

TRAJECTORY DESIGN CONSIDERATIONS FOR EXPLORATION MISSION 1

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Exploration Mission 1 (EM-1) will be the first mission to send an uncrewed Orion vehicle to cislunar space in 2018, targeted to a Distant Retrograde Orbit (DRO). Analysis of EM-1 DRO mission opportunities in 2018 help characterize mission parameters that are of interest to other subsystems (e.g., power, thermal, communications, flight operations, etc). Subsystems request mission design trades which include: landing lighting, addition of an Orion main engine checkout burn, and use of auxiliary thruster only cases. This paper examines the evolving trade studies that incorporate subsystem feedback and demonstrate the feasibility of these constrained mission trajectory designs and contingencies.

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