

Why GAO Did This Study

The F-35 is the most ambitious and expensive weapon system in DOD's history, with sustainment costs comprising the vast majority of DOD's \$1.3 trillion cost estimate. Central to F-35 sustainment is ALIS—a complex system supporting operations, mission planning, supply-chain management, maintenance, and other processes. The F-35 program is approaching several key milestones: the Air Force and Navy are to declare the ability to operate and deploy the F-35 in 2016 and 2018 respectively, and full-rate production of the aircraft is to begin in 2019. However, ALIS has experienced developmental issues and schedule delays that have put aircraft availability and flying missions at risk. The National Defense Authorization Act for Fiscal Year 2016 included a provision that GAO review the F-35's ALIS. This report assesses, among other things, the extent to which DOD has (1) a plan to ensure that ALIS is fully functional as key program milestones approach and (2) credibly and accurately estimated ALIS costs. GAO reviewed F-35 program documentation, interviewed officials, and conducted focus groups with ALIS users.

What GAO Recommends

GAO is making four recommendations including that DOD develop a plan to address ALIS risks, and conduct certain analyses and include historical data to improve its ALIS cost estimate. DOD concurred with developing a plan and partially concurred with the cost estimating recommendations, stating that it follows its own guidance. GAO continues to believe the recommendations are valid, as discussed in the report.

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F-35 SUSTAINMENT

DOD Needs a Plan to Address Risks Related to Its Central Logistics System

What GAO Found

The Department of Defense (DOD) is aware of risks that could affect the F-35's Autonomic Logistics Information System (ALIS), but does not have a plan to ensure that ALIS is fully functional as key program milestones approach. ALIS users, including pilots and maintainers, in GAO's focus groups identified benefits of the system, such as the incorporation of multiple functions into a single system. However, users also identified several issues that could result in operational and schedule risks. These include the following:

- **ALIS may not be deployable:** ALIS requires server connectivity and the necessary infrastructure to provide power to the system. The Marine Corps, which often deploys to austere locations, declared in July 2015 its ability to operate and deploy the F-35 without conducting deployability tests of ALIS. A newer version of ALIS was put into operation in the summer of 2015, but DOD has not yet completed comprehensive deployability tests.
- **ALIS does not have redundant infrastructure:** ALIS's current design results in all F-35 data produced across the U.S. fleet to be routed to a Central Point of Entry and then to ALIS's main operating unit with no backup system or redundancy. If either of these fail, it could take the entire F-35 fleet offline.

DOD is taking some steps to address these and other risks such as resolving smaller ALIS functionality issues between major software upgrades and considering the procurement of additional ALIS infrastructure but the department is attending to issues on a case-by-case basis. DOD does not have a plan that prioritizes ALIS risks to ensure that the most important are expediently addressed and that DOD has a fully functional ALIS as program milestones draw close. By continuing to respond to issues on a case-by-case basis rather than in a holistic manner, there is no guarantee that DOD will address the highest risks by the start of full-rate production in 2019, and as a result, DOD may encounter further schedule and development delays, which could affect operations and potentially lead to cost increases.

DOD has estimated total ALIS costs to be about \$16.7 billion over the F-35's 56-year life cycle, but performing additional analyses and including historical cost data would increase the credibility and accuracy of DOD's estimate. GAO's cost estimating best practices state that cost estimates should include uncertainty analyses to determine the level of uncertainty associated with the estimate in order to be credible. In addition, credible cost estimates should include sensitivity analyses to examine how changes to individual assumptions and inputs affect the estimate as a whole. DOD's guidance does not require the department to perform these analyses for ALIS, and DOD officials stated that they have not done so in part because ALIS constitutes less than 2 percent of the F-35's estimated total sustainment costs. Program officials said that if ALIS is not fully functional, the F-35 could not be operated as frequently as intended, but a DOD-commissioned plan found that schedule slippage and functionality problems with ALIS could lead to \$20-100 billion in additional costs. Without uncertainty and sensitivity analyses, it is unclear how ALIS can affect costs. GAO also found that using historical cost data would make DOD's cost estimate more accurate.