



WASHINGTON — By the end of the year, a new and unusual [deal for the F-35 fighter's spare parts](#) could be in place — one that would flip the current supply model on its head.

If the proposed performance-based logistics contract works the way [F-35 manufacturer Lockheed Martin has promised](#), it will save the government money, improve the availability of spare parts and [give the company greater flexibility](#) on how it assists repairs, such as making it easier to fix a broken part without fabricating a new one.

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Lockheed has for years sought a performance-based logistics, or PBL, contract for the F-35, albeit in a different form. Instead of the traditional transactional model in place today, in which a contractor is paid for specific parts or services, a PBL deal pays the contractor based on how well it meets expected performance outcomes.

The PBL contract now in negotiations, referred to as a “demand reduction” deal, would be a more limited version of the “tip to tail” agreement Lockheed first proposed in 2019, and would cover only the [spare parts needed to repair the fighter](#). Lockheed’s original tip to tail pitch would have also covered support and sustainment activities, and judged the company on overall mission-capable rates, but the Pentagon balked. The military’s F-35 Joint Program Office told Defense News

it opted to scale back the deal's scope to one "that incentivizes [Lockheed] to take risks in areas they have full control over."

The JPO said it is on track to award the five-year deal to Lockheed by the end of this year, if a study using data from the Pentagon's Cost Assessment and Program Evaluation office verifies to Congress that a PBL deal would either reduce cost or improve readiness. A companion deal, for repairs and other nonmaterial sustainment support and services not covered by the PBL contract, would also be awarded at the same time.

Officials from the JPO and Lockheed said in interviews with Defense News that a performance-based logistics contract could be better for both parties than the transactional model, particularly by encouraging the company to reduce the demand for new spare parts for the F-35.

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Ed Apollo, the JPO's product support manager, said a PBL contract incentivizes Lockheed to invest in new processes and improvements to make parts last longer.

"The lower the demand, the more gravy for industry," Apollo said. "The higher the demand, the less the [profit] margins. ... That is the No. 1 benefit that we're looking at in a performance-based logistics contract."

But some experts said the deal could carry risk; most notably, could a PBL contract handle a surge in capacity required during a war?

Brad Martin, director of the National Security Supply Chain Institute at the think tank Rand, said some major programs have used PBL deals in recent years, including the Aegis weapon system and the P-8 Poseidon aircraft. But they're not as common as they once were, he told Defense News, "and they have a lot of baggage."

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"It yields to the contractor an awful lot of discretion as to how they're going to fill the orders and how they're going to deal with the demand," Martin said. "As a result, [the contractor] is in a position of managing things up to the point where there's a crisis — and then when there's a crisis, what are you going to do?"

Martin said PBL deals were more customary in the early 2000s, when the Pentagon sought to achieve efficiencies of the kind typical in a private sector business. The department in 2001 identified PBL contracts as its preferred weapon system support strategy, according to a 2008 Government Accountability Office report.

But they didn't always produce the promised cost savings, Martin said.

He said a PBL contract would likely incentivize Lockheed to maintain an inventory of parts sufficient for normal, day-to-day operations, such as flying standard patrols, training sorties or test flights.

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But during a war that causes F-35s to fly significantly longer and harder, while possibly suffering wear and tear from battle, hard landings and more sorties, he said, it's hard to say what kind of supply inventory and pace would be required, and whether a PBL approach could keep up.

How would a PBL deal work?

The military has awarded Lockheed Martin multiple iterations of the current transactional contract to sustain F-35s since the fighter program's inception, most recently in 2021. But for years the program has struggled to hold sustainment costs down and keep the plane's readiness rates high enough. The average mission-capable rate for all U.S. F-35s is 56%, which falls below the 70% readiness rate the military wants for the Air Force's F-35A, and the 75% goal set for the Department of the Navy's F-35B and F-35C variants.

Today, Lockheed's transactional sustainment contract spells out how many of the thousands upon thousands of spare parts needed to repair the planes will be on hand, Apollo said.

A supply chain-focused PBL contract would operate differently, Apollo added, as Lockheed wouldn't need to keep specific numbers of parts on hand. Instead, the company would be judged on whether those parts are available when needed, or whether it can get those parts to the field within a certain amount of time.



Staff Sgt. Andrew Martin, 944th Aircraft Maintenance Squadron crew chief, finishes preparing an F-35's cockpit for flight on Jan. 29, 2019, at Luke Air Force Base, Ariz. (Staff Sgt. Lausanne Kinder/U.S. Air Force)

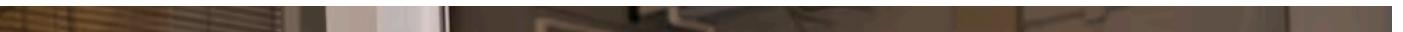
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Because PBL contracts are firm-fixed-price deals, he explained, Lockheed would bear the risk if it makes the wrong call on how many of each part to have on hand.

"They still have to provide ... the products, the performance, but if they have to spend beyond the [firm-fixed-price], that is all industry risk," Apollo said. "The benefit [to a PBL deal] is it incentivizes industry to reduce demand. A healthy supply chain system that we're looking for is not one where industry is incentivized to buy more parts."

There are several ways the JPO believes a PBL deal could push the contractor to reduce demand on parts. When the onus is on Lockheed Martin to keep demand low, the company will be motivated to have parts that last longer and to make process improvements that stretch out their time on the aircraft before repair or replacement, Apollo said.

For example, he added, if a part leaks due to a failing seal, under a standard transactional contract the government could pay Lockheed to fix the problem by removing it — sending it to the original manufacturer for repair before reinstallation.



Airman 1st Class Bryce Jarvis checks equipment needed for his shift on the flight line at Eglin Air Force Base, Fla. All equipment needed for the daily maintenance of the F-35A must be checked out from the supply desk to keep tools accounted for and in inspection order. (Senior Airman Andrea Posey/U.S. Air Force)

But under a PBL contract, Apollo said, Lockheed would have a reason to pressure the subcontractor that makes that part redesign it to avoid frequent failures. With that redesign, “lo and behold, they reduce demand of that part by an order of magnitude, with some level of investment that was enabled by a firm-fixed-price PBL contract.”

Apollo also said a PBL deal offers industry more authority, accountability and ownership of the supply chain. In many cases, he added, it’s faster and cheaper to repair a part than making a new one. This will increase the “velocity” of the supply chain, he explained, and get parts on shelves quicker, which is financially advantageous for Lockheed.

While Lockheed would take on more risk, company officials said the flexibility of such a deal is worth it, and they have expressed confidence in their ability to cut demand for F-35 parts. Audrey Brady, Lockheed Martin’s vice president for F-35 global sustainment, said in an interview that about half the parts on an F-35 haven’t had to come off the plane for repair or replacement, and that more than 90% of parts on the average F-35 are staying on the aircraft longer than expected.

“Do we know exactly where the parts need to be and when?” Brady said. “When [maintainers] go to reach for the part, is it available to them? That’s what we’ll be measured on.”

Wartime surge

But Rand’s Martin said a PBL’s design could give Lockheed an incentive to keep its inventory — particularly of rare or expensive parts — near the minimum required.

And the number of spares a defense program will need in wartime is almost always vastly more than in peacetime.

“When you need them, you really need them,” Martin said.

Dan Grazier, a defense analyst for the Project on Government Oversight, echoed those concerns.

“Imagine a contract like this being signed on Sept. 10, 2001, when no one could have foreseen what was [going to] kick off the next day,” Grazier said, referring to the 9/11 attacks on the United States. “And all those plans the day beforehand all of a sudden get thrown out the window.”

Grazier also said the global nature of the F-35 program could complicate the management of a performance-based supply contract. The JPO said earlier in April the supply chain-focused PBL would cover all F-35s worldwide.

“Who knows what some of these partner countries might get themselves into moving forward?” Grazier said.



Italian Air Force personnel celebrate after an F-35A made aviation history by completing the very first F-35 trans-Atlantic Ocean crossing, arriving at Naval Air Station Patuxent River, Md., from Cameri Air Base, Italy, on Feb. 5, 2016. (Andy Wolfe/U.S. Navy)

At the Sea-Air-Space conference in April, Lt. Gen. Michael Schmidt, the program executive officer for the F-35, criticized the program's "just in time" supply chain, in which parts arrive right before they're needed and little inventory is stockpiled.

"When you have that [just-in-time] mentality, a hiccup in the supply chain, whether it be a strike ... or a quality issue, becomes your single point of failure," Schmidt said.

Martin said a PBL contract could also lead to a "robbing Peter to pay Paul" situation, in which Lockheed might cannibalize parts from another aircraft or assembly line to meet supply requirements.

PBL deals "are almost the epitome of 'just-in-time,'" Martin said.

Apollo and Brady said the PBL contract now under negotiation includes provisions for short-term fluctuations on a month-to-month basis. Brady noted that kind of short-term surge would cover a 10% fluctuation in expected flight hours.

Apollo said that "from a month-to-month standpoint, we have built in that capability [to] have industry execute these peaks and valleys and perturbations for higher demand" in flight hours than normal.

But Brady said the draft PBL deal doesn't take into account longer-term surges that might come with a war or other event lasting one to six months, which could cause flight hours to significantly jump, and cause more wear and tear.

Lockheed and the F-35 Joint Program Office want to “wargame” those requirements, Brady and Apollo said.

“We’re working to … define: What does that surge look like?” Brady said. “And then be able to respond to what that would be. But the current construct [of the PBL draft] doesn’t have a war-level surge; it has a month-to-month flight hour surge.”

Brady said it will be important to look at different scenarios in which the U.S. military might use an F-35 in order to ensure a PBL deal can handle the requirements.

Apollo pointed to one option in an interview with Defense News that would see more funding added to the PBL approach to handle a lengthier surge. However, a follow-up email from the JPO explained the office could not address broader discussions at the Defense Department level in regard to requirements for a sustained surge environment.

Martin found it encouraging to hear Lockheed and JPO officials are considering wartime surge needs, but insisted they need to continue studying future needs, while also considering how to incentive Lockheed to meet a potential surge.

“If we had a war, God forbid, that builds up … to a fairly high-[operational] tempo — 10% [surge capacity] might be enough,” Martin said. “But we don’t know that, and we’re not going to know that without significantly more analysis. And then the problem will be that as that [conflict] occurs, it’s going to be too late to do much about it.”

About Stephen Losey

Stephen Losey is the air warfare reporter for Defense News. He previously covered leadership and personnel issues at Air Force Times, and the Pentagon, special operations and air warfare at Military.com. He has traveled to the Middle East to cover U.S. Air Force operations.

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