

**Exploration Systems Development (ESD) Decision Memorandum
Space Launch System (SLS) Block 1 – Exploration Mission 2 (EM-2)
ESD-DM-13030**

Decision:

The Deputy Associate Administrator (DAA) for Exploration Systems Development (ESD) directs the following to all ESD programs and offices:

- The first crewed SLS/Orion mission – Exploration Mission 2 (EM-2) will use the SLS Block 1 configuration and the current Block 1 Mobile Launcher (ML-1) with minor modifications to support crewed flight (update to caution and warning system, implementation of emergency egress system).
- The Europa Clipper mission will be launched on the SLS Block 1 configuration.
- Mid-2022 is the target date for the next SLS Block 1 launch using ML-1. Determination as to whether this launch will be the SLS/Orion crewed launch (EM-2) or the SLS/Europa Clipper mission will be made based on risk and readiness of the Europa Clipper project.
- ML-1 will be maintained in its current configuration until it is required to convert ML-1 to a configuration that supports SLS Block 1B and later variants and only if funds become available.
- A new Mobile Launcher (ML-2) will be purposefully designed from the outset to support SLS Block 1B and later variants. Planning should assume an SLS Block 1B launch using ML-2 in the first quarter of the calendar year 2024.

Rationale:

Public Law 115-141, the Consolidated Appropriations Act of 2018, provided for:

...launch capabilities and infrastructure associated with constructing a second mobile launch platform, as recommended by the Aerospace Safety Advisory Panel, which will enable an acceleration in the launch schedule for Exploration Mission 2. The funds also will allow flexibility for future NASA and other Federal agency missions that will require heavy-lift capabilities beyond those of current launch vehicles as well as enable a sustainable [SLS] launch cadence.

This direction to build a new ML reduces the schedule dependency between EM-1 and EM-2, which was driven by the minimum time (with technical risk) to reconfigure ML-1 from SLS Block 1 to the Block 1B configuration. Mission objectives of EM-2 can be achieved using SLS Block 1 with the ML-1 in the current SLS Block 1 configuration.

Maintenance of ML-1 in the SLS Block 1 configuration allows for the launch of the Europa Clipper science mission on Block 1 as early as the June 2022 planetary window. Current analysis show sufficient Block 1 capability to support a direct trajectory of Europa Clipper to the Jovian system, without need of Earth or Venus flybys, through the available launch windows in the 2020s.