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SENATE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON AIRLAND
UNITED STATES SENATE

PRESENTATION TO THE
SENATE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON AIRLAND
UNITED STATES SENATE

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SUBJECT: Air Force, Force Structure and Modernization Programs

STATEMENT OF:

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INTRODUCTION

Chairman Cotton, Ranking Member King and distinguished members of the subcommittee, thank you for having us here today to provide testimony on Air Force modernization. Additionally, thank you for your service, leadership and dedication to rebuilding the United States military. The modernization of America's Air Force is a critical national security issue worthy of attention and action.

Today's security environment is perhaps one of the most challenging we've faced as an Air Force when you consider the scale and scope of what our Nation demands of us. We face challenges in and across all domains in which the Air Force operates. Our ability to compete, deter, and win are being challenged by others. We are in global competition across the spectrum of potential operations, ranging from countering malign influence in gray zones all the way to deterring nuclear war. Others have made gains as we return to great power competition. We cannot allow the gap between national security demands and the resources provided to meet those demands to grow all while we continue to operate at a pace that challenges readiness.

Thanks to your help, in recent years, together we have made solid gains in improving wartime readiness and returning some fiscal stability, but there remains work to be done, particularly in the area of modernization, force structure capacity, and warfighting capability. The dialogue we have today will help us as we design and build a better future Air Force worthy of tomorrow's Airmen and our Nation.

STRATEGIC ENVIRONMENT

The National Defense Strategy captures the national security challenges we face as a Nation. The United States faces an increasingly complex global security environment, characterized by long-term, strategic competition. A rapidly growing China and resurgent Russia

aim to coerce their regional neighbors, undermine long-standing alliances, and displace American influence from critical regions around the globe.

Our United States Air Force must be ready to compete, deter, and win in this complex and evolving security environment. We must defend the homeland; provide a safe, secure, and effective nuclear deterrent; and be able to defeat a powerful conventional enemy; deter opportunistic aggression; and continue to disrupt violent extremists. The Air Force must be prepared to do all of these missions every day.

All of this drives how we design and modernize our forces and highlights the need for a larger military. As the bipartisan National Defense Strategy Commission (NDSC) stated in its final report, "The United States needs a larger force than it has today if it is to meet the objectives of the strategy. The Air Force, Navy, and Army will all need capacity enhancements." Additionally, the same report acknowledges that the, "Air Force will need more stealthy long-range fighters and bombers, tankers, lift capacity, and intelligence, surveillance, and reconnaissance platforms." As a Service and a Nation, we are the best at what we do, but in order to maintain our position we must work towards it. It is not a birthright.

AN AIR FORCE IN DEMAND

"Regardless of where the next conflict occurs or which adversary it features, the Air Force will be at the forefront." – NDS Commission

Our Airmen are already at the forefront, performing vital missions in all domains – providing Global Vigilance, Reach and Power. Our Airmen perform strategic and vital missions in all domains, across the spectrum of conflict, from 60 feet below ground to our highest geosynchronous orbits. Last year our Airmen conducted more than 50,000 sorties and 3,400 precision airstrikes in partnership with a joint ground force that destroyed ISIS as a conventional

force. In Afghanistan, the Air Force executed 44,000 sorties in support of our Afghan partners, and targeted Taliban and extremist networks with more weapons than any time in the past 10 years which helped bring the Taliban to the negotiating table.

In 2018, Air Force bombers flew over 840 missions in support of Operation Inherent Resolve, helping to defeat ISIS and the Resolute Support mission in Afghanistan. Our bombers executed over 60 Continuous Bomber Presence missions in the Indo-Pacific region, demonstrating U.S. commitment. American bombers also flew 12 assurance and deterrence missions, reinforcing NATO's eastern flank.

Our mobility forces provided strategic maneuver to the Joint Force by transporting over 1.26 million personnel, 1 billion pounds of warfighting equipment and supplies, and evacuated over 5,400 patients for critical care. Airmen also delivered 152,000 short tons of relief supplies across Southwest Asia, supporting those who are displaced and suffering, and demonstrating U.S. commitment to building a stable and peaceful region. Our Tanker forces passed more the 1 billion pounds of fuel in-flight.

AIR FORCE WE NEED (READINESS & CAPACITY)

We have made great strides since FY17 in readiness recovery – and it has been a team effort by all Airmen to include our civilian leadership, Congress, and industry. Because of this effort, over 90% of our "lead" force packages in "pacing squadrons" are ready – the first Airmen to respond at the beginning of a conflict. When we include their "follow-on packages", we are on track to reach 80% readiness for our pacing units by 2020, 6 years faster than originally planned. In addition, we are continuing to pursue the SECDEF's goal of 80% Mission Capable rates for F-35, F-22 and F-16 Aircraft.

Readiness recovery is dependent on getting enough people with the right experience. Last year we increased our total force end strength by 5,800 personnel. Over the last two years, we eliminated a shortage of 4,000 maintainers and are currently working to build expertise in these young Airmen. To address our aircrew shortage, we are implementing nearly 70 initiatives to increase the number of pilots we are training, season them in operational units, and retain experienced aircrews. In 2018, we produced 1,211 pilots, 146 more than originally expected.

Our Airmen are shifting their focus to great power competition, and we must train and equip them for the high-end fight. We continue to modernize our live and virtual training ranges and infrastructure to provide relevant and realistic training against our most advanced threats. We are investing to build the Nevada Test and Training Range, the Joint Pacific Alaska Range Complex, the Utah Test and Training Range, and several smaller range complexes to better replicate the capabilities of our peer adversaries. The reality is we cannot do it with only ranges, which is why we must invest in live and virtual training.

We are continuing to recover our readiness and in this cycle are focusing on experiencing personnel, high-end training capability, and sustainment to meet National Defense Strategy demands. The Air Force is grateful to be recovering readiness as it comes close to its 30th year of continuous combat and contingency operations, but the road to recovery remains a long one.

CURRENT CAPACITY AND CAPABILITY

Our analysis aligns with the conclusions of the NDSC. When we assessed the operational plans and scenarios, we validated that the Air Force we need to meet the demands of the National Defense Strategy should grow from 312 to 386 operational squadrons, about a 25% increase. This would permit us to execute the National Defense Strategy with moderate risk. Just to be

clear, this was a pure strategy-based analysis – not a budget constrained one – and it looked at the entirety of Air Force force structure.

Bomber Force Structure

We must continue to modernize and sustain the legacy bomber fleets to ensure they remain viable and capable until we transition to the B-21. Our budget proposal supports the Defense Department's principal priority to maintain a safe, secure, and effective nuclear deterrent that safeguards the homeland, assures allies, and deters adversaries.

B-21

The National Defense Strategy provided strategic direction to develop a new stealth bomber, and the B-21 Raider is the answer. The B-21 has a mature and stable design and is transitioning to manufacturing development of the first test aircraft on the path to the significant first flight milestone. The President's Budget provides $3.0 billion of funding in FY20, and $20 billion across the FYDP, to progress the program through the Engineering and Manufacturing Development to progress towards fielding this fleet.

The B-21 will provide critical operational capability and flexibility across a wide range of military objectives providing both conventional and nuclear capabilities. The B-21 will be a highly survivable asset with the ability to penetrate modern air defenses to accomplish mission objectives in an anti-access/area denial environment. We will need a minimum of 100 B-21s in our inventory. We are also pursuing legacy bomber fleet upgrades in order to keep those assets sustainable and viable, which is necessary until the B-21 becomes operational in sufficient numbers.

B-52

The last B-52H Stratofortress entered service in the United States Air Force in 1962, we expect to continue operating the B-52 through 2050 and will continue to invest in modernization programs to keep the platform operationally relevant. Major modernization efforts include the Commercial Engine Replacement Program, $1.4 billion across the FYDP; Radar Modernization Program, $1.0 billion across the FYDP; and Combat Network Communications Technology, $74 million across the FYDP. The B-52 Commercial Engine Replacement Program will replace legacy engines with new commercial engines using Section 804 processes to remove more than three years from the traditional program schedule. Boeing as lead integrator, is currently conducting risk reduction studies to fully define engine and aircraft requirements. Going forward, the Air Force will employ a "hands-on" approach, leveraging competitive prototyping and industry best practices to allow for early identification and mitigation of any risks. The Radar Modernization Program will modernize the current Strategic Radar (AN/APQ- 166), which is based on 1960s technology and was last modified in the 1980s.

B-52 Combat Network Communications Technology (CONECT) provides an integrated communication and mission management system, as well as a machine-to-machine interface for weapons retargeting. CONECT's digital infrastructure and architecture provides the backbone for the 1760 Internal Weapons Bay Upgrade, which allows for internal carriage of J-series weapons through modification of the Common Strategic Rotary Launchers, thus significantly increasing the B-52's capability to store and deliver the Joint Direct Attack Munition (JDAM), Laser-JDAM, Joint Air-to-Surface Standoff Missile (JASSM) and its extended range variant, and the Miniature Air Launched Decoy (MALD) along with its jamming

variant. The Air Force remains committed to B-52 modernization to ensure the nation's oldest and most versatile frontline long range bomber remains relevant through at least 2050.

B-1

The B-1B is a long-range, air-refuelable multirole bomber capable of flying intercontinental missions with the largest payload of guided and unguided weapons in the Air Force inventory. We continue to invest in B-1 modernization and sustainment to ensure the platform remains lethal and viable through 2040. The Integrated Battle Station upgrade, $56 million across the FYDP, will enhance crew situational awareness and precision engagement capabilities and is the B-1B's largest modernization effort ever. The first aircraft with this upgrade was delivered in January 2014, and a total of 50 B-1s are currently modified with this capability. This modernization effort will complete in 2020. Other efforts to update the B-1B's navigation and radar systems were completed in early 2016. These efforts improve the reliability and maintainability of these critical systems.

The B-1B was the Air Force threshold platform for early operational capability of the Long Range Anti-Ship Missile, which transitioned from a Defense Advanced Research Projects Agency (DARPA) demonstration to the Navy-led Offensive Anti-Surface Warfare Program. Integration of this weapon, coupled with the B-1B's long range, high speed and large payload capacity, will posture the B-1B for an important role in any conflict in the Indo-Pacific region.

B-2

Until the B-21 is fielded, the B-2 will be the only long-range strike aircraft capable of penetrating and surviving advanced Integrated Air Defense Systems to deliver weapons against heavily defended targets.

Its unique attributes of intercontinental range, precision strike, large conventional or nuclear payloads, ability to penetrate defenses, and low observable profile allow it to execute Nuclear Deterrence Operations, Nuclear Response, Global Strike, and Global Precision Attack missions. The Air Force will continue to modernize the B-2 to ensure it remains effective as enemy defensive systems advance. Current efforts to modernize the Defensive Management System, $1.5 billion within the FYDP, will ensure the B-2 can continue to counter sophisticated air defense networks and operate in highly contested environments.

The Air Force has completed development efforts to re-host the Stores Management Operational Flight Program software in the Flexible Strike program, enabling the B-2 to take advantage of advanced digital weapon interfaces, such as those used by the B61-12 nuclear weapon. The Flexible Strike capability will begin fielding this year as part of the B-2 P6.2 block effort, which includes Military GPS User Equipment and B-2 hardware to support carrying the B61-12 weapon. The Air Force began installing the Common Very-Low-Frequency / Low Frequency (VLF/LF) Receiver and will complete fielding the system in all twenty B-2 aircraft in FY2020. This program provides the B-2 with a VLF/LF receiver for secure, survivable strategic communications capability.

Other on-going B-2 programs address modernization efforts with $176M across the FYDP to enhance the Identification Friend or Foe (IFF) system, replace the Crash Survivable Memory Unit, and integrate hardware upgrades for the employment of the GBU-57 Massive Ordnance Penetrator, as well as the B61-12 nuclear weapon. The Radar Aided Targeting System software upgrade began development in October 2018 and will provide improved navigational handoff to weapons in a GPS-denied environment. Next year the Air Force will begin exploring modifications, $23M within the FYDP, to the B-2 to enhance the aircraft’s capability against

hardened, deeply buried targets. And, finally, the B-2 will continue sustainment efforts, $139M across the FYDP, for the on-going Low Observable Signature and Supportability Modification effort, to improve aircraft maintainability and availability.

Fighter Force Structure

We remain committed to the dual-capable F-35 and its game-changing capabilities, while we continue to modernize and sustain our aging legacy fleet. However, our current fighter force of 55 squadrons is too small. To restore readiness of the force we must refresh the fighter fleet with a mix of 4th and 5th generation aircraft to ensure the right capacity and capability to fully implement the National Defense Strategy.

F-35

The F-35A is the centerpiece of the United States Air Force's 5th generation multi-domain capability and it is a critical force multiplier for legacy forces. It directly supports National Defense Strategy objectives to, "Build a More Lethal Force and Strengthen Alliances and Attract New Partners." We remain fully committed to the F-35 program of record of 1,763 aircraft. Our budget requests $6.5 billion in FY20, and $31.7 billion across the FYDP, to continue production and integrate vital capabilities. No money from this program was taken for the 4th generation refresh. We expect to have over 20 combat-ready F-35 squadrons in our inventory by 2030, but to ensure those squadrons are ready to achieve National Defense objectives in future threat environments, we must field full F-35 Block 4 capabilities as quickly as possible.

Our budget decreases the F-35 buy profile by 18 aircraft between FY20 and FY23 in order to align the procurement timeline with capability development and reduce retrofit costs. We must also continue our work with the F-35 Program Office to deliver in three key areas as

soon as possible: 1) Autonomic Logistics Information System must fully operate as intended; 2) F-35 Reprogramming Enterprise must update F-35 Mission Data Files at the speed of war to ensure operational relevancy; and 3) F-35 simulator must be current with fielded aircraft operational flight programs, have sufficient fidelity to provide effective training, and be Distributed Mission Operations Network-capable.

We are taking steps to achieve 80% Mission Capable Rates by September 2019 in our combat coded F-35s by addressing prioritized efforts to improve supply chain performance, Reduce Depot span time, Accelerate Modifications, and Optimize Unit Level Performance.

F-22

The F-22 is the only operational multi-mission air superiority fighter aircraft that combines stealth, supercruise, maneuverability, and integrated avionics to make it the world's most capable air superiority aircraft. The F-22 request adds $953 million in FY20, and $5.2 billion across the FYDP, for modernization efforts essential to gain and maintain air superiority against evolving threats. The Capability Pipeline, a Section 804 program, combines former TackLink16, TACMAN and GPS M-code programs to deliver slices of each capability on a regular cadence to the field. Future modernizations will leverage the "Capability Pipeline" as a vehicle to rapidly prototype and iteratively field critical enhancements with capabilities delivered to the fleet on a regular cadence and ensure first look, first shoot, first kill capability in highly contested environments.

F-15

The F-15C/D supports both Homeland Defense and the air superiority mission. Our F-15C fleet is aging, with two-thirds of the fleet past its designed service life. The 234 F-15Cs in the Air Force inventory will reach the end of their design service life in the next six to eight

years, and our analysis shows additional service life extension programs are not cost effective. Our budget proposes to replace our aging F-15C fleet with a modernized successor by purchasing the F-15EX. We propose to buy 80 aircraft across the next five years to begin a cost-effective replacement of our F-15C fleet. The Air Force remains fully committed to advanced 5th generation capabilities and the F-35. The decision to refresh the 4th generation fighter force helps mitigate capacity risk while balancing near term readiness concerns.

The F-15E fleet provides all-weather, long range global precision attack in all but the highest threat environments. Our F-15 budget requests $2.1 billion In FY20, and $12.6 billion thru the FYDP, to continue modernization efforts to ensure the aircraft remains viable through the 2040s. Modernizing the F-15E with Early Passive Active Warning Survivability System (EPAWSS) demonstrates our commitment to building a more lethal Air Force. EPAWSS will allow the F-15E to attack targets in high threat environments that the aircraft cannot currently engage.

F-16

The F-16 is the Air Force's primary multi-role fighter and Suppression of Enemy Air Defense (SEAD) aircraft. This program is in the midst of the largest modernization period in program service history in order to remain operationally capable through the 2040s. The program adds $443 million in FY20, and $3.8 billion across the FYDP, for modifications to ensure the F-16 can operate and survive in today's threat environment. Major efforts in this year's budget include a Service Life Extension Program comprising 12 structural modifications, effecting 300 aircraft, with the biggest structural changes being wings, canopy sill longeron, and lower bulkhead. In addition, there are several avionics capability upgrades including the Active Electronically Scanned Array (AESA) Radar upgrade, this replaces the current mechanically

scanned radar, with greater ability to detect, track, and identify low-observable, low-flying, and slow-flying target. This joint emerging operational need is critical for the F-16 platform to meet aerospace control alert mission requirements in order to properly defend the homeland against modern threats, these radars will begin fielding in 2019. Another key avionics capability upgrade is Auto-Ground Collision Avoidance System (AGCAS) that prevents most controlled flight into terrain by executing an automated recovery maneuver to avoid collisions. The AGCAS system already has eight confirmed saves on F-16 block 40/42/50/52 aircraft. Working with Air Force Research Laboratory, we integrated this capability on F-16 Block 25/30/32 analog flight control computers when completed. We are excited to continue fielding this life saving capability for our warfighters.

A-10

The A-10 is an effective close air support platform for the current Counter Violent Extremist Organization fight. Our analysis anticipates that, without further wing funding, aircraft groundings due to wing lifespan will begin in FY21, with at least 26 aircraft grounded by FY23. To retain the A-10 fleet at 281, we must continue to replace the wings to ensure the A-10 remains operationally capable through the 2030s. Our current budget adds $168.9 million in FY20, and $751.7 million across the FYDP, to modernize the A-10, including $100 million for 10 more wings. The new wing contract is currently in source selection with contract award planned for late Fiscal Year 2019. The 2016 and 2017 National Defense Authorization Acts restrict retiring or divesting A-10s until completion of the F-35 Initial Operational Test and Evaluation comparative tests, associated reports, and the Secretary of the Air Force briefs the findings to Congressional committees. The Comparative Tests are scheduled to complete in Fall 2019, with Initial Operational Test & Evaluation and Air Force reports complete Spring 2020.

Light Attack

The Light Attack effort supports the National Defense Strategy second line of effort for our allies and partners, finding ways to increase their ability to contribute to the counter-violent extremist fight. The Light Attack Experiment taught us important lessons we would not have learned through a traditional acquisition process. This experiment sought to test whether an existing commercial aircraft could perform as a combat capable and cost-effective platform to support the global campaign to counter violent extremist organizations. Key to the experiment was the demonstration of an exportable information-sharing network that will improve interoperability with allies and partners. Based on available aircraft that met experimental criteria, we focused last year on only one aircraft type.

With the Light Attack effort being additive to the Air Force's topline, the FY20 budget requests $35 million, and $1 billion across the FYDP, to expand the experiment in this budget to include additional aircraft types (rotary, unmanned, turbojet) and technologies. Additionally, we intend to continue our close partnership with industry and allies as we determine the best strategy going forward. We remain committed to developing a cost-effective and increasingly networked counter-violent extremist capability to deepen these partnerships and directly support the National Defense Strategy.

Next Generation Air Dominance

The Air Force is investing in technologies as part of a family of capabilities enabling air dominance in the most challenging operational environments. The requirement to establish and maintain air superiority within the battlespace cannot be understated – it underpins the joint force operations in any theater. Air superiority remains a core function of the Air Force, however is not a birthright, and given threat advances, cannot be assumed. Next Generation Air Dominance

(NGAD) is our program that supports studies, analyses, technical maturation, and prototyping activities leading to enhancements in lethality, survivability, interoperability, and persistence to ensure air superiority. This budget requests $1 billion in FY20 and $6.6 billion across the FYDP to fund the continued development of a next generation open mission system architecture, advanced sensors, cutting-edge communications using open standards, and integration of the most promising technologies into the family of capabilities. Furthermore, this program incorporates novel agile acquisition practices through its competitive industry consortium approach that is yielding favorable results and provides greater value for the taxpayer. Our efforts are being shaped by multiple analyses, including recommendations from the CSAF approved Air Superiority 2030 Flight Plan, recently completed NGAD Analysis of Alternatives, and several others from renowned analytic organizations. Continued investment in NGAD technologies is critical to ensuring continued air dominance within emerging threat environments for all future joint operations.

Trainers

T-1, T-6, and T-38

The Air Force is continuing investment efforts in its trainer platforms, including modernization programs for the T-1, T-6, and T-38 fleets. The T-1A Avionics Modernization Program will modernize the T-1A fleet and address known obsolescence and diminishing manufacturing supply issues. The Air Force is completing installation of Automatic Dependent Surveillance-Broadcast (ADS-B) Out across the entire T-6 fleet, modernizing the Aircrew Training Devices and Crew System life support equipment, and providing logistics support. Additionally, research and development activities will be funded for the Next Generation On-Board Oxygen Generation System (OBOGS) to improve the safety of pilot training and address

on-going Physiological Events in the T-6 aircraft. Modifications are also required to sustain and upgrade the T-38C fleet, including Pacer Classic III, Talon Repair, Inspection, Maintenance, and front canopy replacement programs until T-X is delivered. The FY20 requests are $26.8 million, $13.0 million, and $37.9 million for the T-1, T-6, and T-38 fleets, respectively.

T-X

The Advanced Pilot Trainer (T-X) contract was awarded to the Boeing Company on September 27, 2018. The Budget request in the FYDP has been reduced to reflect the approximate $10 billion cost savings realized from the original program cost estimate. T-X replaces the Air Education and Training Command's existing fleet of 429 T-38C aircraft with 351 aircraft and associated simulators, ground equipment, spares, and support equipment. The T-X will provide student pilots with the skills and competencies required to be better prepared to transition into 4th and 5th generation fighter and bomber aircraft. The FY20 request of $348.4 million continues the program's Engineering and Manufacturing Development effort, ensuring we meet a 2024 Initial Operational Capability and 2034 Full Operational Capability.

Munitions

While operational demand for preferred munitions continues, so do our efforts to secure sufficient inventories for our warfighters. During the last several years, we have successfully ramped up production capacity across the portfolio, and our FY20 Budget Request funds preferred munitions to industrial production capacity. Thanks to strong Congressional support and funding, this budget continues to improve on significant FY19 munitions gains and emphasizes the munitions most relevant to the high-end fight. Consistent with prior budgets, the FY20 request again leverages increased base budget and Overseas Contingency Operations (OCO) funding to rebuild inventories and replenish the large number of munitions expended to

counter violent extremist organizations around the world. Additionally, this budget also requests funding to develop more lethal weapons capabilities to meet future operational requirements. As we continue working to synchronize munition inventories with National Defense Strategy objectives, the Air Force is grateful for the continuing Congressional support to confront these challenges. To ensure success, munitions procurement will remain an item of interest across the FYDP.

Joint Direct Attack Munition and Small Diameter Bomb

The Joint Direct Attack Munition (JDAM) is the air-to-ground weapon of choice and the expenditure rate has increased 134% so far in FY19 (6,202) compared to FY18 (2,656). In FY15, JDAM production capacity was 18,500 tailkits per year; by FY18 tailkit production increased to 45,000 tailkits per year to meet the needs of the Services and Foreign Military Sales (FMS) partners. The Air Force plans to procure 37,000 tailkits in FY20 with a request of $1.07 billion, with Navy and FMS partners procuring the remaining production capacity.

Small Diameter Bomb I (SDB I) provides reduced collateral damage effects and increased load-out per sortie for our warfighters. Due to its high operational utility, the Air Force ramped the line from 3,000 weapons per year in FY15 to 8,000 weapons in FY17. The Air Force's FY20 budget requests $275.4 million and plans to order 7,078 weapons and the remaining quantity is available to FMS partners.

SDB II will complete Initial Operational Test and Evaluation in FY19, and in conjunction with the Navy, the Air Force's FY20 budget requests $212.4 million to procure 1,175 weapons, maximizing the production capacity. Though not yet fielded, the SDB II will soon provide a key air-to-ground capability to kill mobile and fixed targets through adverse weather from standoff

ranges. All of these production increases expedite the inventory replenishment of our critical munitions and build stockpiles for future needs.

Finally, Hellfire missiles provide a time-sensitive, direct strike capability for our remotely-piloted aircraft and remain in high demand around the world. Production capacity, shared between Hellfire and Joint Air-to-Ground Missile (JAGM), was ramped up from 5,000 missiles per year in FY15 to 11,000 missiles per year in FY19. The FY20 budget requests $299.6 million and procures at least 3,859 Hellfire missiles. With other Services and critical FMS partners, the production line will remain funded to maximum production capacity.

Joint Air-to-Surface Standoff Missile and Advanced Medium Range Air-to-Air Missile

As the Air Force responds to current operational demands, we are also looking to the future to ensure we are prepared to defend against more advanced threats as directed in the National Defense Strategy. Doing so requires advanced weapons capabilities, and the FY20 budget request reflects the Air Force's plan to continue investing in those areas, specifically with the Joint Air-to-Surface Standoff Missile (JASSM) and the Advanced Medium Range Air-to-Air Missile (AMRAAM). These weapons provide unique capabilities in an anti-access/area denial (A2/AD) environment.

JASSM is the premier air-to-ground, low observable missile for defeating threats in highly contested environments. The FY20 budget requests $503.4 million to procure 430 missiles. The program is focused on increasing inventory by implementing a strategy to ramp up production rates and monitor subsystems for obsolescence. To achieve this, we have partnered with industry to expand production capacity to satisfy a 47% increase in our inventory objective. The total production capacity for the FY20 procurement will be 510, with the available max rate for JASSM increasing to 430.

Production of AMRAAM missiles, a critical air dominance weapon, remains consistent with FY19 procurement levels by requesting $332.3 million for 220 missiles, as industry partners begin to cut-in a solution to obsolescence issues through the Form Fit Function Refresh (F3R) effort. Cut-in of F3R begins this year with initial deliveries starting in FY21, and production rate continues to ramp up thru FY24.

Stand-In Attack Weapon and Extended Range Weapon

To defend the Nation in an increasingly competitive global environment, however, we must look beyond currently fielded weapons systems and invest in future advanced munitions capabilities. To that end, the Air Force continues to invest in the Stand-In Attack Weapon (SiAW) to deliver a strike capability to defeat rapidly relocatable targets that create the A2/AD environment. The FY 20 Budget requests $162.8 million, and $841.4 million across the FYDP. Additionally, the Air Force is investing $246.2 million in FY20, and $587 million across the FYDP, in the Extended Range Weapon (ERWn), a rapid prototyping program to develop an advanced multi-role interceptor missile to defend against and defeat missile threats. Finally, the FY20 Budget request continues to invest in rapid prototyping programs to develop hypersonic weapons for long-range, prompt strike capabilities.

Tanker Fleet

Tankers are the lifeblood of our joint force's ability to respond to crises and contingencies quickly and are essential to keeping our Air Force fueled as a global force. The tanker fleet is comprised of 396 KC-135s, 59 KC-10s, and 6 KC-46s that provide the backbone of rapid U.S. global operations. Delivery of 179 KC-46 Pegasus aircraft by 2028 will replace less than half of the current tanker fleet and leave the Air Force with 300 aging KC-135s awaiting recapitalization.

KC-46

While we continue to sustain the current tanker capability, building the future tanker fleet remains one of the Air Force's top acquisition priorities. The KC-46 will deliver greater operational readiness, flexibility, and survivability to the Global Reach mission. The Air Force awarded Lot 4 on 10 September 2018, increasing the number of production aircraft on contract to 52. Lot 5 (15 aircraft) is projected to award in July 2019.

The first four KC-46 aircraft were delivered to McConnell AFB, KS (Main Operating Base 1), 25-31 January 2019. Two additional KC-46s were delivered to Altus AFB, OK (Formal Training Unit), 8-9 February 2019. The Air Force will continue taking delivery of KC-46s over the next year at a rate of approximately 3 per month until the backlog of aircraft is exhausted, at which point the delivery rate will reduce to approximately 1.25 per month. The Air Force will begin Initial Operational Test and Evaluation (IOT&E) in Spring 2019.

Partnered with Air Mobility Command, we have worked hard to accept the KC-46 while ensuring its major deficiencies—the Remote Visual System (RVS) and boom—are properly addresses without undue burden on taxpayers or warfighters. We initiated a subject matter expert team that derived critical performance parameters for both the RVS and boom and codified these parameters in a legally-binding agreement with the vendor. Due to the extensive nature of the fixes, especially the RVS, both actions will take 3-4 years to implement and retrofit fully across our fleet. Consequently, our warfighters strongly desired the KC-46 in their hands, vice the vendor's, while these corrections are being implemented for training and readiness purposes. Despite its current deficiencies, the KC-46 is safe to operate (adhering to flight manual cautions we have provided to our operators) and is the Air Force's best tanker for contested environments due to enhanced situational awareness, battle management, and countermeasures.

The FY20 Budget requests $59.6 million in RDT&E funding for the ongoing KC-46 Engineering and Manufacturing Development and post production modification efforts. Additionally, FY20 also has a request for $2.2 billion in procurement funding to award Lot 6 (12 aircraft).

KC-10 and KC-135

The average age of our KC-135 and KC-10 tankers is 57 and 34 years old respectively. Both fleets are challenged by aircraft parts obsolescence and diminishing manufacturing source issues. However, with the help of organic Air Force depots and industry, we are able to maintain these platforms as effective and safe weapon systems for the warfighter. We are executing several key modernization, safety, and compliance initiatives to ensure our KC-135 fleet remains viable through at least 2045.

The FY20 Budget requests $124.5 million to continue KC-135 modernization efforts. The Block 45 program addresses supportability, reliability, and maintainability issues with legacy flight and engine instruments by integrating a digital flight director, autopilot, radio altimeter, and electronic engine instrument display for our operators. Additionally, the Real Time in the Cockpit program provides real time situational and battlespace awareness to aircrews.

Furthermore, FY20 also requests $13 million through the FYDP to keep our KC-10 fleet operational through its planned retirement and includes funding for service bulletins and low cost modifications to ensure Federal Aviation Administration (FAA) certification.

Presidential Airlift

VC-25B

The VC-25B program will replace the U.S. Air Force Presidential VC-25A fleet, which faces capability gaps, rising maintenance costs, and parts obsolescence as it ages beyond 30 years.

The VC-25B program will deliver two new aircraft to meet the requirements for the President to execute the three roles of Head of State, Chief Executive, and Commander-in-Chief. The Boeing 747-8 aircraft will be uniquely modified to provide the President, staff, and guests with safe and reliable air transportation with an equivalent level of communications capability and security available in the White House. The modifications to the 747-8 aircraft will include an electrical power upgrade, dual auxiliary power units that are usable in flight, a mission communication system, an executive interior, military avionics, a self-defense system, autonomous enplaning and deplaning, and autonomous baggage loading. The FY20 Budget request aligns funding with the Acquisition Program Baseline and requests $757.9 million to continue Engineering and Manufacturing Development to design, modify, test, and field VC-25B aircraft by 2024, or sooner.

Airlift

The FY20 Budget continues to further investment in the Air Force's critical airlift modernization programs for C-5 Super Galaxy, C-17 and the entire C-130 fleet.

C-5

The C-5 Super Galaxy provides all-weather worldwide strategic airlift for combat forces, equipment, and supplies, exemplifying Rapid Global Mobility outlined in the National Defense Strategy. Current investment programs focus on fleet obsolescence, maintainability, and safety of flight.

The FY20 Budget requests $73.6 million in procurement funding, predominately for C-5 core mission computer/weather radar system equipment. This system replaces an antiquated radar system with diminishing manufacturing sources and upgrades the core mission computer processor to meet the demands of future software modifications.

Additionally, FY20 Budget requests $10.2 million in RDT&E funding to support communications, navigation, surveillance/air traffic management upgrades, including Automatic Dependent Surveillance-Broadcast (ADS-B) Out modifications required for global airspace compliance. Replacement of the Multi-function Control and Displays is a new start in FY20 also included in this RDT&E funding request.

C-17

The C-17 is the only aircraft in the Air Force inventory that combines tactical capability with strategic range to operate from austere airfields. The fleet of 222 aircraft provides our Nation unmatched flexibility to conduct theater and inter-theater direct delivery, airdrop, aeromedical, and special operations airlift missions. Agile and efficient software and hardware updates will ensure timely readiness, safety, and capability improvements as this premier airlift platform contributes to our national security objectives.

The FY20 Budget requests $138 million in procurement funding to continue critical modifications to the C-17 fleet. This includes ADS-B Out to satisfy FAA and civil airspace compliance mandates, Identify Friend or Foe (IFF) for the identification and control of military aircraft, and Large Aircraft Infrared Countermeasures defensive systems. Additionally, $25.1 million of FY20 RDT&E funding will address obsolescence and flight safety issues. The development of a replacement heads-up display will address obsolescence of the current C-17 heads-up display and improve the system's availability, reliability, and maintainability. The Beyond Line-of-Sight communication system effort modernizes multi-channel voice and data communication subsystems to ensure the C-17 keeps pace with changes in DoD communication infrastructure.

C-130

The C-130 fleet consists of legacy C-130H and C-130J aircraft, as well as special mission aircraft (AC/LC/EC/MC/HC/WC-130s). The C-130Hs and C-130Js are medium-size transport aircraft capable of completing a variety of tactical airlift operations across a broad range of missions. The fleet delivers air logistics support for all theater forces, including those involved in combat operations.

The Air Force continues to modernize the C-130H legacy fleet through a four-pronged approach emphasizing aircraft safety, airspace compliance, modernization, and partial recapitalization. We remain committed to ensuring C-130H aircraft remain safe to operate through efforts such as center wing box replacements. By replacing aging center-wing boxes, we are able to breathe new life into some of our hardest flown aircraft enabling them to continue to safely operate well into the future. The C-130H Avionics Modernization Program (AMP) Increment 1 ensures the legacy fleet is able to fly in international airspace by complying with 2020 U.S. and international airspace mandates. The AMP Increment 2 program is key to the modernization of the C-130H fleet. This program will improve the fleet's maintainability and reliability by providing a new digital avionics suite mitigating obsolescence and diminishing manufacturing source issues. The Air Force is also partially recapitalizing the legacy fleet with C-130Js. The FY20 PB requests $140 million in RDT&E and $52 million in procurement funding to support the legacy C-130H fleet.

Partial C-130H recapitalizing also supports our Air Force special operations forces. The newer C-130Js provide our special forces with the extra weight carrying capacity, longer range, and better fuel efficiency. These special mission variants of the C-130J conduct airborne psychological operations and offensive electronic warfare (EC-130J), weather reconnaissance

(WC-130J), search and rescue (HC-130J), and special operations (MC-130J and AC-130J). Along with purchasing new aircraft, the Air Force has multiple modification efforts for the C-130J to include center wing box replacement, large aircraft infrared countermeasures, and an accelerated avionics upgrade to meet 2020 international airspace mandates as part of the C-130J Block 8.1 upgrade. The C-130J Block 8.1 modernization program, currently in production, will begin delivering new communication and data link capabilities, a flight management system, and other key capabilities to the field. In addition, the Air Force plans to upgrade our C-130H and C-130J fleets with a Mobile User Objective System satellite communication system to ensure we can maintain key communication links anywhere in the world.

The FY20 Budget requests $8.7 million for C-130J RDT&E and $142 million for C-130J modification efforts. There is also a request for $17.2 million for HC/MC-130J RDT&E and $958 million for HC/MC-130J procurement and modification efforts.

Rotorcraft

The FY20 Budget continues investment in the Air Force's critical rotorcraft modernization programs, including the CV-22 Osprey, HH-60G, Combat Rescue Helicopter (CRH), and UH-1N Replacement programs.

CV-22

The FY20 PB requests $83.3 million, and $760.7 million across the FYDP, for the CV-22 fleet to assist in execution of the National Military Strategy by providing transformational mission capability to special operations forces warfighters. The Air Force continues to make improvements to the CV-22 with modifications designed to improve reliability, survivability, and capability. Future efforts will make the CV-22 more cost-effective while ensuring the

viability of its unique long-range payload capacity coupled with vertical take-off and landing capability.

HH-60G and Combat Rescue Helicopter

The Air Force is the only Service with a dedicated force organized, trained, and equipped to execute theater-wide Personnel Recovery. The HH-60G fleet currently accomplishes this mission by conducting day, night, and marginal weather Combat Search and Rescue (CSAR) operations to recover isolated personnel in hostile or permissive environments. Due to the advancing age and current attrition rates of the HH-60G, the Air Force must continue to modify existing HH-60G helicopters while utilizing the Operational Loss Replacement program to meet Combatant Command requirements until we can fully recapitalize with the Combat Rescue Helicopter (CRH) program. The CRH will be specifically equipped to conduct CSAR across the entire spectrum of military operations. The FY20 Budget adds one test aircraft to bring the total fleet to 113 air vehicles. The Air Force has fully funded the CRH program to meet National Military Strategy objectives through Personnel Recovery missions. The FY20 Budget requests $22.7 million and $1.1 billion for the HH-60G and CRH programs, respectively.

UH-1N

The UH-1N Replacement helicopter is an element of the Air Force nuclear enterprise reform initiatives and also supports operational airlift within the National Capital Region. Last September, the Air Force awarded the $2.38 billion fixed price UH-1N Replacement contract. This contract will deliver up to 84 replacement helicopters, training devices, and associated support equipment to replace the legacy UH-1Ns. The FY20 Budget requests $171 million for the UH-1N Replacement Program, which will fund the continued integration of non-developmental items, the non-recurring engineering work required to certify the modified air

vehicle, and preparations for the test program. The first two test aircraft will deliver in first quarter FY20.

Intelligence, Surveillance, and Reconnaissance

Aligned with the National Defense Strategy, the Air Force is aiming to reorient the Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise by aligning ends, ways, and means to address the peer threat environment through the increased use of human-machine teaming. The end goal is a ready Next Generation ISR Enterprise possessing a decisive advantage for the warfighter while remaining competent across the entire spectrum of conflict.

To meet the challenges of a highly contested environment, the future ISR portfolio will consist of a multi-domain, multi-intelligence, collaborative sensing grid that utilizes advanced technology; it will be resilient, persistent, and penetrating to support both kinetic and non-kinetic capabilities alike. The FY20 budget submission takes the first steps towards repurposing, retooling, automating and stabilizing the force to ensure the ISR Enterprise can achieve this vision within the next decade. The Air Force aims to increase both the quality and quantity of ISR capabilities with fewer Airmen while remaining dominant across the Range of Military Operations. The very innovation and technologies our Airmen have created in the field will allow our entire ISR Enterprise to advance and posture for operations in the Digital Age.

MQ-9

The Air Force's FY20 investment funding request of $1.1 billion will continue MQ-9 fleet modernization efforts aimed at providing cutting edge capabilities to the Combatant Commands. To date the MQ-9 fleet has flown approximately 2 million hours, with 91% of those hours supporting combat operations. This extraordinary level of warfighter support is facilitated by a unique program architecture in which MQ-9 sustainment and modernization efforts are

managed as separate, yet fully integrated and complementary programs of record. This allows the Air Force to focus on operating and sustaining fielded MQ-9s while robust development and testing of planned modernizations is conducted in parallel. This strategy keeps the MQ-9 relevant with regards to the needs of the Combatant Commands while at the same time addressing future and emerging requirements. By structuring this way, mature and proven upgrades for the program at large are delivered when and where they are needed.

MQ-9 modernization efforts include the new Block 50 Ground Control Station currently in development, a new DAS-4 sensor package, an Extended Range enhancement for Block 5 aircraft and an effective and reliable open systems architecture. Additionally, the MQ-9 program is actively engaged in mitigating the operational and maintenance impacts of sustaining a multi-configuration fleet as well as enabling airspace integration and access. The desired end state is a 100% Block 5 MQ-9 fleet operated exclusively by Block 50 Ground Control Stations in Mission Control Element operations, with Block 30 Ground Control Stations used solely for launch and recovery operations.

RC-135

The Air Force is committed to sustaining and upgrading the RC-135 fleet as it continues to be our most capable, relevant and viable signals intelligence platform. Continued modernization utilizing rapid acquisition and fielding processes is critical as we address emerging peer threats and the return to great power competition. The RC-135 is critical to our decision advantage as it provides vital intelligence data at unrivaled speeds to both the national-level intelligence community and the tactical-level warfighter.

The FY20 investment funding request of $289.9 million facilitates mission system improvements for the entire RC-135 variant fleet. Efforts include the automation of additional

search and detection capabilities, improved near-real-time data distribution and collaborative processing, exploitation and dissemination supported by enhanced artificial intelligence algorithms. Finally, our partnership with the United Kingdom's Royal Air Force on the RC-135 continues to set the standard for cooperative efforts that strengthen alliances while increasing partner interoperability.

RQ-4

The RQ-4 Global Hawk unmanned aircraft system provides high altitude, long endurance, all weather, wide area reconnaissance and surveillance. The FY20 investment funding request of $257.5 million, $1.6 billion across the FYDP, furthers modernization efforts, to include MS-177 sensor integration, a ground segment modernization program and a communications system modernization program.

The MS-177 sensor is on track for Initial Operating Capability in the third quarter of FY19. The MS-177 will utilize the Block 30 ISR Payload Adapter, which has been fully tested and approved for future modifications. The Ground Segment Modernization Program is progressing smoothly, with installation of upgraded cockpits at Grand Forks Air Force Base and Beale Air Force Base projected for completion in FY20. Finally, the program's efforts to modernize ground and air vehicle communications equipment is also moving forward. The Communications System Modernization Program will improve RQ-4 communications capability while alleviating Diminishing Manufacturing Source (DMS) issues with current equipment.

Multi-Domain Command and Control

In future conflict, the prerequisite to achieving a strategic advantage over a peer competitor will be the ability to exercise Multi-Domain Command and Control. The Air Force approach to Multi-Domain Control and Control is focused on complicating our future

adversaries' abilities to defend themselves. The Air Force is developing a Multi-domain Operations Center to fill a joint capability gap in command and control across regional and functional combatant commands. In FY20, the Air Force will experiment with enterprise data to address network challenges with a goal of eventually fielding a "Data Lake" to serve as a command and control platform across air, space, and cyber domains. We plan to have an initial capability by FY22 and then continuously expand the capability through rapid software acquisition.

Advanced Battle Management System

The Advanced Battle Management System (ABMS) will realize the vision of multi-domain command and control to propel our warfighting capability through a layered family of systems construct. We are striving for the capability where any sensor can talk to any shooter whether in space, on land, at sea, in the air, or in cyberspace. Our aim is to have intelligence and targeting data transformed into timely and actionable information through trusted networks and intelligent algorithms that enable our people to focus on decisions. In this construct, information is a service, rather than a platform, and the layers of sensing and the communication pathways will provide reliability and assurance in a contested environment.

We have started reviews to evaluate existing and emerging potential technologies and platforms across the Defense Department, the Intelligence Community, and the commercial world, to perform integrated analysis of the capability of various options to contribute to the fight and prioritize investment over time. We are beginning to develop requirements and standards for engineering discipline during execution, and all along the way to challenge ourselves and our Labs, commercial, and government partners to demonstrate capability early. As we pursue ABMS, we will maintain the right mix of legacy and future capabilities over time to be ready to

fight. We are dedicated to pursuing ABMS thoughtfully. In total, from FY19-FY24, the Air Force is funding $3.8 billion towards the pursuit of ABMS across supporting programs. The FY20 PB request includes $525.5 million for investments across sensors, battle management command and control, communications, and architecture activities.

To date there have been no changes to the Joint Requirements Oversight Council requirements for the ABMS Initial Capabilities Document. The Initial Capabilities Document addresses JSTARS requirements for ground centric requirements, in addition to air centric targets as well. ABMS will be able to perform the mission sets associated with both the JSTARS and AWACS platforms and possibly assume other roles of the Theater Air Control System. Additionally, Ground Moving Target Indicator (GMTI) requirements are being folded into the overarching ABMS architecture.

We are moving forward on ABMS, with the Analysis of Alternatives beginning in January 2019. It is being accomplished on a compressed schedule with release of results expected in the Fall 2019 timeframe. The on-going Analysis of Alternatives addresses our ability to conduct both the air moving target indicator (AMTI) mission and ground moving GMTI mission from permissive to highly contested environments in a disaggregated manner.

Recently we hired a Chief Architect, as a permanent Senior Executive Service position, and he officially began work in this month. His first of many tasks will be to oversee the ABMS architecture design, enterprise communications and integration across programs. He will also identify technologies to enable horizontal and vertical integration across operating environments and warfighting domains.

Air Operations Center/Kessel Run

Air Operations Center (AOC) Weapon System interoperability with the Multi-Domain Command and Control (MDC2) vision remains essential to the AOC way ahead. The fielded AOC Weapon System Increment 10.1 legacy system will not support the MDC2 vision without significant improvements and modernization, and the Air Force is committed to fielding a modern architecture for the AOC that enables MDC2's goal of a common command and control platform. The FY20 PB request includes $148 million to support sustainment and the additional AOC development capacity required to retire the AOC 10.1 infrastructure and software while leveraging modern commercial software best practices. This year's budget request is required for the AOC to remain viable and will result in faster decision making capability, leading to more success in combat when fighting against a near-peer adversary.

Kessel Run

We are revolutionizing the way we build and deliver software. The Air Force's Software Factory, the Kessel Run organization, is proving we can get valuable software released faster, with higher quality and reduced risk using an agile software development operations (DevOps) approach. This approach focuses on obtaining immediate user feedback, allowing for rapid delivery of capability that matters most to the warfighters. Kessel Run's initial effort, the AOC Pathfinder, was successfully completed in July 2018 and transitioned to the AOC Weapon System Block 20 development effort using Section 804 authorities of the FY16 NDAA. The Air Force appreciates the use of these rapid prototyping and rapid fielding authorities, which have created a potential two-year schedule savings to retire the outdated legacy AOC 10.1 baseline.

We are leveraging the flexibility in these authorities to not only make development faster and delivering capabilities in weeks instead of years, but to also achieve better results for

planning, executing, and assessing theater-wide air and space operations. To date, we have successfully deployed capabilities at Langley Air Force Base, Al Udeid Air Base and Osan Air Base to prove out agile DevOps at scale. Within these deployed capabilities, we have demonstrated the ability to increase the speed of initial software product delivery by as much as 83 percent, and the ability to successfully deliver software application updates to users within hours. The Kessel Run organization also offers Enterprise Services, has expanded beyond AOC's current 17 applications, and is developing a diverse portfolio of 12 additional applications including business enterprise systems and a logistics information system for the F-35.

Modular Open Systems Approach

Modular, open systems, based in common and consensus based standards, reduces acquisition and lifecycle costs, improves innovation and competition, simplifies technology refresh, improves interoperability, and enables cheaper and faster modernization. The Open Architecture Management Office, established in January 2019, is posturing to be an Air Force wide office of expertise for common standards and open architecture efforts. The Open Architecture Management Office, located under the Air Force Life Cycle Management Center, currently manages the Open Mission System and Universal Command and Control Interface initiatives. These consensus based standards initiatives are being implemented on major weapon systems, such as the F-22 and B-52 Radar Modernization Program. There are also significant efforts to ensure these standards are compatible with other consensus standards such as the Future Airborne Capabilities Environment and Sensor Open System Architecture. The Air Force efforts in modular, open systems will enable rapid and reduced cost modernization.

FUTURE CAPABILITY

To compete against rising peer adversaries during this time of unprecedented commercial technology change requires a competitive acquisition system: one that is faster and more agile than all rivals. Our analysis, including multiple war simulations, workshops and wargames, clearly shows we must adopt the latest technology and deliver capability faster to stay ahead in the near-peer fight.

To achieve our National Defense Strategy, "*the delivery of performance at the speed of relevance*" matters. We must design, build, integrate and field systems faster than any adversary. That is why we have taken full advantage of rapid acquisition authorities to accelerate our programs to maintain our cutting edge. Through authorities given to us by Congress, like section 804 and tailoring traditional acquisition approaches to match the program needs, we are trimming excess, non-statutory steps that have previously slowed programs down. As of the end of February 2019, we have saved 88.5 years through the use of tailored acquisitions and Section 804 authorities. The initial goal of saving 100 years will be accomplished in less than one year of pursuit. As a result, we are getting better results and meeting warfighter needs faster. For instance, using section 804 authorities, the Air Force is leading the development B-52 Commercial Engine Replacement Program, F-22 Capability Pipeline and Unified Platform. Stripping years from F-22 and Unified Platform programs are reaping the benefits as they shift to Agile Development Operations, accelerating delivery to the warfighter by over seven years. With the B-52 effort, we are duplicating commercial practices and aim at getting the new engine fielded three and a half years sooner than under a traditional Major Defense Acquisition Program.

Another contributor to fielding tomorrow's Air Force faster is agile software development. With the establishment of the Program Executive Office Digital, Kessel Run and Kobayashi Maru software factories, and Software Engineering Squadrons, we are scaling the successes of recent pathfinders to implement modern commercial software development practices across the Air Force to speed delivery and close cyber vulnerabilities more rapidly.

Faster acquisitions go hand-in-hand with smarter ones. One area where we are applying innovative thinking is in the area of sustainment. The new Air Force Rapid Sustainment Office has Program Executive Office authorities to drive innovation in sustainment programs, lower cost and improve readiness. The office is developing, transitioning and training Air Force maintainers to use technologies found in commercial manufacturing. Technological advances such as artificial intelligence, robotics and 3-D printing are being incorporated into our labs to lower costs and speed-up repairs for our warfighters. To date, the Air Force has certified broad swaths of metal and plastic additively manufactured parts, cold spray repair at our depots in Tinker and Robbins AFB, and over 140 predictive maintenance algorithms, saving cost while increasing readiness.

Other smart practices center around the industrial base, both growing it and getting performance out of it. Over the past year, the Air Force saved the taxpayer over $15 billion through competitively awarding major contracts. We are committed to getting the most out of competition through maintaining stable requirements and remaining transparent with industry. We are also using new authorities, including Section 804, for competitive prototyping in major programs like B-52 Commercial Engine Replacement Program and Next Generation Overhead Persistent Infrared to expand our industrial base while lowering overall risk to the programs. Robust experimentation and prototyping are also enabling the Air force to develop

disruptive technologies to retain our cutting edge while we sharpening industry's. New organizations, such as the Air Force Warfighting Integration Capability, AFWERX, and the Strategic Development Planning and Experimentation Office, are providing new ideas and tools to increase overall speed of idea to pathfinder to program.

Outside of the Defense Industrial Base, we know many innovative ideas are being birthed in U.S. startup companies and that we are largely missing out on them. In order to break down barriers for small businesses who want to work on our toughest challenges, we have created an innovative new contracting approach. Using a one-page contract and a small-dollar contracting mechanism that can "pay-in-a-day", we invited small businesses to pitch their ideas to the Air Force on March 6th and 7th. Of the 407 proposals received, we invited 59 companies to NYC to pitch their proposals. We were able to awarded 51 contracts valued at $8.75 million, with $3.5 million awarded that day within 3-15 minutes. The week before Pitch Day we also held a Contracting Sprint, 25 February through 1 March, awarding 183 contracts and continuing to prove the concept of rapidly awarding contracts. Overall, this shows that we are able to move faster and smarter by awarding 242 Small Business Innovation Research contracts valued at $75 million in the span of less than two weeks and expanding working relationships with startup companies and small businesses.

Based on the success, we plan to repeat Pitch Days to increase Air Force access to a broader demographic of small disruptive companies revolutionizing U.S. and global technology industries. As we move into the future of building our Air Force for the future faster and smarter, the Fiscal Year 2020 President's Budget that has been submitted for your consideration is the avenue for us to fund the critical programs and initiatives to get there.

We want to give credit and thanks to Congress. Without the Rapid Acquisition Authorities there would still be a half-century worth of unnecessary time in 20 of our programs that are using the new authorities in Section 804 to develop and field faster. Additionally, we appreciate the delegation of Milestone Decision Authority to the Service Acquisition Executive; we have subsequently delegated all medium and small programs to the field, increasing overall decision-making capacity and speed. Because of Congressional action, we can focus on performance—rather than process—in our rapid capability development efforts.

We have many other initiatives that will commence later this year, all centered speeding our process to remain competitive for tomorrow's Airmen as we remain dominant for today's. There will be no silver medal for building the world's second-best Air Force. We hope the steps we have taken with the authorities you have given us demonstrate that we do not intend to.