Audit warns costs for NASA's new Artemis launcher could balloon to $2.7 billion

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NASA's second mobile launcher needed for future missions in the Artemis program is already years late and millions over budget, and NASA's Office of the Inspector General warns it could get even worse.

In an audit released last week, the OIG said the mobile launcher 2

(ML-2), which was originally awarded a $383 million contract in 2019 for delivery by 2023 but only began construction at Kennedy Space Center last August, could continue to see ballooning costs and delays, so that once delivered it will cost taxpayers more than $2.7 billion and not be ready until 2029.

"Despite progress since our last report, NASA has struggled to develop a reliable cost and schedule estimate for the ML-2 project and incentivize significant improvement in contractor performance," reads the OIG report. "Given the importance of ML-2 for future Artemis missions, it is critical that NASA effectively manage the project to control cost increases and avoid further schedule delays."

The first Artemis launch took place in 2022 on the existing mobile launcher (ML-1), but ML-2 is needed to support a larger version of the Space Launch System rocket that will be used beginning with the Artemis IV mission.

Bechtel National Inc., NASA's prime contractor to construct ML-2, only got the first pieces of steel bolted together last August. It's responsible for project management, architectural and engineering designs, technical integration, fabrication, construction, testing, commissioning and quality control.

It was the primary source of issues in the OIG's last audit of ML-2 in June 2022. In its new report, the OIG noted that by August 2022, the contract value had already nearly tripled from its original projection to more than $1 billion with delays until May 2026. And those costs and deadlines have since been exacerbated, the OIG stated.

NASA as of December 2023 projected the entire ML-2 project will have climbed to $1.5 billion, including $1.3 billion for the Bechtel contract and $168 million for other project costs. Part of those costs are

facets of the ML-2 taken off Bechtel's plates and taken over by NASA, such as the six of the 11 umbilical connections needed for fueling because Bechtel had run into subcontractor issues, the report stated.

The projected costs and delivery grew further as of June 2024, when NASA, directed by Congress after the last audit, submitted its Agency Baseline Commitment (ABC), noting the cost and schedule was projected to grow to $1.8 billion with delivery in September 2027.

But that also adjusted cost projections so that once the ML-2 was delivered, the project would be complete. Costs for roughly two years of testing and preparation so it would be ready for launch would then fall under NASA's Exploration Ground Systems program, which is based at KSC.

That means the EGS budget will also climb in later fiscal years, but even without those costs, the OIG still forecasts the ML-2 project to near $2.7 billion, with $2.5 billion as part of Bechtel's contract.

When complete, the slightly taller platform will span 390 feet, which can support the Block 1B version of SLS that is 40 feet taller than the rockets for the first three Artemis flights. The height increase is due to SLS getting rid of what's called the Interim Cryogenic Propulsion Stage (ICPS) used to propel the Orion space capsule to the moon in favor of the more powerful and roomier Exploration Upper Stage beginning with Artemis IV.

Artemis IV is currently on NASA's roadmap for no earlier than 2028, but the OIG report warns the ML-2 may not be ready until 2019.

"Despite the Agency's increased cost projections, our analysis indicates costs could be even higher due in part to the significant amount of construction work that remains," the OIG report stated. "With the time

NASA requires after delivery to prepare the launcher, we project the ML-2 will not be ready to support a launch until spring 2029, surpassing the planned September 2028 Artemis IV launch date."

NASA officials disagreed with the analysis, citing cost growth to lessen over time now that Bechtel has begun construction.

"The Agency believes this is an area of expertise for the contractor. While progress has been made with the beginning of construction of the ML-2, it is still too early to determine the impact on the contract's continued cost growth and whether Bechtel can achieve and sustain an improved level of performance throughout the construction phase." the report stated.

Cathy Koerner, NASA's associate administrator for its Exploration Systems Development Mission Directorate, said the OIG's cost estimate was flawed.

"Simply using a straight-line extrapolation, as the OIG did, does not accurately reflect the current development situation," she wrote, noting EGS has transitioned to construction from the design phase, since the most recent audit began.

"Application of a straight-line projection misses this key advancement, overlooks recent performance improvements, and does not provide a credible estimate of what we can expect in the future."

But the report counters the project's history and leads to the OIG's more alarmist conclusions.

"Cost and schedule estimates from NASA and Bechtel have changed several times and increased significantly over time, making it difficult for NASA to identify its funding needs, be accountable to Congress and

other stakeholders, and accurately measure project and contractor performance," the report reads.

"The Agency's history of increasing the ML-2's cost estimate over time also contributes to our assessment that costs will be higher than what the Agency currently projects in its ABC."

Already at $1.1 billion, the contract includes $594 million of Bechtel overruns, the report states, with the company continually underestimating costs related to labor, equipment and administrative expenses.

"Although Bechtel has made progress on the ML-2 project since construction began in August 2023, the company faces technical challenges that risk further cost increases and schedule delays," the report states. "This includes steel fabrication and delivery issues that impacted the construction start date, as well as potential changes to the ML-2's structure that could add to the launcher's weight and increase costs."

The weight may need to increase as NASA works with Bechtel to determine how much more robust the launcher needs to be to endure the power of the SLS rockets, which subjected the ML-1 to millions in damage after the Artemis I launch in 2022.

When finished, the ML-2 will weigh at least 11.3 million pounds and be able to support the Block 1B version as well as a planned Block 2 version of SLS that is planned to have even more power at liftoff than the first Artemis missions, which produce 8.8 million pounds of thrust on liftoff.

For now, NASA has stuck with the cost-plus approach to the contract, allowing for cost overruns. Such contracts have been avoided as the Artemis program's other major features, including the SLS and Orion

spacecraft, have all seen cost increases and delays.

But the OIG says NASA can do little to encourage fiscal and deadline responsibility from Bechtel, including the unlikelihood of switching from the current cost-plus contract to a fixed-price contract.

"Project management told us they presume Bechtel would likely provide a cost proposal far beyond NASA's budgetary capacity to account for the additional risk that comes with a fixed-price contract," the report stated.

Such a move would mean another year of negotiating and an additional $1 million in costs, and the threat of Bechtel switching out project leadership for a fifth time.

"Bechtel officials advised they do not want the contract converted due in part to the difficulty and cost of making design changes—which they anticipate will recur following subsequent Artemis missions—in a fixed-price environment," the report stated.

Because Artemis IV is on the clock, alternatives to the existing path forward have been "considered unreasonable by project management at this point" and that "prevents NASA from substantially adjusting its current course of action."

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