

A report to congressional committees

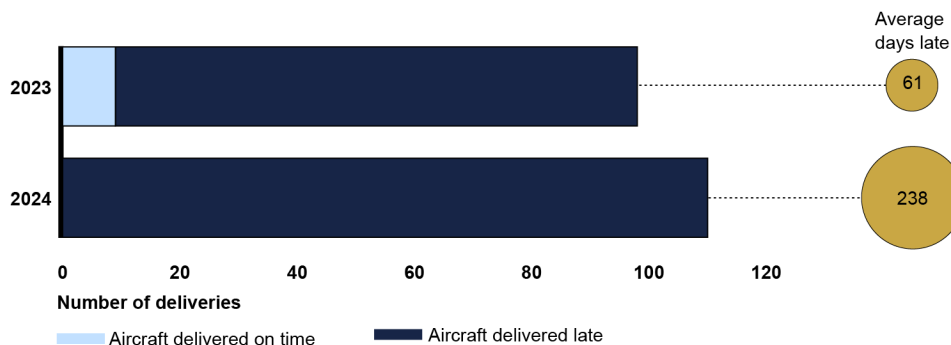
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## What GAO Found

After years of cost growth and schedule delays in its hardware and software modernization effort for the F-35 aircraft, known as Block 4, the Department of Defense (DOD) is in the process of establishing a new major subprogram to help meet cost, schedule, and performance goals. Currently, Block 4 costs are over \$6 billion more and completion is at least 5 years later than original estimates. The program plans to reduce the scope of Block 4 to deliver capabilities to the warfighter at a more predictable pace than in the past.

Contractors for the program, Lockheed Martin and Pratt & Whitney, continued delivering aircraft and engines late. For instance, in 2024, Lockheed delivered 110 aircraft. All were late by an average of 238 days, up from 61 days in 2023.

### F-35 Aircraft Delivered Late by the Contractor, Calendar Years 2023–2024



Source: GAO analysis of Lockheed Martin data. | GAO-25-107632

Lockheed Martin's Technology Refresh 3 (TR-3)—a \$1.9-billion suite of hardware and software upgrades that are critical to the Block 4 modernization effort—was the primary driver of late aircraft deliveries in 2024. Evaluating Lockheed Martin's capacity to deliver aircraft on time would help determine how many aircraft the program should plan to purchase.

In recent years, the program paid contractors, such as Lockheed Martin, hundreds of millions of dollars in incentive fees that were intended to improve on-time delivery. However, the structure of on-time delivery incentives allowed the contractor to deliver aircraft up to 60 days late and still earn some of the fee. To avoid rewarding late deliveries, the program should reevaluate its use of fees in future contracts and better align them to achieve desired production outcomes.

As it stands up new modernization subprograms, the F-35 program has opportunities to deliver capabilities faster. GAO's work on leading practices for product development has found that leading companies employ an iterative process of design, validation, and production to quickly develop and deliver products. While the program is implementing some aspects of these practices, it would benefit from expanding the use of modern design tools, such as digital models that developers can test in a simulated environment, to more rapidly deliver capabilities to the warfighter than it has historically.

## Why GAO Did This Study

The F-35 Joint Strike Fighter plays a crucial role in national security for the U.S. and its partners and allies. The aircraft's unique stealth technology and advanced sensor networking systems provide critical capabilities to DOD's tactical air portfolio. DOD estimates that Block 4 and engine and power thermal management modernization—as well as the costs to maintain and operate the 2,470 planned aircraft over the 77-year life cycle—will exceed \$2 trillion.

Congress included a provision in statute for GAO to review the F-35 program. This report assesses, among other things, (1) DOD's progress in Block 4 modernization efforts; (2) the extent to which contractors delivered F-35 engines and aircraft within contract time frames and earned related incentives; and (3) the program's use of leading practices for product development.

GAO conducted site visits to contractor facilities; collected and analyzed cost, schedule, and production data; reviewed relevant program documentation; and interviewed DOD officials and contractor representatives.

## What GAO Recommends

GAO is making six recommendations to DOD, including that it evaluates Lockheed Martin's capacity to meet planned deliveries on time; reevaluates the use of incentive fees to better achieve the desired schedule; and expands and formalizes the use of leading practices for product development. DOD concurred with four recommendations and partially concurred with two. For all six recommendations, DOD cited actions it is taking to address them. GAO acknowledges DOD has taken some positive steps and believes further action is warranted to fully address the recommendations, as discussed in the report.