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SPACE LAUNCH SYSTEM

Management Tools Should Better Track to Cost and Schedule Commitments to Adequately Monitor Increasing Risk

GAO Highlights

Highlights of GAO-15-596, a report to the Chairman, Committee on Homeland Security and Governmental Affairs, U.S. Senate

Why GAO Did This Study

SLS is NASA's first heavy-lift launch vehicle for human space exploration in over 40 years. For development efforts related to the first flight of SLS, NASA established its cost and schedule commitments at $9.7 billion and November 2018, respectively. The program, however, has continued to pursue more aggressive internal goals for cost and schedule.

GAO was asked to assess a broad range of issues related to the SLS program. This report focuses on NASA's cost estimate for the initial phases of SLS and other management tools needed to control costs. Specifically, this report examines the extent to which SLS's (1) cost and schedule estimates for its first test flight are reliable; (2) cost and schedule reserves are available to maintain progress toward this flight test; and (3) EVM data provides meaningful insight into progress. To do this work, GAO examined documents supporting the cost and schedule estimates, contractor EVM data, and other relevant program documentation, and interviewed relevant officials.

What GAO Recommends

NASA should direct SLS program officials to update the cost and schedule estimates at least annually, and to implement a mechanism that reports progress relative to external committed cost and schedule baselines on a quarterly basis, among other actions. NASA concurred with GAO's recommendations.

View GAO-15-596. For more information, contact Cristina Chaplain at (202) 512-4841 or chaplainc@gao.gov.

What GAO Found

The cost and schedule estimates for the National Aeronautics and Space Administration's (NASA) Space Launch System (SLS) program substantially complied with five of six relevant best practices, but could not be deemed fully reliable because they only partially met the sixth best practice—credibility. While an independent NASA office reviewed the estimate developed by the program and as a result the program made some adjustments, officials did not commission the development of a separate independent estimate to compare to the program estimate to identify areas of discrepancy or difference. In addition, the program did not cross-check its estimate using an alternative methodology. The purpose of developing a separate independent estimate and cross-checking the estimate is to test the program's estimate for reasonableness and, ultimately, to validate the estimate. The continued accuracy of the estimates is also questionable because officials have no plans to update the original estimates created in 2013. GAO's cost estimating best practices call for estimates to be continually updated through the life of the program to provide decisionmakers with current information to assess status. Moreover, as stressed in prior GAO reports, SLS cost estimates only cover one SLS flight in 2018 whereas best practices call for estimating costs through the expected life of the program.

Limited cost and schedule reserves place the program at increased risk of exceeding its cost and schedule commitments. Although the SLS program is committed to a November 2018 launch readiness date, it has been pursuing an internal goal for launch readiness of December 2017, with the time between December 2017 and November 2018 being designated as schedule reserve. The SLS program expects to use a significant amount of schedule reserve, in part to address some technical challenges, and plans to shift its internal goal from December 2017 to tentatively July 2018. This shift will reduce the amount of available schedule reserve from 11 months to just 4 months. In addition, the program planned for cost reserves of less than 4 percent each year and has already allocated those funds for this year, which leaves no reserve funding available to address unanticipated issues.

Earned value management (EVM) data for SLS remains incomplete and provides limited insight into progress toward the program's external committed cost and schedule baselines because it tracks progress relative to the program's internal goals—which have proven unrealistic. EVM data is intended to provide an accurate assessment of program progress and alert managers of impending schedule delays and cost overruns. GAO analysis of available SLS contractor EVM data indicated that the contractors may incur cost overruns ranging from about $367 million to about $1.4 billion, which is significantly higher than what the contractors were reporting—$89 million. SLS is implementing a program-level EVM system that, once complete, will include all contractor work and work conducted in-house by NASA and may provide more comprehensive information on program progress relative to internal goals. Tracking to internal goals, however, provides limited information relative to progress toward external commitments. At present, the SLS program lacks comprehensive program-level reporting to alert managers of impending delays and cost overruns to external commitments.