

A Lunar Surface Rendezvous Architecture Proposal

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Lunar exploration architecture revision is proposed based on two Ares V launches [1]. The first cargo-only launch pre-replaces Earth return consumables and exploration systems on the lunar surface. One to five months later, a second Ares V launch lands a crew of four at the same lunar location. Rendezvous operations in Earth and Moon orbit are eliminated, together with associated geometric trajectory design constraints. Absent these constraints, the proposed lunar surface rendezvous architecture enjoys uniform performance and loiter time requirements regardless of landing location. Consequently, the "land anywhere; leave anytime" goal associated with United States lunar exploration policy is fully realizable. In addition, proposed lunar surface rendezvous architecture leads to scalable systems and capabilities supporting human exploration of near-Earth asteroids and other destinations beyond the Moon. Precision trajectory design data are presented, illustrating the proposed architecture's robust and uniform performance [2].

[1] Adamo, D. R., "Revisited Virtues of Lunar Surface Rendezvous (LSR)", 23 March 2009.

[2] Adamo, D. R., "A Notional Lunar Surface Rendezvous Mission In 2019", 22 February 2009.

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