo 2 CDR; SpaceX Demo 1; Demo 3 CDR; financing round 3; SpaceX Demo 2; SpaceX Demo 3; IOC

RpK: SRR; financing round 2; Pressurized Module CDR; Unpressurized Module CDR; ISS TRR; rendezvous s/w TRR; financing round 3; K-1 to Woomera; COFR; Risk Reduction Flight; 1st Demo Flight; 2nd Demo Flight; IOC

COTS Phase I

COTS Phase II

Facilities

SSP last-need for O&C

LC-39B configuration for last SSP flight off pad

SSP last-need for MLP 1

SSP last-need for LCC Firing Room 1; transfer to Cx for modifications

SSP last-need for VABHB 4

SSP last-need for VAB HB 3

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

LC-39B configuration for Orion 1

SSP last-need date for LC-39A

LC-39A configuration for Ares V

SSP last-need for VAB LB and HB 1, 2, and 4

SSP last-need for OPF 3

SSP last-need for MLP 2 and 3

SSP last-need for CT 1 and 2

SSP last-need for OPF 1 and 2

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 *FOC*; Orion 5, Orion 6, Orion 7, Orion 8, Orion 9, Orion 10, Orion 11, Ares V-Y, Orion 12; LSAM 1 / Orion 13, Orion 14, LSAM 2 / Orion 15, Orion 16, LSAM 3 / Orion 17, Orion 18, LSAM 4 / Orion 19, Orion 20

NOTE: Shadowed Orion flights through Orion 7 are manifested at a 33 – 40% confidence level (given current funding levels). Bold flights from Orion IOC forward are manifested at a 65% confidence level (given current funding levels).

initial capability (IC) Level 1 SRR; IC Level 1 SDR; IC Level 1 PDR 1; IC Level 1 PDR 2; IC Level 1 CDR; IC Level 1 SAR

Orion SRR; Orion SDR; Orion PDR; Orion CDR; Orion DCR

Ares I SRR; J2 SRR; Ares I 1st stage SRR; Ares I-X PDR; Ares 1 u/s SRR; Ares I-X CDR; J2 PDR; Ares I u/s SDR; Ares I SDR; Ares I u/s PDR; Ares I 1st stage PDR; Ares I PDR; J2 CDR; Ares I u/s CDR; Ares I 1st stage IDR; Ares I CDR; start of J2 testing on A3; J2 MPTA; Ares I 1st stage CDR; Ares I u/s DCR; J2 DCR; Ares I 1st stage DCR; Ares I DCR

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; LSAM project SRR; Ares V project PDR; LSAM project PDR; Ares V project CDR; LSAM project CDR; Ares V project DCR; LSAM project DCR

RSRM

NOTE: Reusable Solid Rocket Motor segment production

35 Shuttle 0 Constellation | 35 Shuttle 15 Constellation | 35 Shuttle 5 Constellation | 5 Shuttle 0 Constellation | 0 Shuttle 25 Constellation | 0 Shuttle 30 Constellation | 0 Shuttle 30 Constellation