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THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF

LIEUTENANT GENERAL ERIC FICK  
PROGRAM EXECUTIVE OFFICER  
F-35 LIGHTNING II PROGRAM

BEFORE THE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE OF THE  
HOUSE ARMED SERVICES COMMITTEE

ON

FIXED-WING TACTICAL AND TRAINING AIRCRAFT PROGRAMS  
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## ***Introduction***

Chairman Norcross, Ranking Member Hartzler, and distinguished Members of the Subcommittee, thank you for this opportunity to provide you with an Enterprise update on the F-35 Lightning II Program. As we have proudly briefed you and your staff in recent years, the F-35 isn't just coming – it's here. Given ongoing aggression from Russia, China, and adversaries across the globe, the platform's capabilities remain more relevant – and critical – than ever. To date, we have delivered more than 770 F-35s to our U.S. Services, International Partners, and Foreign Military Sales (FMS) customers. These aircraft have logged over half a million flight hours while operating from twenty-five bases and eight warships worldwide. For the men and women of the F-35 Enterprise, the platform's impact is real and palpable – this Air System is making a difference every day.

The F-35 Program continues to advance and enhance international relationships and operations while delivering world class capabilities. With the U.S. Navy and Marine Corps' first F-35C carrier deployments, the combined deployment of Marine Corps F-35Bs on the UK's Queen Elizabeth, NATO arctic patrols, and current operations in the Baltic and Pacific – F-35s are making their presence known and are creating an unbroken line of western 5<sup>th</sup> Generation airpower from the Arctic Circle to the eastern shore of the Mediterranean and beyond.

As I briefed you last April, the mandate of the F-35 JPO remains the delivery of a ***capable, affordable, and available*** Air System to the warfighter – outpacing our key competitors to win tomorrow's high-end fight as we develop, deliver, and sustain war-winning 5<sup>th</sup> Generation capabilities at high-end 4<sup>th</sup> Generation costs. As we will surely discuss today, the F-35 Program is not without its challenges. However, these challenges pale in comparison to the magnitude of progress the F-35 Program has made in recent years. I am grateful for this opportunity to share the full story of our progress with you today.

When I appeared before you last April, I heard your concerns loud and clear, and committed to pursue continued improvement with a fierce focus upon sustainment affordability and mission readiness. As the leader of the F-35 Program, I take full responsibility for our challenges and the implementation of their solutions. Since becoming the Program Executive Officer (PEO) in 2019, I have remained committed to open and transparent communication with the Congressional Defense Committees. As part of this open communication, House Armed Services Committee professional staff have identified key interest areas where Committee Members expect to receive updates during this week's hearings before the Tactical Air and Land Forces Subcommittee and the Readiness Subcommittee. These include *capability* topics such as Block 4 and Technical Refresh 3 (TR-3), Adaptive Engine Modernization and Integration, the Autonomic Logistics Information System (ALIS) to Operational Data Integrated Network (ODIN) Transition, and Initial Operational Test and Evaluation (IOT&E) and the Joint Simulation Environment (JSE); *availability* topics such as F135 Power Modules and Propulsion Depot Recovery, Spares Packages, Technical Data Rights, Depot Stand-Up, and Surge Sustainment; and *affordability* topics with an emphasis upon Initiatives to Drive Down Sustainment Costs. The following testimony addresses these requested topics.

### **CAPABILITY**

Through current operations around the globe, we continue to prove the F-35's unprecedented and unmatched capabilities. As the F-35 Program looks to the future, the Block 4 suite remains our most critical development effort and TR-3 remains key to fully unlocking these capabilities. When combined with legacy demands for subsystem power and cooling, continued modernization of the F-35 beyond Block 4 will also drive a need for engine enhancements, and we are in lock step with the U.S. Services as we mature our plans to meet this challenge. Meanwhile,

we are modernizing our legacy logistics information system to enhance software, hardware, data, and infrastructure capabilities – with an emphasis on the user experience and interface. Finally, we continue to make progress in the completion of the JSE as we prepare for IOT&E. I look forward to sharing our progress across each of these requested discussion areas.

### ***Block 4 and Technical Refresh 3 (TR-3)***

We are grateful for the Committee’s support of Block 4 in the FY22 National Defense Authorization Act (NDAA). The FY22 budget reflects the investment priorities of the U.S Department of the Air Force and Department of the Navy in ensuring we continue to deliver capabilities to compete, and win, against peer adversaries. The Block 4 capability set – which we have been incrementally delivering since 2019 – ensures F-35 lethality and survivability against the most sophisticated threats for decades to come. Last year, in the face of an accelerated NATO need date, the Program completed design, development, and testing of one of these critical capabilities – Dual Capable Aircraft (DCA) – one-full year ahead of the planned schedule, a remarkable testament to the alignment among the JPO, Industry, and the nuclear enterprise. Other important capabilities including sensor and avionics enhancements, integrated weapons, and interoperability and self-protection improvements will continue to deliver in the months ahead.

Our delivery of the TR-3 hardware suite brings significant increases in processing, memory, and throughput to the platform. Our most pressing developmental task is to keep TR-3 on track for production cut-in at Lot 15 in the summer of 2023. The criticality of meeting this TR-3 commitment cannot be overstated, and we’re leaning heavily into the development effort to retire risks and execute to plan. Despite budgetary and developmental challenges, we continue to make deliberate progress. We began Safety of Flight Qualification Testing on the Integrated Core Processor – the brains of TR-3 – in March 2022, and we’re driving hard to achieve Lot 15 hardware

insertion. We are working in lock step across this Government and Industry team to deliver on our joint commitment.

### ***Adaptive Engine Modernization and Integration***

The original F135 engine specification allocated 15 kW of bleed air extraction to support system cooling requirements, and the F135 engine was designed, tested, and qualified to this specification with a level of margin available for future growth. During the final stages of initial aircraft development, and the early stages of Block 4 development, the Air Vehicle cooling requirements grew to exceed planned bleed air extraction. To provide the necessary bleed air, the engine was required to run hotter, and early engineering assessments suggest that this increase in operating temperature could decrease engine life, driving earlier depot inductions and an increase in life cycle cost. Ultimately, we can maintain this level of bleed air draw through Block 4 development, but future capabilities that require increased cooling may further tax the engine, causing degraded mission performance and exacerbating current engine life impacts. Today, the amount of bleed draw is also approaching the max capacity of the Power and Thermal Management System (PTMS), which is responsible for converting engine bleed air into electrical power and cooling air for the F-35.

We have a clear plan to address this challenge. Multiple engine and PTMS options exist; each with trade-offs across the entire acquisition spectrum including cost, schedule, and performance. The F-35 JPO, along with the U.S. Services, is conducting a full Air System Business Case Assessment (BCA) to examine a variety of engine options paired with a variety of PTMS upgrade solutions. This BCA will be complete by the summer of 2022 and will provide actionable cost, schedule, performance, and risk data to inform the decisions that lie ahead.

In accordance with FY22 NDAA Sec 242, the F-35 JPO is supporting the U.S. Air Force in its report on the integration of the Adaptive Engine Transition Program (AETP) propulsion system into F-35A aircraft. As reflected by this NDAA language, currently proposed AETP engines would likely be specific to the U.S. Air Force, which would likely bear the cost of its development and implementation. Both current AETP offerings (GE Aviation's XA100 and Pratt & Whitney's XA101) promise impressive improvements, and their consideration allows for enhanced competition and capability. The proposed AETP engines would necessitate significant modification requirements to become compatible with the F-35C and are not currently realistic for the F-35B. Therefore, in accordance with NDAA Sec 243, we are also supporting the U.S. Department of the Navy in a report on the Acquisition Strategy for an Advanced Propulsion System for F-35B and F-35C Aircraft. While Block 4 capability will require enhanced engine performance, initial Block 4 capability increments can function with the existing F135 engine. Ultimately, the F-35 JPO is working closely with our warfighting customers and Industry to develop a family of options to enhance engine power and cooling. We are committed to work with these same parties to assess the cost and logistics implications of each of these families.

### ***ALIS-to-ODIN Transition***

Early in my tenure as PEO, we decided as an Enterprise to replace our legacy logistics information system, ALIS, with a new and modernized system called ODIN. Early in this effort, we envisioned a rapid, if not abrupt transformation between these systems. We quickly learned; however, that such a transition was imprudent, so we developed a phased approach to address ALIS's most pressing hardware and software obsolescence challenges while simultaneously evolving to ODIN. We are calling this transition ALIS-to-ODIN, or A2O. The modernization of the logistics information system, the heart of the A2O transition, addresses multiple elements:

software, hardware, data, and infrastructure. Each element is maturing at a different speed, providing value to users along the way.

Through 2021 we have continued our user-focused engagements, leading to more frequent releases of ALIS software that address our users' most pressing concerns while strengthening cybersecurity. Currently, two software releases are being installed at various units. Another release is undergoing flight test and will field in June 2022. Through these ALIS updates, we have dramatically improved system performance for the users, and have reduced the maintainer's wait time for Portable Maintenance Aid synchronization to aircraft or ALIS servers by forty-five percent. Additionally, time to download air vehicle Portable Memory Device (PMD) data is reduced by thirty-five percent through software efficiencies, with additional benefit of new ODIN Base Kit (OBK) hardware processing PMDs nearly fifty percent quicker than legacy Standard Operating Units. The combined software and hardware deliveries facilitate a face-to-face pilot debrief with actionable maintenance codes in less than five minutes, vastly improving turnaround time and sortie generation rate.

One additional (and final) ALIS software release is in development now, in accordance with our cybersecurity risk burn-down plan, which addresses software and hardware vulnerabilities. Following the fielding of this final ALIS software by early 2023, we will freeze the code, modernize or containerize it, and move it to the cloud. We'll concurrently initiate the development of modernized applications and transition the classified code to the cloud as well. Modernizing the software and its architecture will allow us to make faster code updates in the future that are more aligned to commercial practices.

The F-35 JPO has made significant progress with the introduction of unclassified ODIN hardware. We completed the initial phase of our ODIN hardware fielding, replacing the oldest ALIS hardware in the fleet and fielding fourteen OBKs to units around the world. These OBKs

are eighty percent smaller and thirty percent cheaper than the ALIS Standard Operating Units they replace, and they perform substantially better. We will continue fielding the new hardware in 2022 and 2023 for new site activations and fleet technical refresh. We are also progressing well with the design of the associated classified hardware and the country or service-level servers that aggregate information from unit-level hardware.

We have also made significant progress with data quality, transformation, and infrastructure. While we were tracking over 2,200 ALIS Action Requests (trouble tickets) in 2019, the number of open ALIS Action Requests is down to just 199 as of March 2022. Additionally, we are building a Data Centralization Archive and Retrieval capability, which will improve the performance of unit hardware, provide easier access to data, and enhance fleet analytics. We have initiated work to define our infrastructure as code – as opposed to hardware – which allows us to publish software independent of the underlying hardware and transition seamlessly into our developmental and production environments in Government-owned clouds. We have started these efforts in Lockheed Martin’s cloud but will transition development into a JPO cloud by 2023.

While great work continues across major A2O elements of software, hardware, data, and infrastructure, we continue our efforts in other ways to improve the user experience and decrease costs. One example is the recent deployment of wireless barcode scanners to fleet warehouses. These scanners eliminate manual data entry which removes errors inherent in manual processes, accelerates the process of receiving parts, and makes parts available for use more quickly. In recent years, we have also fielded multiple software improvements and system enhancements, and stood up the National ALIS Support Center (NASCC) to provide a centralized source of remote support for system administrators. The NASCC offers a consolidation of common activities that can be remotely executed and allows practices and improvements to be applied across all systems, with a smaller number of centrally located experts. The Air Force has evaluated NASCC performance and



found that it meets their needs in a way that brings efficiency – and lower costs – to managing their F-35 logistics information system. I am happy to report that the Air Force has approved the reduction of ALIS system administrators at their training and test units, using NASC for first level response. As you can see, we are making solid progress across the board with A2O.

### ***Initial Operational Test & Evaluation (IOT&E) and Joint Simulation Environment (JSE)***

The F-35's IOT&E includes an unprecedented evaluation of the aircraft's capability against the high-end threat, to be conducted in an extremely high-fidelity simulation facility. These final sixty-four trials of F-35 IOT&E will test the F-35's performance against a denser, more capable threat than can be represented in open-air flights against aggressor squadrons and integrated air defenses on test ranges. The development, validation, verification, and accreditation of a simulator of sufficient complexity and fidelity to replicate that threat environment has proven to be an incredibly complex task. Not only do we have to create an environment that looks right...it has to be right. The F-35 is bright enough to know when it's being tricked...and we can't have that in this facility. With that said, we are winding down the development phase of the Joint Simulation Environment (JSE) and have delivered approximately ninety percent of the component Verification & Validation (V&V) packages to the accreditors at the Air Force Operational Test and Evaluation Center (AFOTEC). System V&V packages are now in development and will be delivered to the accreditors later this summer. Once the Operational Test community reviews the complete V&V data and performs final test readiness assessments, the sixty-four mission trials will be conducted.

In coordination with NAVAIR and the JSF Operational Test Team (JOTT), the F-35 JPO conducted an IOT&E Schedule Risk Assessment in May 2021. That analysis projected a test completion date of summer 2023. Formal operational test activities are scheduled to begin in

January 2023 with the JOTT's "Test the Test," which will inform their Test Readiness Assessment. Once all test readiness criteria are met, the sixty-four trials are expected to take less than a month to conduct. Upon completion of the JOTT's analysis and evaluation, they will submit their final IOT&E report to inform the Full Rate Production decision. When completed, JSE will allow us to test new and existing aircraft digitally in the world's most dense and lethal threat environments. As we know, the threat environment is always evolving. This investment in JSE will ultimately enable us to accelerate discovery in the developmental pipeline. This will reduce risk with future development efforts as new capabilities are introduced.

### **AVAILABILITY**

With capability delivery progressing according to plan, our attention remains particularly focused upon availability. While our near-term objective remains the resolution of key degraders, we will not lose sight of our long-term goal: an environment of comprehensive sustainment excellence. Our approach, therefore, is twofold – First: At a tactical level, we must address key near-term degraders such as F135 Power Modules and Propulsion Depot Recovery. Second: At a strategic level we must enable an ecosystem that supports the program's long-term sustainment. This includes initiatives to keep parts on wing longer, maintaining an appropriate spares posture, and enhancing repair capability and velocity. The following topics address both pieces of this approach.

#### ***F135 Power Modules and Propulsion Depot Recovery***

The F-35 Enterprise is driving towards year-over-year improvements to our Full Mission Capable (FMC) rates by executing the foundations of our Life Cycle Sustainment Plan and Global Support Solution. As the Committee is certainly tracking, F135 Power Modules have been a

significant source of availability degradation across the F-35 fleet for the past couple of years. I'm pleased to report that in 2021 we made significant progress against this availability degrader. This past year we continued to execute a three-pronged recovery program designed to address the F135 Power Module crisis. First, this recovery program focused on increasing production at the Air Force Sustainment Center's Heavy Maintenance Center (HMC) at Tinker AFB. Second, this program focused on standing up additional capacity within the Power Module's global repair network, including Contractor Logistics Support sites in the continental U.S. and select overseas locations. Third, this program focused on keeping engines on wing longer through the execution and assessment of an accelerated engine "lifing" effort that has matured our inspection procedures and damage tolerance limits.

As a result of this effort, Tinker's HMC beat its F135 Power Module production plan by twenty-five percent by the end of 2021, tripling the number of Power Modules it produced in 2020. I am very pleased to announce Tinker is on track to deliver more than sixty F135 Power Modules to the F-35 Enterprise this year.

On the international front, the F-35 Program continues to expand its infrastructure and has achieved significant milestones with our F-35 Partner Nations in 2021. Working with our Australian and Dutch Partners, we activated F135 Regional Maintenance, Repair, Overhaul, and Upgrade (MRO&U) facilities in those nations. These facilities provide the critical technical support needed to overhaul and maintain F135 engines, and they deliver that service in strategically located areas to provide optimal support to OCONUS F-35 operations. The Program further matured MRO&U capability in Europe last year by inducting the first F135 Fans and Power Modules at Norway's regional engine MRO&U facility. These advances support our warfighters' sustainment requirements and add resilience to the F-35 sustainment infrastructure to fortify engine maintenance and repair capacity for the entire F-35 Enterprise.

As you and your staff analyze the data, you'll see a slight decline in F-35 Mission Capable rates in 2021. I assure you we understand the root causes behind near-term readiness degraders such as F135 Power Modules, and we're getting after them. Beyond these near-term degraders, we're also tackling Enterprise actions required to deliver a healthy fleet for tomorrow – keeping parts on-wing longer, having spares available when those parts eventually fail, and establishing repair capacity and velocity required to meet the ever-growing fleet demand. These fundamentals are unchanged from when I spoke with you last, and we continue to drive forward in this area.

### ***Spares Packages***

The investment in Initial Spares provides the warfighter with the ability to sustain daily flight and training simulator operations throughout CONUS and OCONUS regions. Between FY15 and FY21, the F-35 program invested \$4.8B in Initial Spares for U.S. Service, Partners, and FMS customer requirements. Before FY15, the Program endured a shortage in Initial Spares funding for myriad reasons, including under-execution of appropriated funds and a shortage in initial spares funding from participants. The F-35 Program has reversed those trends over the past three years, and has met appropriated execution targets of ninety-three percent per year for FY19, FY20, and FY21. Additionally, we have focused on the expedited delivery of procured spares. To date the program is experiencing a ninety-two percent On Time Delivery (OTD) between the program's prime contractors, Lockheed Martin and Pratt & Whitney.

### ***Technical Data Rights***

The F-35 JPO is pursuing a strategy to deliver data for a strategic combination of intellectual property, technical data and data rights in support of the F-35 program's objectives. We have seen successes in deferred ordered delivery of Component Maintenance Manuals (CMM)

to expand the Government's ability to perform repairs. Additionally, the Government effectively asserted rights on Failure Reporting Analysis and Corrective Action System (FRACAS) data to streamline processes in identifying failure modes, developing corrective actions and fielding corrective actions. We are committed to improving the data contracting processes to support enterprise objectives. As such, we have established a Data Requirement Review Board (DRRB) to review contracted data requirements within the program. The board evaluates and authenticates requirements and reduces redundancy of data deliverables by reviewing contract data packages.

### ***Depot Stand-Up Activities and Capacity***

Depot stand-up efforts remain critical to the long-term affordability and availability of the F-35 Air System. Through the execution of our Global Sustainment Solution, the F-35 Enterprise has established Air Vehicle and Propulsion repair facilities in the U.S., Europe, and the Asia-Pacific. We are also standing up organic depots to execute the repair of air vehicle components. On 24 March, Ogden Air Logistics Complex (OO-ALC) declared repair capability for the Gun System Control Unit. This marks the thirty-ninth workload established across six organic U.S. depots. For those activated workloads, we're executing seventy-one percent of component repairs.

In 2022, we intend to activate thirteen additional workloads; four of which have been accelerated from 2023. We anticipate final activations will complete in 2028. While this progress greatly enhances capacity, we're building velocity through these depots as well, with twenty activated workloads already beating our targeted thirty-day repair time. We are absolutely committed to driving repair velocity into every depot. This velocity is critical to minimizing our requirement for expensive spares inventory.

As we meet this challenge, we are working diligently with our prime contractors and military service depots (MSD) to right-size repair capacity and increase repair velocity for

activated workloads through targeted investment in depot repair material lay-in, test system upgrades, and test equipment spares. So far this calendar year, 1,782 component repairs have been completed in our organic depots. This expanding organic industrial base is a key lever to achieving affordability targets for the program.

Partnerships with our global allies continue to add strength and resilience to the F-35 global repair network. For example, on 28 February 2022, Kongsberg Aviation Maintenance Services (Norway), achieved certification as a F135 Maintenance, Repair, Overhaul, and Upgrade (MRO&U) facility, marking the third such OCONUS capability to be added to the propulsion repair network in the past eight months. This additional capacity and shared knowledge will help the Enterprise aggressively drive down the F135 Engine Power Module shortfall impacting flying operations today. The collective repair network will deliver 122 Power Modules in 2022 compared to seventy-six in 2021.

On the Air Vehicle front, F-35 modification operations at OO-ALC and Fleet Readiness Center East (FRC-E) continue to bring fleet aircraft up to the latest configurations, delivering decisive capability and improved reliability to the fleet. Ogden is on a glide slope to activate twelve additional modification docks by 2024, adding to their twenty active bays. This accelerated build-up of Ogden's modification capacity, together with utilization of field teams and FRC-E's nine maintenance bays, will enable the CONUS F-35 modification network to meet customer needs for Block 4 capability and Life Limiting Structure upgrades.

Within the F-35 JPO, we continue to drive towards increased organic participation across our sustainment operations – not just in depot operations. In January 2021, we established an agreement with the Defense Logistics Agency (DLA) for North American warehousing, and have transitioned over 5,000 part numbers, and two million parts out of Lockheed Martin warehouses and into DLA warehouses. We established an agreement with the U.S. Transportation Command

for Global Transportation and Distribution and have conducted over 40,000 CONUS parts shipments under that arrangement. We have also established an agreement with DLA for Demilitarization and Disposal Services. Finally, we are requesting funding in the FY24 POM for the procurement of Provisioning and Cataloging Data to enable the Services to participate in organic supply chain management roles in the future and are actively exploring pathfinder opportunities in supply chain management with DLA, the USAF, and the DoN. Our sustainment strategy remains focused on getting the best bang for the buck in the near term, while laying the groundwork for a future that will enable more organic sustainment activity.

### ***Planning for Surge Sustainment***

As we see right now in the European theater, the world remains dangerous and unpredictable. As nations increasingly rely on the F-35 Air System to reinforce national and regional security, the Enterprise must be ready to surge sustaining support to meet the demands of contingency operations.

The F-35 Enterprise has established thoughtful policies and practices to manage surge events. Business Rule #34 (Global Pooling Business Rules) establishes a common mechanism for allocation and prioritization of limited resources via assignment of Force Activity Designation (FAD) Codes when scarcity of parts exists. This system differentiates between the relative significance of competing needs and creates a structure that is responsive to customer requirements during peacetime and war. Through this system, we prioritize Enterprise support to the elements of our global fleet most directly engaged in and supporting combat operations, resulting in significantly enhanced readiness across these sub-fleets.

The Global Spares Pool system allows for flexibility across the F-35 fleets, as opposed to legacy systems' use of individual base supply warehouses. The F-35 global pooling strategy

reduces individual participant stove-piped supply chains and provides the flexibility necessary to enable the principals of the F-35 Global Support Strategy. Moreover, the JPO has recently pre-positioned additional materiel at the European Regional Warehouse (ERW) in the Netherlands. Finally, the Program Office contracts with Lockheed Martin to utilize analytical tools to properly account for (and view) the GSP parts and components, and move inventories across the globe based on activities, and leverages active production lines allow for flow of parts for reallocation as needed for a surge. Surge sustainment is not limited to parts and material, and we are actively deploying personnel across the enterprise in response to increased demand signals today.

### **AFFORDABILITY**

As I have testified before, cost is the greatest threat to the F-35 Program. My team remains laser-focused on Enterprise affordability, and I remain personally committed to cost reduction across the acquisition lifecycle. Last year, we secured a significant affordability win for the Program through the completion of the FY21-23 Annualized Air Vehicle Sustainment contract. This historic agreement is the first multiple-year sustainment contract for our program, and it's a quantum leap forward toward securing affordable lifecycle costs for our customers. The contract drives improvements to performance through an incentive structure focused on year-over-year improvements in full mission capable rates and supply metrics. Under this contract, our average cost per flight hour in CY23 - for all variants – is projected to be reduced 7.5 percent from existing program estimates. This contract sets the stage for further cost reductions and performance improvements, and positions the program well for an effective Supply Support and Demand Reduction Performance Based Logistics contract in the coming years. I understand the Committee remains particularly interested in initiatives to drive down sustainment cost. I look forward to sharing our progress and plans with you today.



### *Initiatives to Drive Down Sustainment Costs*

Through April 2021, the JPO captured \$19.8B (CY12\$) of sustainment cost reductions into the annual cost estimate (2021v1.0). These reductions reflect a collection of initiatives fielded through the JPO's Affordability Directorate and consist of various reliability and maintainability projects, capability updates, and other cost reduction initiatives. Historically, the JPO has driven down the CY12\$k cost per flight hour (USAF A-Variant: O&S less indirects & mods, plus production support) from \$87.3k in 2014 to \$33.6k in 2020. The recently awarded Lockheed Martin FY21-23A contract represents an additional \$3.6k reduction in CPFH for the F-35A from \$33.6k in 2020 to \$30.0k in 2023. While we are seeing cost reduction related to the Air Vehicle, we also see near term risk for propulsion sustainment, which could potentially offset the savings. Under the Lockheed Martin FY21-23A contract, the CPFH at the platform level in FY2023 will be reduced eight percent from the original JPO cost projection of \$36.1k to \$33.3k (by variant: F-35A \$30.0k, F-35B \$41.7k, and F-35C \$37.9k) [All in CY12\$]. The CPTPY at the platform level in FY23 will be reduced six percent from the original JPO cost projection of \$6.7M to \$6.3M.

Finally, my F-35 Product Support Manager (PSM) is leading a long-term effort to inject cost-saving competition into the supply chain through an organic pathfinder initiative. We're studying methodologies and opportunities for USAF, USN, DLA to contract directly with Original Equipment Manufacturers (OEM), rather than the prime contractor. This will ultimately unlock the door to competition once the product is more mature within its lifecycle, and technical data is procured. Right now, we're working to identify candidate parts. Next, we'll develop Ground Rules and Assumptions, and work on U.S. Service processes and requirements development. We envision moving forward with activations under this initiative in FY23.

## *Conclusion*

I thank you for today's opportunity to share the full story of the F-35 Program, and I will reiterate, the F-35 isn't just coming – it's here. The Air System we are delivering today is truly remarkable, and its capabilities are unmatched. Through the efforts of the men and women of the F-35 Enterprise, and in continued collaboration with Congress, senior DoD leadership, the GAO, and other stakeholders, this Air System is becoming increasingly affordable and available. The platform's operational performance continues to speak for itself, and the international F-35 user community continues to grow. In the wake of increased aggression from Russia and China, these capabilities are more essential today than ever before. Like any Major Defense Acquisition Program, the F-35 will always face challenges – but none of these challenges are insurmountable. We will continue to demand the highest quality from our industry partners as we improve our Air System's Capabilities and Availability while aggressively driving down cost across the Acquisition Lifecycle. Through these efforts, the F-35 will remain the premier 5<sup>th</sup> Generation Air System for the U.S. and its allies for years to come.

Thank you for your time today; I look forward to your questions.