

UNITED STATES AIR FORCE

ACQUISITION

ANNUAL REPORT

FISCAL YEAR

2018

COST-EFFECTIVE MODERNIZATION



WWW.AF.MIL

“

We cannot win in this great power contest with an acquisition system from the Cold War. We must move fast to stay competitive, and we are fundamentally transforming what we buy, how we buy it, and who we buy it from.”

.....
Heather Wilson
Secretary of the Air Force

MESSAGE FROM THE SECRETARY OF THE AIR FORCE

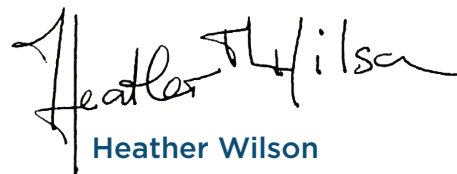
The National Defense Strategy recognizes a return to great power competition. To meet the requirements of the National Defense Strategy, the Air Force must build a more lethal and ready force. We are implementing acquisition reform to field tomorrow's Air Force faster and smarter. There are three efforts I would like to highlight for you in this year's report.

First, we are taking advantage of authorities that Congress gave us in recent National Defense Authorization Acts to accelerate prototyping and experimentation. We reduce risk by building and learning early. We improve quality and speed through sharpened requirements.

Second, we are using Other Transaction Authority agreements to award contracts faster, and with more appropriate terms. In 2018, Congress made these agreements the preferred method to fund science and technology and prototyping programs. These agreements also allow us to work more easily with small businesses and non-traditional defense companies. As one example, more than 220 companies are now part of the Space Enterprise Consortium sponsored by the Space and Missile Systems Center. Nearly 80% of those companies have not done business before with the Department of Defense.

Third, whenever possible, we are shifting to agile software development across the Air Force. Technology is changing too rapidly for an industrial-age approach to designing and fielding tomorrow's software. End-users and designers must work together to deliver minimum viable products quickly, followed by continuous incremental improvements. Our Airmen are now delivering software capabilities to the warfighter on a daily basis.

As we improve the way we buy things and implement the authorities the Congress have given us, we will be transparent with the public on the results of our work. This annual report reflects that commitment. We must get ideas from the lab bench to the warfighter faster to defend our nation, and we will.



Heather Wilson
Secretary of the Air Force

“

The Air Force can ill afford to maintain its historical technology development strategy. Instead, we must bet on identifying, adapting, and updating technologies faster than all enemies. Acquisition speed and agility must be—and is—our big bet for the future.”

.....
*Dr. William Roper
Assistant Secretary of the Air Force
(Acquisition, Technology & Logistics)*

MESSAGE FROM THE ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION, TECHNOLOGY AND LOGISTICS

Capturing the breadth of what the Air Force develops, acquires and sustains is no easy feat. The programs and initiatives in this second annual report tell only a part of the story. Every day I learn another way that acquisition is the backbone of the Air Force. Every day I am impressed by the dedication and creativity of our acquisition workforce. Our new National Defense Strategy impresses upon us the necessity to discard old ways of doing business in order to rapidly advance our current capabilities. With the support of Congress and the Secretary and Chief of the Air Force, I have seen the workforce rise to the occasion.

Speed, with discipline, is our top priority. Less than a year into the Century Challenge to strip 100 years of unnecessary time out our programs, we are more than 70% of the way to surpassing our goal. Speed is our top priority because everyone involved in the program has the potential to impact its speed. From the Program Manager to the Palace Acquire Intern, everyone involved has the ability to push the envelope of the possible and challenge any process that slows down a program.

As excited as I am to share a portion of the work we have accomplished in the past year, I am more excited for next year's report when the results of speed with discipline will come to fruition. In Air Force acquisition, we buy everything from stealth bombers to hospital blankets. Critical thinking is necessary to tailor the traditional, generic acquisition approach that has long overshadowed our programs. As I said, I'm impressed and do not expect to be disappointed.

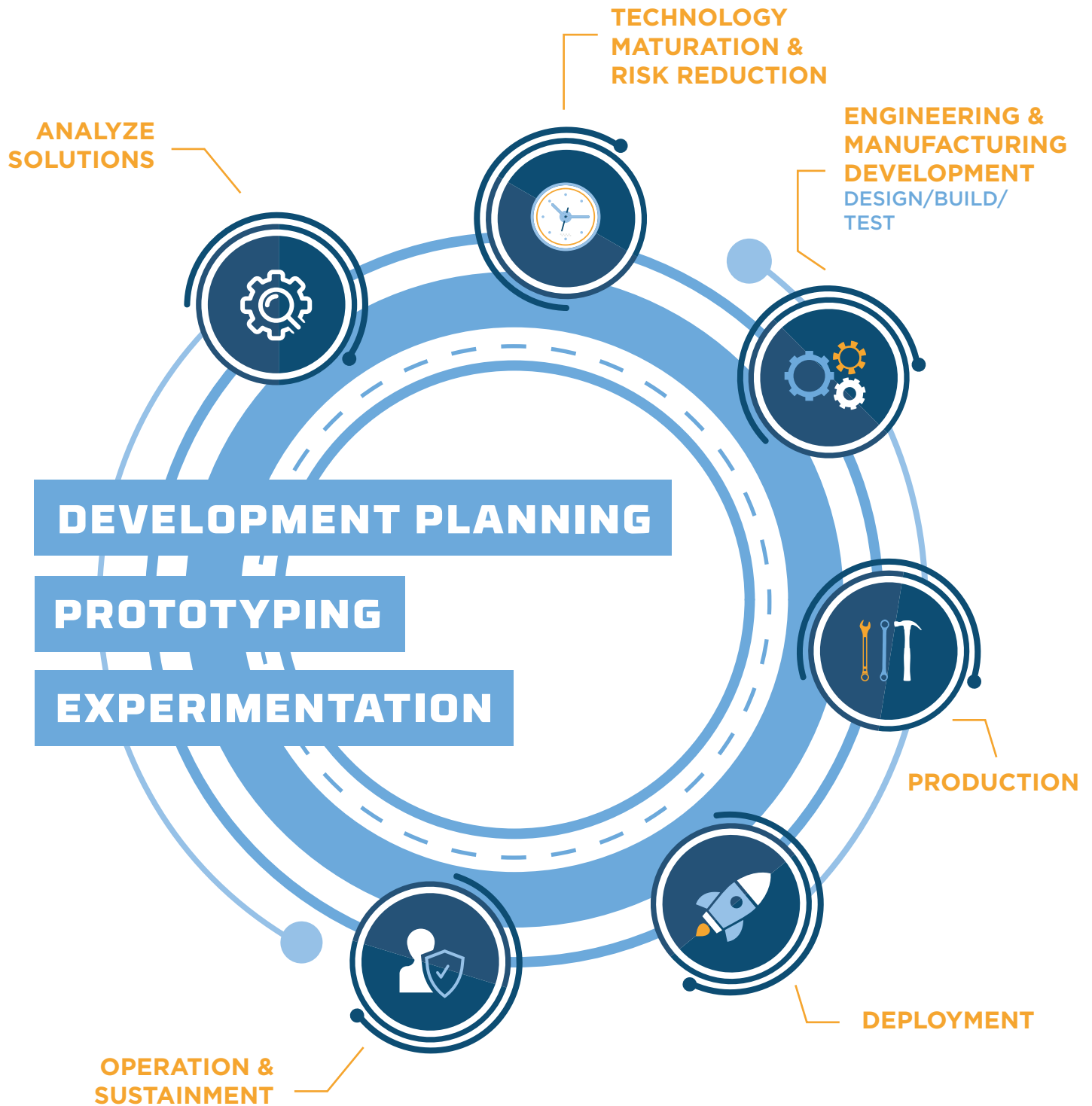


William B. Roper, Jr.
Assistant Secretary of the Air Force
(Acquisition, Technology & Logistics)

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THE ACQUISITION LIFE CYCLE



FIELDING TOMORROW'S AIR FORCE FASTER AND SMARTER

SPEED TO WIN

Speed of acquisition matters for the Air Force to achieve our National Defense Strategy. The invaluable authorities Congress provided to the Air Force in 2016 and 2017 enabled us to accelerate programs that maintain our cutting edge. These new authorities are changing the way we get capability from the lab bench to the warfighter. We are fielding tomorrow's Air Force faster and smarter using prototyping, experimentation and tailored acquisition.

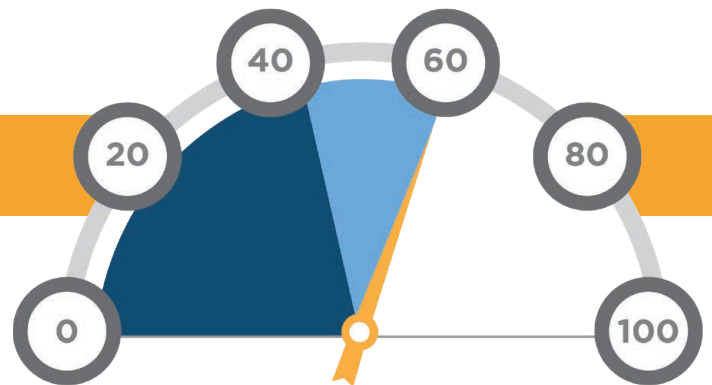
FASTER

CENTURY CHALLENGE

We must design, build, and field systems faster than any adversary. We set an aggressive goal to strip **100 YEARS** of unnecessary schedule from our program plans. As of September 30, we have already reached 62 years.

SPEED WITH DISCIPLINE

The traditional acquisition approach buys everything from bombers to blankets. But, a generic approach doesn't fit all programs perfectly. More importantly, a generic approach can even stall solutions from reaching warfighters. Disciplined internal review of our programs allows us to smartly remove excess steps from the acquisition process. We are committed to transparency as we accelerate and will submit triannual rapid acquisition reports to Congress for 804 programs.



PROTECTED
TACTICAL
SATCOM



-3
YEARS



-4
YEARS



F-22
CAPABILITY
PIPELINE

The Air Force has an amazing history of prototyping to shorten design cycles. We are returning to our roots and rediscovering why prototyping is an acquisition best practice.



**NEXT-GEN OVERHEAD
PERSISTENT
INFRARED**

 **-3.5
YEARS**



**-5
YEARS** 

**HYPERSONIC
CONVENTIONAL
STRIKE WEAPON**

AGILE SOFTWARE

Commercial software practices are shortening deliveries from years to months...even weeks. We stood up “PEO Digital” to help spread best practices across the Air Force.



**~4
MONTHS**



**“MAD HATTER”
F-35 AUTONOMIC
LOGISTICS
INFORMATION
SYSTEMS**

Contract to App Delivery



**~6
MONTHS** 

**SPACE COMMAND
AND CONTROL**

Contract to Software
App Delivery

SMARTER

WORKING WITH STARTUPS

Innovating with the Air Force must be easy and energizing. We developed a one-day, one-page contract with same-day payment to work with startups and small businesses at unprecedented speeds.

TARGETED COMPETITION

We're reaping the benefits of savvy source-selection and competition in major programs. In 2018, we achieved over \$17.8 billion in savings.



INNOVATION IN SUSTAINMENT

Sustaining our operations accounts for more than 70% of our expenses, so we created a new office to drive sustainment innovation. The Rapid Sustainment Office is well on its way to paying for itself in savings in less than two years.





A PLACE FOR INNOVATION

Innovators. The Air Force has driven the innovation of technology – such as GPS, drones, and advanced composites – that has both propelled our nation’s military superiority and improved the day-to-day lives of our citizens. Just as it has always done, the Air Force acquisition workforce is creating, integrating, and fielding the best technologies in creative operational ways that will maintain ours as the greatest Air Force in the world. Today, even more innovation is happening outside the government than inside of it. The creativity, initiative and spirit of American Airmen and American industry must now be leveraged together in new domains in more contexts to solve problems faster.





MISSION

Cost-effectively modernize to increase the lethality of the force.

VISION

Rapidly deliver enduring, world-class capabilities to assure air, space and cyberspace dominance for the nation and our allies.

PRIORITIES

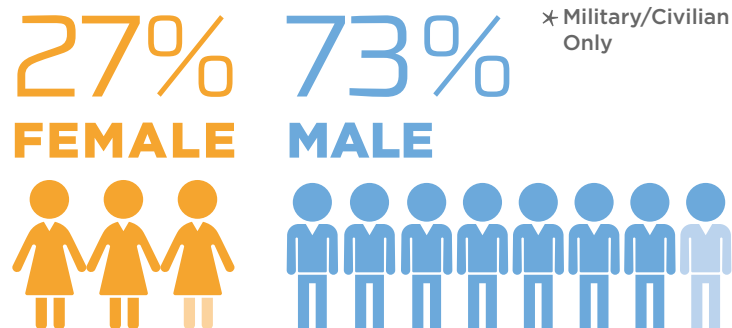
- 01** Keep programs within cost, schedule and performance parameters
- 02** Tailor the acquisition process to provide capability to the warfighter
- 03** Develop the acquisition workforce and delegate authority to the lowest appropriate level
- 04** Drive innovation to secure our future
- 05** Strengthen our alliances because we are stronger together

WHO WE ARE

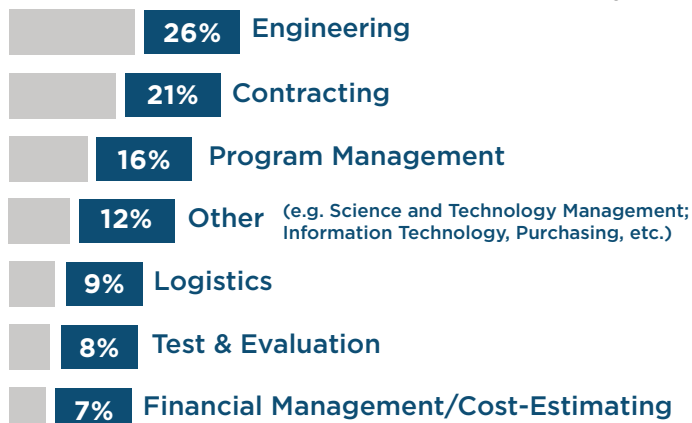


PERSONNEL: BY NUMBERS

MORE THAN 51,000 TOTAL FORCE PERSONNEL



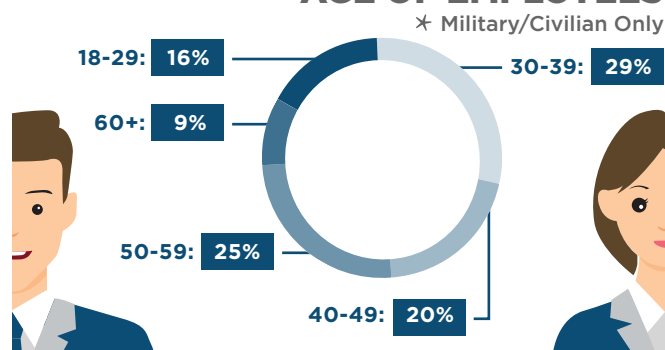
WORKFORCE CAREER FIELDS * Military/Civilian Only



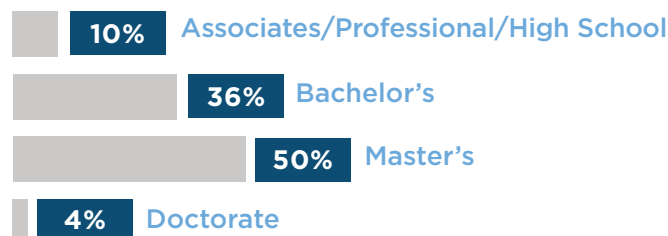
As a service we deliver high-quality weapons systems to the warfighter by developing, acquiring, and sustaining new programs and our acquisition personnel facilitate these important endeavors.

*General David L. Goldfein,
Air Force Chief of Staff*

AGE OF EMPLOYEES



EDUCATION: HIGHEST DEGREE COMPLETED



WHERE WE ARE: * As of Sept 30, 2018

PROGRAM EXECUTIVE OFFICER LOCATIONS

AQ WORK CENTERS

LOS ANGELES AFB
PEO Space Systems

KIRTLAND AFB
PEO Strategic Systems

GUNTER ANNEX
PEO Business and Enterprise Systems

EGLIN AFB
PEO Weapons

ARLINGTON, VA
JPEO F-35

HANSCOM AFB

PEO Digital
PEO Command, Control, Communications, Intelligence and Networks
PEO Nuclear Command, Control and Communications

JOINT BASE ANACOSTIA-BOLLING

PEO Combat and Mission Support
PEO Rapid Capabilities

WRIGHT-PATTERSON AFB

PEO Fighter/Bomber
PEO Mobility
PEO ISR and SOF
PEO Tankers

PEO Agile Combat Support
PEO Presidential Airlift Recapitalization
Technology Executive Officer

ACQUISITION BUDGET



6 ACQUISITION CATEGORIES

Acquisition programs are organized into three acquisition categories - or ACATs and three business acquisition category or BCATs

ACAT I

Eventual expenditure of more than **\$480M** in RDT&E, or more than **\$2.79B** in procurement, in FY 2014 dollars

ACAT II

Eventual expenditure of more than **\$185M** in RDT&E or more than **\$835M** in procurement in FY 2014 dollars

ACAT III

Does not meet the criteria of ACAT I or ACAT II

ONE TEAM

556

PROGRAMS

48

ACAT I

41

ACAT II

371

ACAT III

2

BCAT I

9

BCAT II

85

BCAT III *As of: 20 Sept 2018

BCAT I

Expected total budget authority over the period of the current Future Years Defense Program in excess of **\$250M**

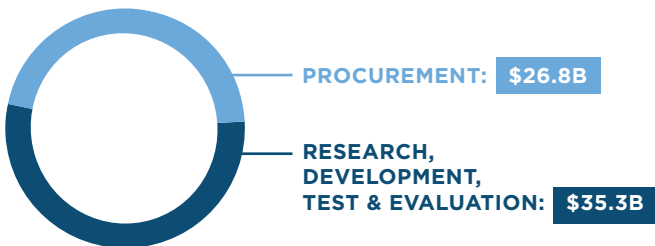
BCAT II

Expected total budget authority over the period of the current Future Years Defense Program in excess of **\$50M**

BCAT III

Does not meet the criteria for BCAT I or BCAT II

FY20 FUNDING - APPROPRIATION

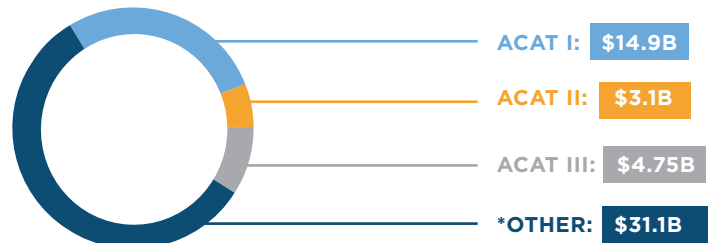


RDT&E: An appropriation intended for the development of a new system or to extend the performance of fielded systems.

PROCUREMENT: An appropriation intended to cover the necessary costs to deliver an item intended for operational use or inventory.

FY19 FUNDING BY ACAT RDT&E/PROCUREMENT

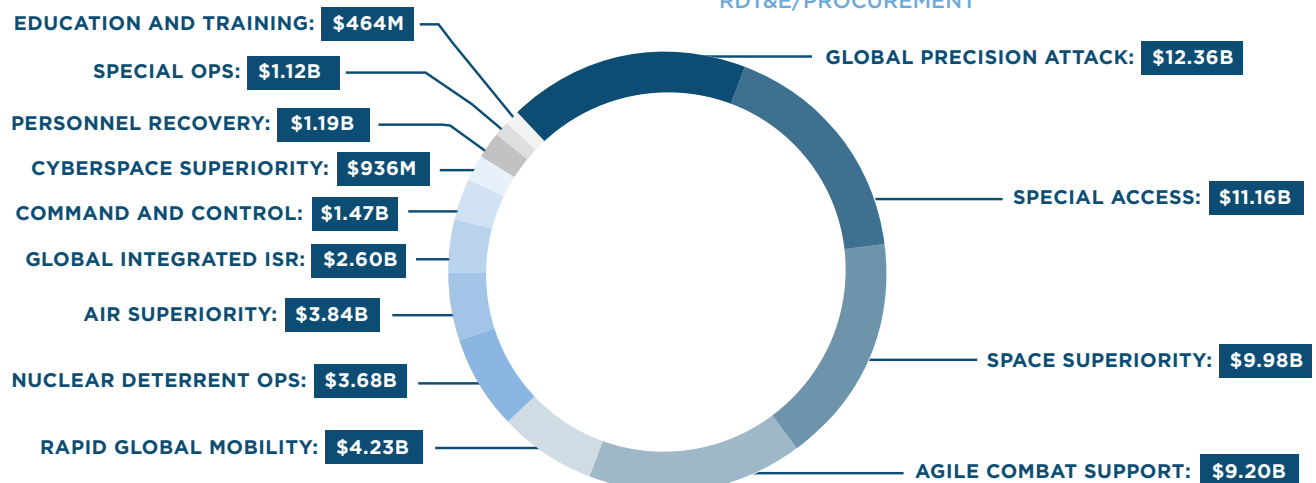
Unable to calculate FY20 ACAT breakouts until FY20 Presidential Budget flows to program management data systems.



*Includes: F-35, classified programs (including B-21), science and technology efforts, pre-acquisition activities, acquisition workforce, etc.

FY20 FUNDING - CAPABILITIES

RDT&E/PROCUREMENT

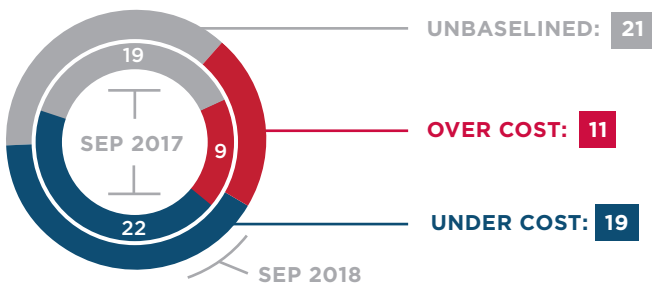




COST + SCHEDULE

The Air Force balances program cost, schedule and performance to meet warfighter needs and optimize taxpayers' dollars. Acquisition programs are organized into three categories (ACATs) based on level of spending. Baselines are used to show increases or decreases over time. These baselines provide a measure of accountability.

ACAT I - COST PERFORMANCE ORIGINAL BASELINE



Note: This number includes 2 BCAT I programs and 1 BCAT 2 programs formerly identified as ACAT IAC programs

11 PROGRAMS OVER ORIGINAL COST BASELINE

5 of those programs are between 0% and 5% over original baseline (Sep 2017 Value in Parentheses)

Mission Planning System, Increment 5 (14%)	16%
F-15 Eagle Passive/Active Warning and Survivability System	14%**
Family of Advanced Beyond-Line-of-Sight Terminals Force Element Terminal (-1%)	14%
B-2 Defense Management System Modernization (-1%)	13%
Deliberate and Crisis Action Planning and Execution Segments Increment 2B	8%**
Global Positioning System-III (6%)	5%

IMPROVED TO AT/UNDER 0%

(Sep 2017 Value in Parentheses)

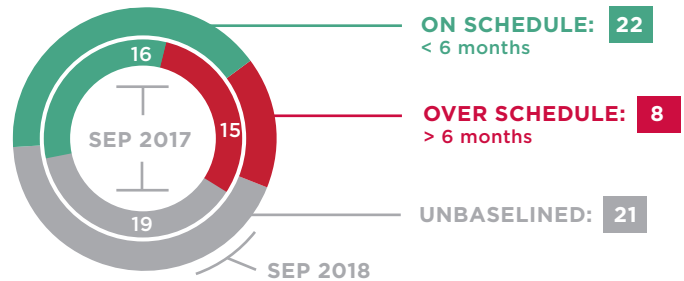
MQ-9 Reaper (7%)	-8%
Defense Enterprise Accounting & Management System (32%)	0%*

* Original baseline was reset | ** Did not have Sep 2017 data

ACAT I - TECHNICAL PERFORMANCE ORIGINAL and CURRENT BASELINE



ACAT I - SCHEDULE PERFORMANCE ORIGINAL BASELINE



Note: This number includes 2 BCAT I programs and 1 BCAT 2 programs formerly identified as ACAT IAC programs

8 PROGRAMS OVER ORIGINAL SCHEDULE BASELINE (Sep 2017 Value in Parentheses)

Family of Advanced Beyond-Line-of-Sight Terminals (78)	96 Months
Global Positioning System-III (25)	40 Months
Small Diameter Bomb II (28)	30 Months
Advanced Medium-Range Air-to-Air Missile (24)	24 Months
KC-46A Pegasus (14)	20 Months
Advanced Extremely High Frequency 5 & 6 (13)	13 Months
Space-Based Infrared System (12)	12 Months
Joint Air-to-Surface Standoff Missile Extended Range (11)	11 Months

IMPROVED TO AT/UNDER 6 MONTHS GROWTH

(Sep 2017 Value in Parentheses)

Next-Generation Operational Control System (66)	0 Months*
Defense Enterprise Accounting & Management System (62)	0 Months*
Joint Space Ops Center Mission System, Increment 2 (32)	-1 Months*

* Original baseline was reset

ORIGINAL BASELINE

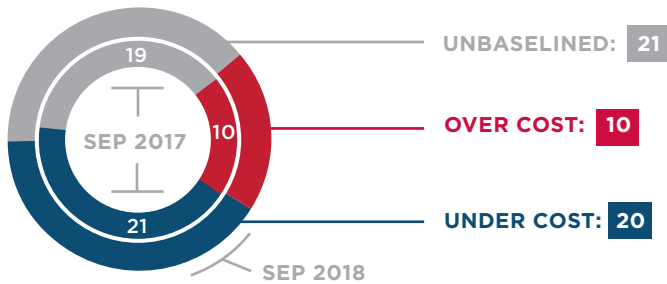
The **original baseline** reflects the cost, schedule and performance parameters as approved by the milestone decision authority in the program's first acquisition program baseline. Cost, schedule and performance parameters will only be revised in the case of recertification post critical Nunn-McCurdy breach or Critical Change.

CURRENT BASELINE

The **current baseline** reflects the current cost, schedule and performance parameters as approved by the milestone decision authority in the current acquisition program baseline. The current baseline differs from the original baseline as a result of updates made at milestones or decision points, major program restructures or breaches.

+ PERFORMANCE: BY NUMBERS

ACAT I - COST PERFORMANCE CURRENT BASELINE



Note: This number includes 2 BCAT I programs and 1 BCAT 2 programs formerly identified as ACAT IAC programs

10 PROGRAMS OVER CURRENT COST BASELINE

4 of those programs are between 0% and 5% over original baseline (Sep 2017 Value in Parentheses)

F-15 Eagle Passive/Active Warning and Survivability System	14%**
B-2 Defense Management System Modernization (-1%)	13%
Family of Advanced Beyond-Line-of-Sight Terminals Force Element Terminal (-1%)	8%
Deliberate and Crisis Action Planning and Execution Segments Increment 2B	8%**
Mission Planning System, Increment 5 (4%)	5%
Small Diameter Bomb II (3%)	5%

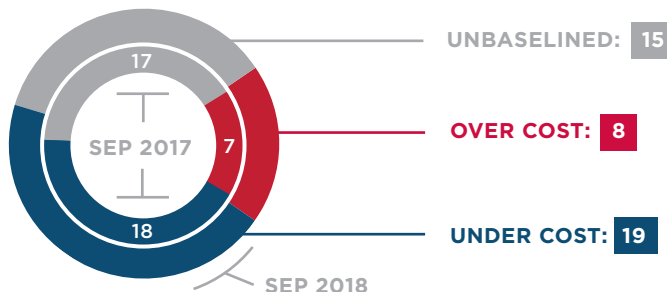
IMPROVED TO AT/UNDER 0%

(Sep 2017 Value in Parentheses)

MQ-9 Reaper (6%)	-8%
Defense Enterprise Accounting & Management System (32%)	0%*

* Original baseline was reset | ** Did not have Sep 2017 data

ACAT II - COST PERFORMANCE CURRENT BASELINE

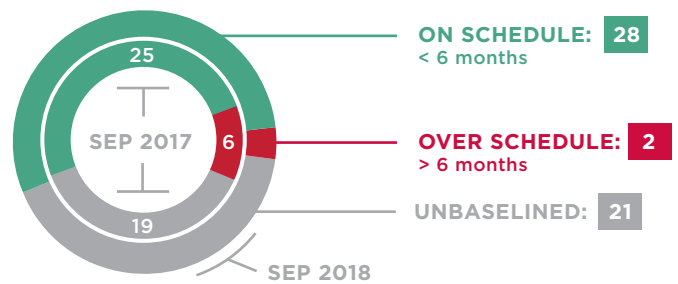


8 PROGRAMS OVER CURRENT COST BASELINE

5 of those programs are between 0% and 5% over original baseline (Sep 2017 Value in Parentheses)

B-2 Flex Strike Phase I (0%)	10%
Miniature Air-Launched Decoy - Jammer (7%)	7%
F-15 Advanced Display Computer Processor II (0%)	7%

ACAT I - SCHEDULE PERFORMANCE CURRENT BASELINE



Note: This number includes 2 BCAT I programs and 1 BCAT 2 programs formerly identified as ACAT IAC programs

2 PROGRAMS OVER CURRENT SCHEDULE BASELINE

(Sep 2017 Value in Parentheses)

Small Diameter Bomb II (10)	12 Months
Space-Based Infrared System (12)	12 Months

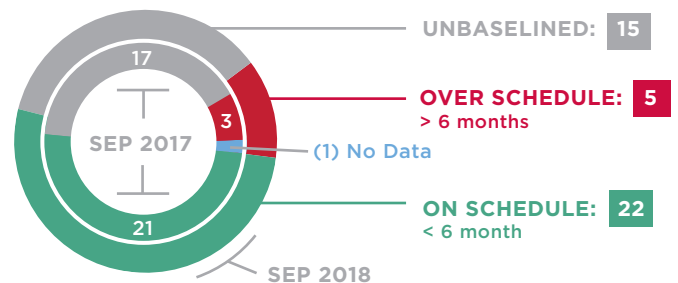
IMPROVED TO AT/UNDER 6 MONTHS GROWTH

(Sep 2017 Value in Parentheses)

Defense Enterprise Accounting & Management System (62)	0 Months*
Next-Generation Operational Control System (33)	0 Months*
Global Positioning System-III (25)	0 Months*

* Original baseline was reset

ACAT II - SCHEDULE PERFORMANCE CURRENT BASELINE



5 PROGRAMS OVER CURRENT SCHEDULE BASELINE

(Sep 2017 Value in Parentheses)

LGM-30G Flight Test Telemetry and Termination System (0)	18 Months
E-3 Diminishing Manufacturing Sources Replacement of Avionics for Global Operations and Navigation (0)	18 Months
A-10 Wing Replacement Program (0)	8 Months
B-2 Flex Strike Phase 1 (6)	8 Months
F-16 Block 40/50 Mission Training Center (8)	8 Months

NOTE: The ACAT II portfolio does not have sufficient key performance parameter data to perform a yearly analysis. Due to a lack of historical data, ACAT II programs cannot be tracked to their original baseline. The ACAT III programs do not have sufficient baselines or data to perform annual cost, schedule or performance analysis.



COST-EFFECTIVE MODERNIZATION

A balance must be struck between the sustainment of the legacy systems that make this the world's greatest Air Force today, and the development of the new systems that will maintain that status in the future. One example of this is the plan for our bombers, which will see us update the B-52 fleet and replace its engines, continue necessary B-1 and B-2 modifications to keep them relevant, all as we develop the B-21s until they come online. We are committed to reducing costs across program life cycles, and ongoing initiatives have avoided more than \$15 billion in cost since 2011.

Note for Program Pages 20-72: *In last year's report, the original unit cost was calculated in fiscal year 2015 dollars. This year, the original unit cost is calculated in fiscal year 2018 dollars.*





WHAT WE DO

GLOBAL POWER

Global power is the Air Force’s ability to threaten or strike any target, anywhere in the world, to assert national sovereignty, safeguard joint freedom of action, and achieve swift, decisive, precise effects. From bombers, fighters and nuclear missiles, to conventional weapons and munitions, the global power acquisition team provides timely, accurate information to enable building and sustaining the most lethal Air Force in the world.

In 2018, the team ensured timely award of contracts supporting the nation’s nuclear enterprise modernization efforts, coordinated key upgrades to modernize fighters and bombers, and implemented the strategic plan to replenish the munitions inventory in support of close-air support missions against the Islamic State of Iraq and Syria and other missions around the globe.



FISCAL YEAR 2020
BUDGET \$21.96B

RESEARCH,
DEVELOPMENT,
TEST & EVALUATION **\$9.26B**

PROCUREMENT **\$12.70B**



IN SOURCE
SELECTION
N/A

IN OPERATION/SUSTAINMENT

- » A-10 Thunderbolt II
- » B-2 Spirit
- » B-52 Stratofortress
- » E-4B National Airborne Operations Center
- » F-15C/E Eagle/Strike Eagle
- » F-16 Fighting Falcon
- » F-22 Raptor
- » Minuteman III

IN DEVELOPMENT/PRODUCTION

- » Advanced Medium-Range Air-to-Air Missile
- » AGM-114 Hellfire Missile
- » AIM-9 Sidewinder
- » B-21 Raider
- » B61-12 Nuclear Bomb
- » Tailkit
- » F-35A Lightning-II
- » Ground-Based Strategic Deterrent
- » Joint Air-to-Surface Standoff Missile
- » Joint Direct Attack Munition
- » Long-Range Stand Off Missile
- » Massive Ordnance Penetrator
- » Minimum Essential Emergency Communications Network
- » Small Diameter Bomb-II



PORTFOLIO



AIR SUPERIORITY



NUCLEAR
DETERRENCE



GLOBAL PRECISION
ATTACK

Advanced Medium- Range Air-to-Air Missile

AIM-120D



GLOBAL
POWER

COST

2020 - 2024
President's Budget
\$2.46 Billion

2020
\$389
Million

ORIGINAL UNIT COST
\$1.47 Million

CURRENT UNIT COST
\$1.48 Million
(less than 1% increase)



SCHEDULE

Raytheon delivered the required AIM-120Ds to the warfighter in May 2012, which was two years behind the original date of May 2010.

CONTRACTING

Research, Development,
Test & Evaluation
Cost-Plus-Incentive-Fee and
Cost-Plus-Fixed-Fee

Production
Fixed-Price-
Incentive-Firm

The AIM-120D Advanced Medium-Range Air-to-Air Missile (AMRAAM) is an Air Force-led, joint Acquisition Category I program. The AIM-120D is the Air Force's and Navy's premier beyond-visual-range missile and the next evolution of AMRAAM.

This new version of the AMRAAM incorporates both software and hardware improvements, including GPS-aided navigation, an enhanced two-way data link, increased kinematic range, improved high-off-boresight capabilities and improved targeting accuracy. Two variants of the weapon are currently in production: the AIM-120D for the Air Force, Navy, Australia, and United Kingdom and the AIM-120C-7 for other foreign military sales.

The Navy declared AIM-120D initial operational capability in January 2015, followed by the Air Force in July 2015. The AIM-120D's capability against emerging threats is continually upgraded using the system improvement program for the AIM-120D and the advanced electronic protection improvement program for the AIM-120C7.

The AMRAAM is integrated on the F-15, F-16, F/A-18, F-22, F-35, and AV/8B. The AIM-120D program is buying more than 3,000 AIM-120Ds in full-rate production for the next five years, as well as supporting sustainment and providing enhanced capabilities through software upgrades.

AMRAAM PRODUCTION

FY2016	610
FY2017	706
FY2018	550
FY2019	538
FY2020	641

RAYTHEON MISSILE SYSTEMS
Tucson, Arizona

The System Program
Office is at Eglin
Air Force Base, Florida.



The B-2 Defensive Management System is part of the avionics package on the B-2 Spirit stealth bomber, which allows the aircraft to penetrate dense threat environments and bring massive firepower to even the most heavily-defended targets, with either conventional or nuclear weapons.

The B-2 Defensive Management System Modernization program upgrades the threat warning systems onboard by replacing aging antennas, electronics, display system, and an auto-router, which automates the re-planning of aircraft missions in flight. The updated system will allow the bomber to detect and avoid electronic threats, ensuring the B-2 can reach the intended targets in defense of our national security.

The B-2 Defensive Management System successfully completed Preliminary Design Review March 22, 2018, and the Critical Design Review November 8, 2018. The Service Cost Position for the program was updated June 4, 2018.

ORIGINAL UNIT COST
\$132.1 Million

CURRENT UNIT COST
\$149.0 Million
(13% increase)

COST

2020 - 2024
President's Budget
\$1.41 Billion

2020
\$294.4
Million

CONTRACTING

Engineering & Manufacturing
Development
Cost-Plus-Fixed-Fee,
with a Firm-Fixed-Price
engineering change
proposal to be
definitized
in early 2019

NORTHROP GRUMMAN
CORPORATION
Palmdale, California

SCHEDULE

Delivery of the first eight modified aircraft is currently estimated to be in June 2022, which is six months behind the original estimate of December 2021.

IMPLEMENTATION STRATEGY

Whiteman Air Force Base, Missouri, is the only permanent base for the B-2 Spirit stealth bomber. Whiteman can launch B-2 combat sorties directly from Missouri to any part of the globe to engage adversaries with nuclear or conventional weapon payloads.



Raider | B-21



GLOBAL
POWER

COST

2020 – 2024
President's Budget
\$19.8 Billion

2020
\$3.0
Billion

The Air Force remains committed to the Secretary of Defense's mandated \$550 million average unit cost requirement. (Base Year 2010)

CONTRACTING

Engineering & Manufacturing
Development
Cost-Plus-Incentive-Fee

Production
Fixed-Price-
Incentive-Firm

NORTHROP GRUMMAN
CORPORATION
Falls Church, Virginia

SCHEDULE

Initial capability
is planned for the
mid-2020s.

The government offices are located at Joint Base Anacostia-Bolling, D.C., and Wright-Patterson Air Force Base, Ohio.



The Air Force is pleased with how the program is moving forward. The B-21 Raider program is on the right track to make continued progress over the next few years as it now transitions from the design phase into a robust manufacturing phase that will ultimately produce our first B-21 test aircraft.

Heather Wilson
Secretary of the Air Force

Conventional and nuclear-capable bombers provide nuclear deterrence, global strike and nuclear strike capabilities.

The B-21 will replace part of our aging bomber fleet as a long-range, highly-survivable bomber, capable of carrying mixed, conventional and nuclear payloads, to strike any target worldwide.

The B-21 will provide operational flexibility for joint commanders, and it will be relevant across the spectrum of conflict. From raid to campaign levels, the B-21 will be able to penetrate modern air defenses to accomplish national objectives.

The Air Force will procure a minimum of 100 B-21 Raiders and expects initial capability in the mid-2020s, as well as nuclear certification within two years of declaring initial operational capability. Agile acquisition processes have been built into the B-21 development and procurement efforts to ensure the Air Force delivers system capabilities at the best value for taxpayers.

The B-21 is currently in the engineering and manufacturing development phase. The program completed a critical design review in November 2018 and is continuing with detailed design work.



Legacy B61s are nearing the end of their service life and require a life-extension program to address age-related issues. The B61-12 LEP consolidates four legacy B61 variants – modifications 3, 4, 7 and 10 – into one variant, mod 12. The addition of an Air Force-provided tail kit assembly with a digital interface enables consolidation of these four mods while maintaining military capabilities.

B61-12 LEP is a joint program between the Department of Defense and Department of Energy. The DoD is responsible for the B61-12 tail kit assembly development, weapon system integration and aircraft integration, while the DoE is responsible for the B61-12 bomb assembly. The joint program completed developmental testing on June 20, 2018, and successfully conducted all 31 developmental flight test events. The B61-12 transitioned from the engineering and manufacturing development phase to the production phase October 26, 2018.

ORIGINAL UNIT COST
\$1.6 Million

CURRENT UNIT COST
\$1.3 Million
(18% decrease)

COST

2020 – 2024
President's Budget
\$156.6 Million

2020
\$108.3
Million

CONTRACTING

Engineering & Manufacturing
Development
Cost-Plus-Incentive-Fee

Production
(Lot 1 Scheduled to be
awarded in the 3rd quarter
of fiscal year 2019)
Fixed-Price-Incentive
Firm Target Contract

SCHEDULE

The first asset delivery is currently estimated for August 2019, two months behind the original estimate of June 2019.

BOEING
St. Louis, Missouri

DEPLOYMENT STRATEGY

The System Program Office is located at Eglin Air Force Base, Florida. The B61-12 nuclear weapon will be part of the airborne leg of the U.S. nuclear triad and will provide support to NATO allies. The B61-12 will be integrated on the B-2A, B-21, F-15E, F-16C/D, F-16 MLU, F-35 and PA-200.



Eagle Passive/ Active Warning and Survivability System

F-15



GLOBAL POWER

COST

2020 - 2024
President's Budget
\$1.5 Billion

2020
\$200.6
Million

ORIGINAL UNIT COST
\$10.6 Million

CURRENT UNIT COST
\$12.1 Million
(14.1% increase driven by a
cut in units from 413 to 221)
includes four spares



SCHEDULE

Delivery of 24 F-15Es
is currently scheduled
for August 2022
to meet the required
assets available
milestone

CONTRACTING

Engineering & Manufacturing
Development
Cost-Plus-Incentive-Fee
(F-15C and F-15E)

Production
Firm-Fixed-Price
(Electronic Warfare
Kits F-15E)

BOEING
St. Louis, Missouri

IMPLEMENTATION STRATEGY

Mountain Home Air Force Base,
Idaho, and Seymour Johnson AFB,
North Carolina

Overseas Locations: Royal Air Force
Lakenheath, England and Kadena Air
Base, Japan.

The F-15 Eagle Passive/Active Warning Survivability System improves the F-15s ability to detect, identify, locate, deny, degrade, disrupt and defeat surface and airborne threats. The system will replace the current 40-year-old onboard electronic warfare self-protection system for 217 F-15Es. EPAWSS includes a new jammer, a new chaff-and-flare dispenser and a new radar warning receiver.

The program is currently in development, and a production decision is planned for the first half of 2019. Hardware procurement for the F-15C is not currently funded in the fiscal year 2019 budget, as our limited investment funds are prioritized to more critical needs, including the F-15 service life extension. In September 2018, the Air Force approved a tailored acquisition plan that is intended to enable EPAWSS fielding up to 18 months earlier than the originally planned date of late fiscal year 2022.

F-15 EPAWSS PRODUCTION

FY2019	14
FY2020	12
FY2021	14
FY2022	27
FY2023	27
TOTAL	94
TO COMPLETE	123



The F-22 Increment 3.2B program upgrades the F-22A with the latest air-to-air weaponry (AIM-9X and AIM-120D), adds additional electronic protection techniques to guard against emerging threats and improves the network-centric warfare capabilities of the aircraft.

This upgrade dramatically increases the lethality and survivability of the F-22 Raptor, while providing an exponential leap in warfighting capabilities vital to supporting the National Defense Strategy.

The program successfully completed Initial Operational Test and Evaluation in April 2018, after which it was determined to be operationally effective, operationally suitable, and mission capable.

Beyond Increment 3.2B, future F-22 modernizations will leverage the newly established F-22 Capability Pipeline as a vehicle to rapidly prototype and iteratively field critical warfighting enhancements including Link 16 communications, Mode 5 Identify Friend or Foe, and upgrades to precision, navigation and timing systems with GPS anti-jam.

ORIGINAL UNIT COST
\$10.9 Million

CURRENT UNIT COST
\$9.9 Million
(8% decrease)

COST

2020 - 2024
President's Budget
\$26.2 Million

2020
\$20.2
Million



CONTRACTING

Engineering & Manufacturing
Development
Cost-Plus-Incentive-Fee

3.2B Kit Production
Firm Fixed Price

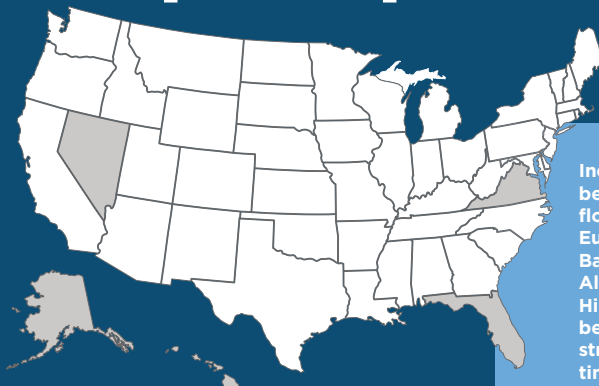
3.2B Kit Installs
Cost-Plus Fixed Fee

LOCKHEED MARTIN
Fort Worth, Texas

SCHEDULE

The program completed its initial operational test and evaluation phase in April 2018, certifying the program as operationally effective and suitable. The program is on track to begin upgrade of the F-22 operational fleet starting in May 2019.

IMPLEMENTATION STRATEGY



Increment 3.2B hardware kits will be installed on 143 F-22s, as they flow through Joint Base Langley-Eustis, Virginia, Tyndall Air Force Base, Florida, Elmendorf AFB, Alaska, Nellis AFB, Nevada and Hickam Air Force Base, Hawaii, beginning in May 2019. This strategy ensures minimal down time and returns the upgraded jets to the warfighter at the fastest rate possible.

Lightning II | F-35A



GLOBAL
POWER

COST

2020 - 2024
President's Budget
\$31.4 Billion

2020
\$6.5
Billion

ORIGINAL UNIT COST *
(2012 - Program Recertification):
\$146.5 Million

CURRENT UNIT COST *
\$143.3 Million
(2.2% decrease)
*Combined F-35A/B/C Costs

The F-35 program is managed by a joint program office under the Office of the Secretary of Defense.

The F-35A is the centerpiece of our future fighter precision attack capability—serving in both conventional and nuclear capacities for the U.S. and partner nations. Its primary missions will include air interdiction, offensive and defensive counter-air, close air support, strategic attack, and suppression of enemy air defenses.

The program of record includes 2,456 U.S. production aircraft, 1,763 F-35A conventional takeoff and landing aircraft for the Air Force, 693 F-35B short take-off and vertical landing aircraft, and F-35C carrier variant aircraft for the Navy and Marine Corps. Partners and foreign military sales countries expect to buy approximately 720 aircraft.

The Air Force fielded Block 3F capable aircraft in 2018. The F-35's next development effort centers on a Continuous Capability Development and Delivery process that delivers upgraded Block 4 capabilities in smaller incremental drops on an expedited timeline.

F-35 PRODUCTION

FY2020	48	FY2022	54
FY2021	54	FY2023	54

SCHEDULE

The Air Force declared initial operational capability in August 2016, which was five years behind the original schedule of June 2011. The program is currently on track to start full-rate production in April 2019.

CONTRACTING

F-35 contracting is accomplished through a mix of cost-plus and fixed-price-incentive-firm vehicles.

Development
Cost-Plus-Award-Fee

Low-Rate Initial Production (Lot 4+ Production)
Fixed-Price-Incentive-Firm (LRIP Lot 11 contract awarded on September 25, 2018)

LOCKHEED MARTIN
Fort Worth, Texas

BASING STRATEGY

F-35As are currently based at Hill Air Force Base, Utah, Eglin AFB, Florida, Luke AFB, Arizona, Nellis AFB, Nevada, and Edwards AFB, California. Burlington Air Guard Station, Vermont, and Eielson AFB, Alaska, have been selected as future locations for the beddown of F-35As. Naval Air Station Joint Reserve Base, Fort Worth, Texas, Truax Field ANG Base, Wisconsin, and Dannelly Field ANG, Alabama, have been selected as potential locations.

Overseas Locations: Royal Air Force
Lakenheath, England

“

We are implementing agile practices to expedite F-35 software modernization, enhancements and improvements. We are working with coders, testers and the warfighters to shorten delivery timelines and outpace current and future threats.

Vice Admiral Mathias Winter,
Joint Strike Fighter
Program Executive Officer



The Ground Based Strategic Deterrent will replace the current Intercontinental Ballistic Missile Minuteman III weapon system that is years beyond its design service life. The program will deliver a fully-integrated weapon system beginning in fiscal year 2029.

The GBSD will ensure the ground-based leg of the nuclear triad remains a responsive deterrent capability against current and future adversaries through 2075.

The Minuteman III first became operational in the early 1970s. While certain components and subsystems have been upgraded over the years, most of the fundamental infrastructure in use today is the original equipment supporting more than 50 years of continuous operation.

The next major program milestone is the Engineering and Manufacturing Development Request for Proposal Decision Point planned for the fourth quarter of fiscal year 2019.



The Air Force Nuclear Weapons Center is focused on building schedule margin and reducing schedule risk to deliver our major nuclear recapitalization programs with time certainty—ensuring our strategic deterrent is never doubted and always feared.

*Major General Shaun Morris,
Strategic Systems Program
Executive Officer*

GBSD | Ground Based Strategic Deterrent

COST

2020 - 2024
President's Budget
\$10.8 Billion

2020
**\$570.4
Million**

CONTRACTING

Technology Maturation &
Risk Reduction
Cost-Plus-Fixed-Fee

Engineering & Manufacturing
Development
Cost-Plus-Incentive-Fee

BOEING
Huntsville, Alabama

NORTHROP GRUMMAN
CORPORATION
Redondo Beach, California

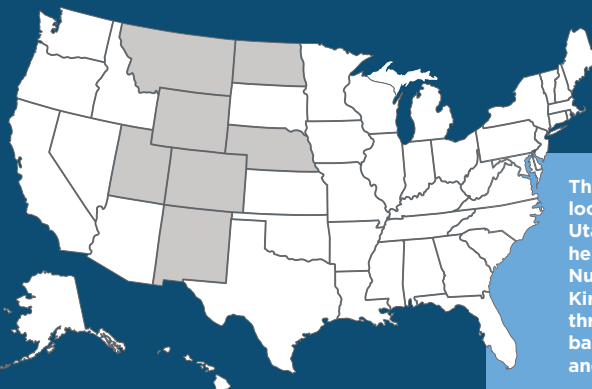
SCHEDULE

Following the Technology Maturation and Risk Reduction phase, the Air Force plans to enter into the Engineering and Manufacturing Development phase. A single engineering and manufacturing development contract with competitively-priced production options is expected to be awarded in late fiscal year 2020.

BASING STRATEGY

The GBSD Program Office is located at Hill Air Force Base, Utah. The program office's headquarters is the Air Force Nuclear Weapons Center at Kirtland AFB, New Mexico. The three Air Force missile wings are based in North Dakota, Wyoming and Montana.

Minuteman III ICBM silos are based in Colorado, Montana, Nebraska, North Dakota and Wyoming.



Intercontinental Ballistic Missile Fuze Modernization

ICBM FUZE



GLOBAL
POWER

COST

2020 - 2024
President's Budget
\$965.4 Million

2020
**263.3
Million**

ORIGINAL UNIT COST
\$2.4 Million

CURRENT UNIT COST
\$2.5 Million
(1.6% increase)

SCHEDULE

The first 10 fuze modifications are currently on track to be delivered at the original estimated date of July 2023.

CONTRACTING

System Development &
Demonstration
Military Interdepartmental
Purchase Request
Weapon System Integration
Cost-Plus-Fixed-Fee

SANDIA NATIONAL LABORATORIES
Albuquerque, New Mexico

IMPLEMENTATION STRATEGY

The current ICBM force consists of 400 Minuteman III missiles located at F.E. Warren Air Force Base, Wyoming, Malmstrom AFB, Montana, and Minot AFB, North Dakota.

The Intercontinental Ballistic Missile Fuze Modernization program is designing and developing a replacement for the legacy Mk21 fuze, which is well beyond its planned design life.

The program is a cooperative effort between the Air Force and the Navy that will share common-use technologies between the services and leverage the Navy's extensive fuze work currently being performed on the Mark 5 Alteration 370 fuze program planned for deployment onboard the Navy's Trident II D5 submarine-launched ballistic missile system. The new Air Force fuze will incorporate modular and adaptable components that will improve design life, reduce development time and achieve cost savings.

The development effort is conducted through the Department of Energy's National Nuclear Security Administration. Sandia National Lab and the Kansas City National Security Campus are performing the design and development work. The Kansas City National Security Campus will produce the fuzes, and the Air Force will be the lead systems integrator.



GLOBAL
POWER

JASSM

Joint
Air-to-Surface
Standoff Missile

The Joint Air-to-Surface Standoff Missile is an autonomous, conventional, long-range, precision-guided, highly-survivable, low-observable cruise missile. Its standoff capability enables the delivery platforms to avoid surface-to-air missile systems and integrated air defense systems.

This missile can strike high-value, highly-defended targets. There are two JASSM variants: JASSM Baseline and JASSM Extended Range. The first combat use of JASSM-BL occurred April 14, 2018. The program transitioned to JASSM-ER only procurement in fiscal year 2017, and full rate production is planned for the next five years.

JASSM-BL is integrated on the B-52, B-2, B-1, F-16, F-15E and F/A-18 foreign military sales. JASSM-ER is integrated on the B-1, B-52 and F-15E. JASSM-ER is planned for integration on the B-52 (full capability completed by early 2019), F-16 (late 2019), and B-2 (2021).

ORIGINAL UNIT COST
\$1.6 Million

CURRENT UNIT COST
\$1.5 Million
(5.9% decrease)

COST

2020 - 2024
President's Budget
\$2.4 Billion

2020
\$561.5
Million

CONTRACTING

Research, Development,
Test & Evaluation
Cost-Plus-Incentive-Fee and
Cost-Plus-Fixed-Fee

Production
Fixed-Price-
Incentive-Firm

LOCKHEED MARTIN
MISSILE SYSTEMS
Orlando, Florida

SCHEDULE

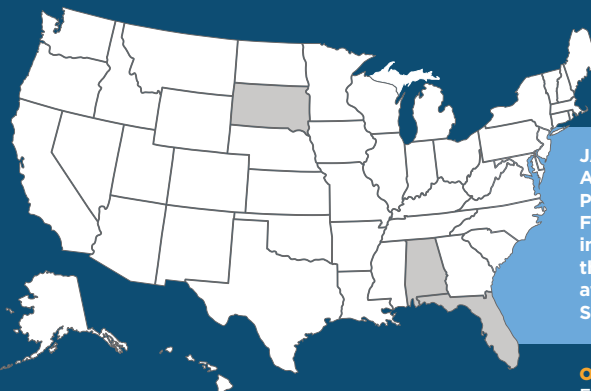
Began full-rate production in November 2014, which was nearly a year behind the original estimate of December 2013.

Lot 14 (FY16) was the last year of JASSM-BL production. The Air Force exercised Lot 16 for 360 JASSM-ER in October 2018.

DEPLOYMENT STRATEGY

JASSM is produced in Troy, Alabama, with the system Program Office at Eglin Air Force Base, Florida. The JASSM inventory is distributed across the globe, to include beddown at bases like Ellsworth AFB, South Dakota.

Overseas Locations: Andersen Air Force Base, Guam, Kunsan Air Base, Korea, and Ramstein AB Germany





COST

2020 - 2024
President's Budget
\$2.0 Billion

2020
\$1.1
Billion

ORIGINAL UNIT COST
\$45,000

CURRENT UNIT COST
\$29,000
(35.6% decrease)

CONTRACTING

Tail Kit Production
Fixed-Price-Incentive-Firm
Weapon System Integration
Cost-Plus-Award-Fee

SCHEDULE

Achieved full
deployment on time
in March 1999.

BOEING
St. Charles, Missouri

DEPLOYMENT STRATEGY

JDAM tail kit manufacturing in St. Charles, Missouri, is a lean final assembly operation. The System Program Office is at Hill Air Force Base, Utah.

The Air Force-led Joint Direct Attack Munition program produces low-cost GPS-aided tail kits that provide accurate, all-weather capability for 500, 1,000 and 2,000 pound general purpose bombs. The Laser JDAM variant provides capability against moving targets by adding a laser sensor to the 500 and 2,000 pound bombs. The Navy leads the procurement effort for JDAM laser sensors.

The Air Force awarded an indefinite-delivery/indefinite-quantity contract for Lots 18-22 (fiscal year 2014 through fiscal year 2018) in May 2016. Delivery orders are awarded annually, with a 24-month period of performance. The total Lot 21 order quantity of 45,000 total tail kits, awarded in February 2017 and extended in January 2018, made it the largest lot buy in JDAM history. In March 2018, the Air Force exercised Lot 22 for 45,000 total tail kits. The Air Force plans to award a five-year IDIQ contract extension with Boeing in fiscal year 2019. The Navy awarded the Laser JDAM Lot 6 contract in November 2017 for 4,131 Air Force laser sensors.

JDAM is the DoD's stand-in weapon of choice, and more than 300,000 JDAM tail kits have been produced over the last two decades. Ramping up procurement has been critical to replenishing stockpiles for supporting ongoing warfighter missions. JDAM is integrated on the A-10, B-1, B-2, B-52, F-15E, F-16, F-22, MQ-9, F/A-18, and AV-8B. Integration with the F-35 is in progress.



The Long-Range Stand-Off cruise missile will replace the air-launched cruise missile. The ALCM was designed in the 1970s and fielded in 1982 with a 10-year design life expectancy. ALCM's ability to survive is diminishing as it continues to age and as adversary air defenses improve. Combined with nuclear capable bombers, the LRSO weapon provides a visible and tailorable deterrent option to project power and target any location on the globe. Initial operational capability is planned for 2030.

The program completed Systems Requirements and Systems Functional Reviews in 2018.

The Air Force continues to use competition to mature the weapon design and manufacturing processes, as well as limit future cost growth. One contractor will be selected for both the development and production phases.

Development and procurement costs for LRSO are expected to be about \$10 billion.

The LRSO cruise missile is planned to be compatible with the B-21 and B-52 bombers.



COST

2020 - 2024
President's Budget
\$2.4 Billion

2020
**\$712.5
Million**

CONTRACTING

Technology Maturation &
Risk Reduction
Cost-Plus-Fixed-Fee

LOCKHEED MARTIN
Orlando, Florida

RAYTHEON COMPANY
Tucson, Arizona

SCHEDULE

The Air Force plans to buy approximately 1,000 missiles to support warfighter requirements as well as the need for logistical spares and Nuclear Weapon System Evaluation Program assets.



This weapon will modernize the air-based leg of the nuclear triad. Deterrence works if our adversaries know that we can hold at risk things they value. This weapon will enhance our ability to do so, and we must modernize it cost-effectively.

Heather Wilson
Secretary of the Air Force

Small Diameter Bomb Increment II

SDB II



GLOBAL
POWER

COST

2020 - 2024
President's Budget
\$1.5 Billion

2020
\$243.7
Million

ORIGINAL UNIT COST
\$303,000

CURRENT UNIT COST
\$259,000
(14.5% decrease)

SCHEDULE

F-15E Required Assets Available is currently projected for August 2019, which is 37 months behind the original estimate of July 2016.

CONTRACTING

Engineering & Manufacturing Development
Fixed-Price-Incentive-Firm

Production | Lots 1-3
Fixed-Price-Incentive-Firm

Production | Lots 4-5
Fixed-Price Not-to-Exceed
with Economic Price Adjustment

RAYTHEON MISSILE SYSTEMS
Tucson, Arizona

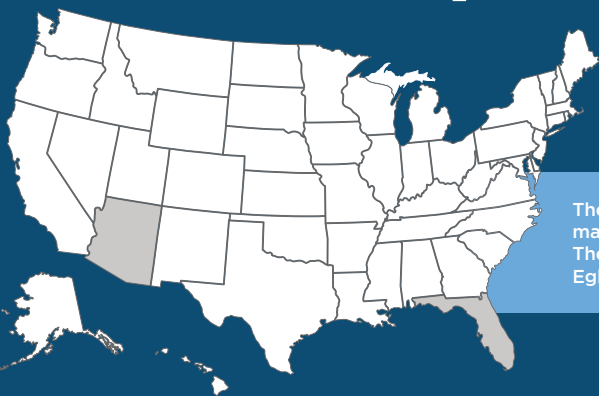
DEPLOYMENT STRATEGY

The SDB II program weapons are manufactured in Tucson, Arizona. The System Program Office is at Eglin Air Force Base, Florida.

Small Diameter Bomb, Increment II, is a joint Air Force and Navy program with the Air Force as the lead service. SDB II provides the warfighter with a standoff attack capability against fixed and mobile targets through adverse weather.

Raytheon Missile Systems is on contract with the Air Force to produce SDB II weapons. Raytheon successfully completed production and delivery of 144 weapons for the Low Rate Initial Production Lot 1 contract in October 2017 and 250 weapons for LRIP Lot 2 in September 2018. Delivery of 312 weapons for LRIP Lot 3 began in 2018, and the LRIP Lot 4 option was exercised in February 2018 for 660 weapons.

SDB II completed developmental test in May 2018, which included a 28-shot Government Confidence Test program. The testing achieved several "firsts," including a successful normal attack shot through adverse weather conditions and weapon retargeting using a joint terminal attack controller on the ground. During developmental testing, SDB II experienced delays in software development and investigation of flight test anomalies. Initial Operational Test and Evaluation started June 2018 and is ongoing.





GLOBAL
POWER

B-52 | Radar Modernization

2020 PB:
\$109.4 Million



The current B-52 radar is based on 1960s technology, last modified in the 1980s, with a 63 percent rate-of-failure during operations. This radar upgrade will maintain platform viability through 2050. The program began in fiscal year 2017 and the acquisition strategy was approved in March 2018. Production is planned to begin in fiscal year 2024, with the planned delivery of 76 radars from 2025 through 2029.

COMMERCIAL ENGINE REPLACEMENT PROGRAM

The Air Force plans to fly the B-52 through 2050, but the current B-52 engine was deemed unsustainable past 2030. In 2018, the Air Force began efforts to replace these engines with commercially available engines. On September 20th, 2018, the Air Force Service Acquisition Executive designated the Commercial Engine Replacement Program as a National Defense Authorization Act Section 804 Rapid Prototyping program. Leveraging rapid prototype authorities removes 39 months from the CERP schedule. Savings are realized through streamlined documentation, use of commercial-based engineering practices, and use of a two 'block' flight test program focusing first on operational capability demonstration and then performance characteristics which will allow the Air Force to make decisions earlier. The prototype efforts will culminate with operational aircraft with new engines and associated modifications to the aircraft to integrate 21st century engines. Eight engines per aircraft will be procured for all 76 aircraft, with production beginning in 2025.

“

We are enabling programs to go faster by ensuring consistent and frequent communication with our many stakeholders across the nuclear command control and communication enterprise. Relationships are a key enabler to our successes.

*Colonel Amanda Kato, Nuclear Command, Control
and Communication Program Executive Officer*

ACAT II & III Program Highlights



GLOBAL
POWER



Air Launched Cruise Missile

To mitigate an Air Launched Cruise Missile reliability risk, the ALCM system program office used Congressional authority (10 USC 2371b), Other Transactions for Prototype Projects for remanufacture of the Linear Actuator. This approach will yield a savings of 12 months of acquisition cycle time.



A-10 Wing Replacement Program

The A-10 Thunderbolt II Wing Replacement Program is a two-phase procurement effort to replace legacy wings on the entire fleet of the beloved A-10 “Warthog” aircraft to meet the weapon system’s 16,000 Extended Flight Hours requirement. The Enhanced Wing Assembly acquisition effort began in 2007 and re-wings 173 of the 281 A-10 aircraft fleet. Currently, 165 A-10s have been modified with the EWA with 17 wing installations accomplished in fiscal year 2018.



“

We are laser focused on delivering needed capabilities to the field as quickly as possible, leveraging all of the authorities and flexibilities allowed by current policy. Go Fast, Think BIG!

*Brigadier General Heath Collins,
Fighter Bomber
Program Executive Officer*



F-16 Active Electronically Scanned Array

The \$1.8 billion F-16 AESA Radar program is delivering cost effective, 5th generation radars to meet a validated Joint Emergent Operational Need for homeland defense by providing an improved air-to-air detect and track capability. This program includes radars for Air Combat Command, the Air National Guard, and the Air Force Reserve Command. It also includes iterative software releases to ensure F-16 viability through the 2040’s, allowing for air operations in an EW-contested environment. In fiscal year 2018, the F-16 system program office awarded options to procure the 72 radars required to meet the program’s Initial Operational Capability.





FISCAL YEAR 2020

BUDGET \$7.1B

RESEARCH,
DEVELOPMENT,
TEST & EVALUATION



\$1.89B

PROCUREMENT



\$5.21B



IN SOURCE
SELECTION

IN DEVELOPMENT / PRODUCTION

N/A

- | | |
|-----------------------------------|---|
| » Advanced Pilot Trainer | » KC-46A Pegasus |
| » C-130J Super Hercules | » UH-1N Replacement |
| » AC/HC/MC-130J Modifications | » VC-25B Presidential Aircraft Recapitalization |
| » HH-60W Combat Rescue Helicopter | |

IN OPERATION / SUSTAINMENT

- | | | |
|------------------------|-----------------------|------------------------|
| » C-5 Galaxy | » HH-60G Pave Hawk | » T-6 Texan |
| » C-17 Globemaster III | » KC-10 Extender | » T-38 Talon |
| » C-130H Hercules | » KC-135 Stratotanker | » VC-25A Air Force One |
| » CV-22 Osprey | » T-1 Jayhawk | |



PORTFOLIO



AIRLIFT



AIR REFUELING



PERSONNEL RECOVERY



SPECIAL OPERATIONS



TRAINING

GLOBAL REACH

Global Reach is the Air Force's ability to project American airpower quickly anywhere around the world. The Air Force acquisition team for Global Reach is responsible for the \$7.1 billion airlift, air refueling, training, personnel recovery and special operations programs portfolio.

They deliver the aircraft and systems necessary for Airmen to accomplish their missions, ranging from major combat to humanitarian relief operations around the world.

From delivering personnel and cargo when and where they're needed, to providing in-flight refueling for joint-power projection, the acquisitions team for Global Reach puts critical capabilities into the hands of the warfighter.



The C-130J Super Hercules is replacing active duty, guard and reserve C-130H and EC-130E/WC-130H aircraft. The C-130J is a key component of tactical airlift modernization.

The HC/MC/AC-130J programs are recapitalizing the more than 40-year-old combat rescue and special operations tanker fleets with a new medium-transport aircraft. A common platform will be used to replace all legacy HC-130, MC-130, and AC-130 aircraft.

The C-130J has a glass cockpit, more powerful and efficient engines, modern navigation systems, and will reduce the need for aircrew and maintenance personnel.

The C-130J multi-year procurement contract for fiscal year 2014 through fiscal year 2018 saves taxpayers more than \$600 million while simultaneously accelerating deliveries. Congress has approved a multi-year contract for fiscal years 2019 through fiscal year 2023 which will save the taxpayer more than \$400 million.

Ongoing modifications to the C-130J fleet will address all Federal Aviation Administration mandates for communications navigation surveillance and air traffic management. Partial recapitalization of the C-130E/H fleet will result in a mixed fleet of 151 C-130Js and 149 C-130Hs.

C-130J: ORIGINAL UNIT COST
\$95.2 Million

C-130J: CURRENT UNIT COST
\$95.3 Million
(less than 1% increase)

HC/MC-130: ORIGINAL UNIT COST
\$124.4 Million

HC/MC-130: CURRENT UNIT COST
\$108.0 Million
(13% decrease)

COST

C-130J

2020 - 2024
President's Budget
\$727 Million
2020 - \$162.5 Million

HC/MC/AC-130J

2020 - 2024
President's Budget
\$1.9 Billion
2020 - \$911.2 Million



CONTRACTING

Production & Sustainment
Combination of
Firm-Fixed-Price and
Fixed-Price-Incentive-Firm

Development
Cost-Plus-
Incentive-Fee

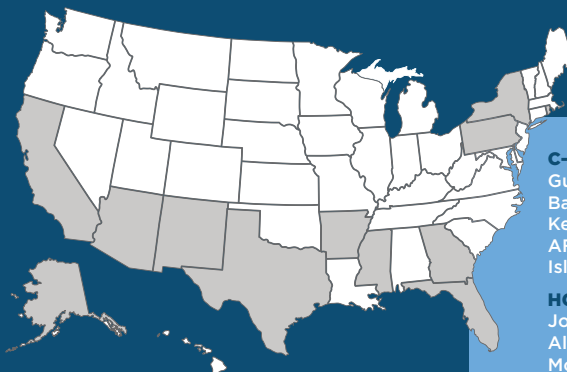
LOCKHEED MARTIN
Marietta, Georgia

SCHEDULE

A total of 146 C-130J aircraft have been delivered. This includes 119 C-130Js, 10 C-130J 'shorts', 10 WC-130Js, and seven EC-130Js. There are 24 C-130Js yet to be delivered.

A total of 76 Air Force HC/MC/AC-130Js have been delivered to date. This includes 36 MC-130Js, 24 HC-130Js and 16 AC-130Js. There are 21 MC-130Js, 15 HC-130Js and 21 AC-130Js yet to be delivered.

BASING STRATEGY



Overseas Locations: C-130Js: Ramstein Air Base, Germany, and Yokota AB, Japan
MC-130Js: Kadena AB, Japan, and Royal Air Force Mildenhall, England

C-130Js: Channel Islands Air National Guard Base, California, Dyess Air Force Base, Texas, Harrisburg, Pennsylvania, Keesler AFB, Mississippi, Little Rock AFB, Arkansas, Quonset Point, Rhode Island

HC-130Js: Davis Monthan AFB, Arizona, Joint Base Elmendorf-Richardson, Alaska, Kirtland AFB, New Mexico, and Moody AFB, Georgia and Moffett Field, California; Future Basing: HC-130Js will also be based at Gabreski ANGB, New York, Patrick AFB, Florida and Hurlburt Field, Florida

MC-130Js: Cannon AFB and Kirtland AFB, New Mexico; Future Basing: Hurlburt Field, Florida

AC-130Js: Hurlburt Field; Future Basing: Cannon AFB, New Mexico



COST

2020 - 2024
President's Budget
\$4.8 Billion

2020
\$1.1
Billion

ORIGINAL UNIT COST
\$76.4 Million

CURRENT UNIT COST
\$73.7 Million
(4% decrease)

The Combat Rescue Helicopter program will replace the HH-60G Pave Hawk with the HH-60W Pave Hawk II. The HH-60W will conduct day, night and marginal-weather combat search and rescue to recover downed aircrew or other isolated personnel in hostile environments.

The HH-60W will also be able to conduct noncombatant evacuation operations, defense support to civil authorities, civil search and rescue, international aid, emergency aeromedical evacuation, disaster/humanitarian relief, counter-drug activities, support for NASA flight operations, and insertion/extraction of combat forces.

Sikorsky is on contract with the Air Force to produce 112 HH-60Ws, the training system and support equipment. The Air Force awarded a contract for development and production of the first four aircraft in June 2014 and exercised a contract option for five test aircraft in January 2017.

The government's cost for program development continues to follow cost estimates and remains stable.

The first eight aircraft – four training and four operational – along with associated training systems and support equipment are expected to be delivered in 2020 and begin operations in 2021.

CONTRACTING

Engineering & Manufacturing
Development
Fixed-Price-Incentive-Firm

Production
Firm-Fixed-Price

SCHEDULE

Sikorsky is assembling the first test aircraft and its first flight is scheduled for May 2019.

SIKORSKY
Stratford, Connecticut

BASING
STRATEGY

Basing: Davis-Monthan Air Force Base, Arizona, Gabreski Field, New York, Joint Base Elmendorf-Richardson, Alaska, Kirtland AFB, New Mexico, Moffett Field, California, Moody AFB, Georgia, Nellis AFB, Nevada, Patrick AFB, Florida

Overseas Locations:

Kadena Air Base, Japan, Royal Air Force Lakenheath, England



The KC-46A will primarily provide aerial refueling. The aircraft will also be equipped to carry cargo and passengers, as well as perform aeromedical evacuations.

Boeing is on contract with the Air Force to produce 179 KC-46A aircraft, associated engine spares and support equipment. The Air Force exercised contract options for Lot 4, 18 aircraft, in September 2018. Each aircraft lot also includes two spare engines and five refueling pods.

The Air Force has 52 aircraft on contract and plans to award Lot 5, for another 15 aircraft in 2019.

As of 31 December 2018, Boeing had completed 93% of the planned flight testing, with the Wing Aerial Refueling Pod testing planned to start in March 2019. The KC-46 received the Federal Aviation Administration Supplemental Type Certification in September 2018, which verified its systems meet FAA requirements, and received Air Force military airworthiness approval in December 2018.

The Air Force accepted first aircraft delivery on January 25, 2019 at McConnell Air Force Base, Kansas. Aircraft fielding will be an important step toward achieving initial operational capability.

ORIGINAL UNIT COST
\$271.4 Million

CURRENT UNIT COST
\$224.9 Million
(17% decrease)

COST

2020 - 2024
President's Budget
\$13.9 Billion

2020
\$2.3
Billion



CONTRACTING

Engineering & Manufacturing
Development
Fixed-Price-Incentive-Firm

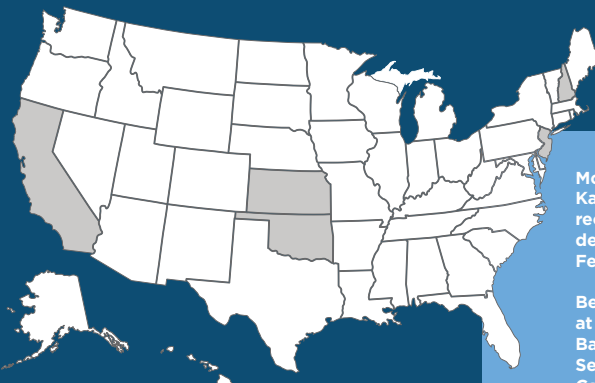
Production
Firm-Fixed Price,
Not-to-Exceed

BOEING COMPANY
Seattle, Washington

SCHEDULE

Required assets available (first 18 aircraft, 2 spare engines, 9 wing aerial refueling pod sets), an important step toward achieving initial operational capability, has been delayed from August 2017 to June 2020.

BASING STRATEGY



McConnell Air Force Base, Kansas and Altus AFB, Oklahoma received their initial KC-46 deliveries in January and February 2019.

Beddown activities are on track at Pease Air National Guard Base, New Hampshire, as well as Seymour Johnson AFB, North Carolina. Joint Base McGuire-Dix-Lakehurst, New Jersey, and Travis AFB, California, have been identified as preferred alternatives and are also standing up capability. Tinker AFB in Oklahoma is on track to have depot level maintenance capability in place by July 2020.

Advanced Pilot Training System | T-X



GLOBAL
REACH

COST

2020 - 2024
President's Budget
\$2.1 Billion

2020
\$348.5
Million



SCHEDULE

Initial operational
capability is
projected for 2024.

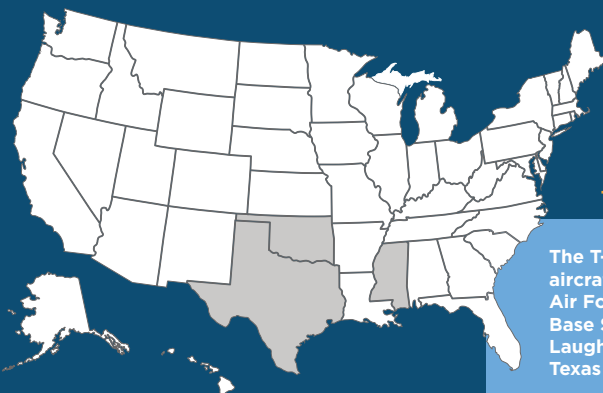
CONTRACTING

Fixed-Price-Incentive-Firm
Indefinite Delivery/
Indefinite Quantity

Estimated ceiling price
of \$9.2 Billion on
27 September 2018.

BOEING COMPANY
St. Louis, Missouri

BASING STRATEGY



The T-X will replace the T-38C aircraft, currently based at Columbus Air Force Base, Mississippi, Joint Base San Antonio-Randolph, Texas, Laughlin AFB, Texas, Sheppard AFB, Texas and Vance AFB, Oklahoma.

Joint Base San Antonio-Randolph will receive the first T-X aircraft.

The Advanced Pilot Training System, 'T-X', will replace Air Education and Training Command's fleet of T-38C aircraft, currently based in Mississippi, Oklahoma and Texas with T-X aircraft and associated simulators.

This new aircraft will provide the advanced training capabilities the Air Force needs to increase the lethality and effectiveness of future pilots.

On September 27, 2018, The Boeing Company was awarded a fixed-price-incentive-firm indefinite delivery/indefinite quantity contract as the prime contractor for the T-X program. The contract provides for the anticipated delivery of 351 aircraft, 46 associated training devices, and other ancillary supplies and services.

Robust dialogue with industry enabled the Air Force to balance risk, performance, and affordability. The result was a strong competition that benefited the T-X program and taxpayer as the service's estimated costs for the program were reduced by \$10 billion.

The contract includes an \$813 million initial delivery order for engineering and manufacturing development with a delivery of five aircraft and seven ground based training systems.



VC-25B will replace the current Air Force One to safely and securely transport the President and enable the President to execute the duties of Head of State, Chief Executive, and Commander in Chief.

In 2018, the Air Force closed all risk-reduction activities, continued with preliminary design work, and awarded an engineering and manufacturing development contract. The engineering and manufacturing development contract codifies the February 2018 informal agreement reached between the President and the Boeing Chief Executive Officer.

The Air Force anticipates transferring the two 747-8 commercial aircraft to the Boeing modification facility in the spring of 2019 and completing Critical Design Review in fall of 2019 to support modifications starting in spring of 2020.



Our VC-25B program team implemented innovative business strategies on the development contract that solidified foundational government statutory and fiduciary responsibilities, while providing the contractor the ability to leverage their commercial practices. This approach ensured contract award and secured \$1.4B savings, stemming from the President of the U.S.-Boeing CEO agreement.

*Major General Duke Richardson,
Presidential & Executive Airlift
Program Executive Officer*

COST

2020 - 2024
President's Budget
\$2.9 Billion

2020
**\$761.9
Million**



CONTRACTING

Engineering & Manufacturing
Development
Fixed-Price-Firm

Risk Reduction
Cost-Plus-Fixed-Fee

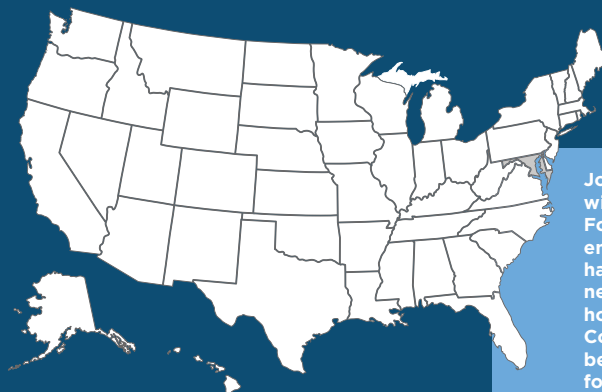
Commercial Aircraft
Firm-Fixed-Price

Preliminary Design
Cost-Plus-Award-Fee

SCHEDULE

Two presidential
mission-ready VC-25Bs
are projected to be
delivered by 2024.

BOEING COMPANY
Seattle, Washington



BASING STRATEGY

Joint Base Andrews, Maryland, will remain the home of Air Force One when the VC-25B enters service. The Air Force has begun the planning of a new presidential complex to house the next Air Force One. Construction will be completed before the new aircraft is ready for operational testing.

C-5M | Super Galaxy



GLOBAL
REACH

The C-5 Reliability Enhancement and Re-engining Program is a comprehensive modernization effort to improve C-5 reliability, maintainability and availability. The C-5M Super Galaxy, when compared to the legacy C-5 Galaxy, has increased range, payload, takeoff thrust, climb performance and fuel efficiency, as well as an extended service life through at least 2040. The C-5M has met the 75 percent mission-capable rate requirement for wartime and surge conditions. All 52 aircraft have been modified as of August 2018.



BASING STRATEGY

The fleet of C-5M aircraft are currently based at Dover Air Force Base, Delaware, Travis AFB, California, Joint-Base San Antonio-Lackland, Texas, and Westover Air Reserve Base, Massachusetts.

CONTRACTING

Prime Contractor: Lockheed Martin Aeronautics, Marietta, Georgia

Contract: Firm-Fixed-Price for Modifications, Cost-Plus-Fixed-Fee for Over and Above

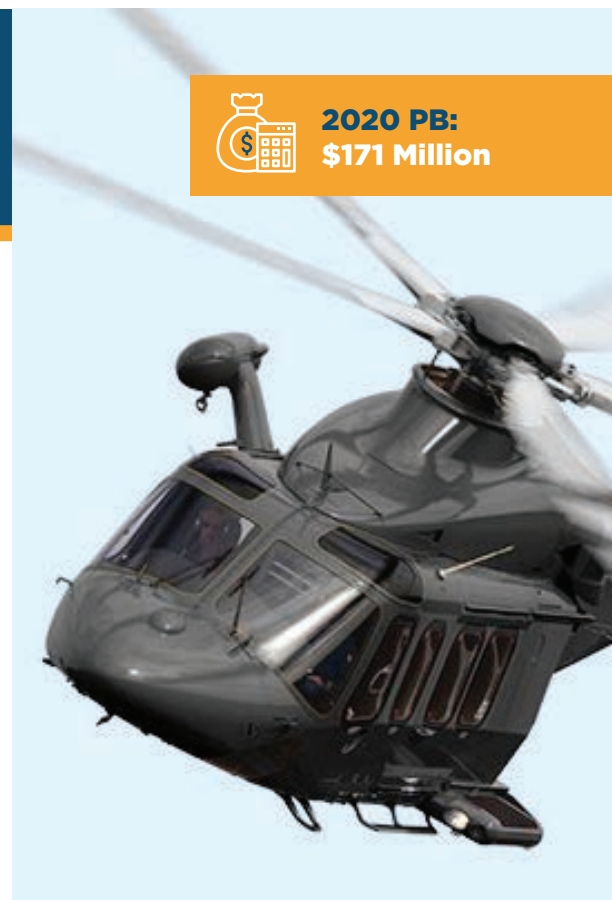
Contract Value: \$4.6 Billion

UH-1N | Huey Replacement

The UH-1N is a twin-engine, medium-lift utility helicopter initially manufactured in the 1960s. The Air Force's UH-1N fleet of 63 aircraft supports Combatant Command critical missions and vertical lift needs of several major commands. The UH-1N Replacement program will replace the current UH-1N fleet and mitigate capability gaps in carrying capacity, speed, range, endurance, defensive systems, and survivability. The Air Force awarded the \$2.38 billion fixed-price type contract to The Boeing Company in September 2018. Boeing's primary subcontractor is Leonardo Helicopter Division, Philadelphia, PA. Boeing will deliver up to 84 MH-139 helicopters, associated training devices, and ground support equipment to replace the legacy UH-1Ns. Strong competition drove down costs for the program, resulting in \$1.7 billion in savings to the taxpayer.



2020 PB:
\$171 Million





ACAT II & III Program Highlights



T-1A Avionics Modification Program

The T-1A Avionics Modification Program is an ACAT III program to upgrade 178 aircraft, 16 simulators and 14 Part Task Trainers to address avionics Diminishing Manufacturing Sources and incorporate the Federal Aviation Administration mandated automatic dependent surveillance-broadcast requirement. The program office expects to deliver the first two modified T1 Aircraft in the second quarter of fiscal year 2019, five Low Rate Initial Production Aircraft jets mid fiscal year 2019, and execute Full Rate Production in late fiscal year 2019. This enables the Air Education and Training Command to meet their pilot production goals and address the Air Force's pilot shortage by mitigating reliability concerns with new avionics suite.



The use of the NDAA Section 804 rapid fielding authorities on the Open Skies Recapitalization program will accelerate the design and development of a new weapon system of two newly-produced, missionized, small airliner class commercial-derivative aircraft 20 months of schedule for second aircraft delivery.

*Brigadier General Donna Shipton,
Tankers Program Executive Officer*



KC-135 Block 45 Upgrade

Implementation of the Block 45 modification reduces the KC-135 logistics footprint—it mitigates the ongoing reliability, maintainability & supportability shortcomings of the present systems. The new systems will improve signal fidelity, converts from analog to digital for the autopilot, radio altimeter, engine instruments, and the analog flight director. This digital conversion of the flight deck creates a digital backbone for growth and ease of operator use for future software integration.

The program implemented installation efficiencies during fiscal year 2018 that could yield a potential capacity increase of four aircraft per year (from 38 to 42 aircraft inductions). The Block 45 program completed the 115th aircraft upgrade out of a fleet of 399.

ACAT II & III Program Highlights



GLOBAL
REACH



HH-60G Operational Loss Replacement Program

The Air Force is converting 19 Army UH-60L helicopters to the USAF HH-60G configuration, enhancing mission capability for rescue operations by bringing the HH-60G fleet back up to 112 aircraft. During fiscal year 2018, the OLR team resolved two major developmental testing deficiencies delaying entry into operational testing, and delivered the second developmental testing aircraft, clearing the path for full quantity delivery in fiscal year 2019/2020.



Countermeasures Increment II Program

This program equips 32 HH-60G helicopters with the Navy-developed Distributed Aperture Infra-Red Countermeasures system. This modification increases aircraft and crew survivability in specific hostile environments by detecting advanced Man-Portable Air-Defense systems, the most common threat in specific Area of Responsibility regions. During fiscal year 2018 the systems passed critical live fire testing, clearing the way to follow-on testing and production.

INFORMATION DOMINANCE

Information dominance is achieved through command, control, communications, computers, intelligence, surveillance and reconnaissance, or C4ISR, systems and architectures. Air Force information dominance programs are comprised of reconnaissance and surveillance aircraft, remotely piloted aircraft, command and control, combat support systems, enterprise resource planning programs, evolving C4ISR infrastructure, expeditionary reach-back, and information warfare.

In 2018, the Air Force completed Critical Design Review for the Three-Dimensional Expeditionary Long-Range Radar, or 3DELRR, which detects, identifies, tracks and reports aerial targets. The MQ-9 Reaper program transitioned from a mix of MQ-1/MQ-9 systems to an all MQ-9 Reaper fleet. We delivered 86 Block 5 Reapers, 66 Block 30 Ground Control Stations, and accomplished 80 retrofit modifications to the fleet, while conducting concurrent development and sustainment, to ensure sustained combat capabilities 24/7.

The Air Force also completed its Pathfinder approach to evolve the air operations center. Using agile software development operations, the Air Force demonstrated we can iteratively and rapidly deliver capability to the warfighter and proved scalability of agile methodologies to modernize the infrastructure.



FISCAL YEAR 2020

BUDGET \$4.58B

RESEARCH,
DEVELOPMENT,
TEST & EVALUATION



\$2.20B

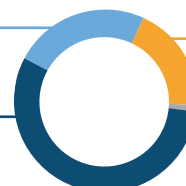
PROCUREMENT



\$2.38B

COMMAND AND CONTROL
PLATFORMS & AIR TRAFFIC
CONTROL SYSTEMS

BUSINESS &
ENTERPRISE
SYSTEMS



CYBER

AIRBORNE
ENTERPRISE SYSTEMS
RECONNAISSANCE

IN SOURCE SELECTION

- » Air Force Integrated Personnel and Pay System
- » Maintenance Repair and Overhaul Initiative

IN OPERATION / SUSTAINMENT

- » Base Information Transport Infrastructure
- » EC-130H Compass Call
- » Mission Planning System

IN DEVELOPMENT / PRODUCTION

- » 3DELRR
- » AOC Pathfinder
- » Defense Enterprise Accounting and Management System
- » MQ-9 Reaper
- » Distributed Common Ground System
- » EC-37B Compass Call Re-host
- » Integrated Strategic Planning and Analysis Network Increment 4 & 5



PORTFOLIO



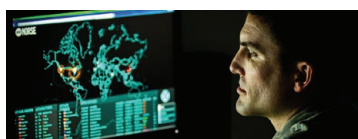
AIRBORNE
RECONNAISSANCE



BUSINESS &
ENTERPRISE SYSTEMS



COMMAND & CONTROL



CYBER



COST

2020 - 2024
President's Budget
\$127.8 Million

2020
\$39.3
Million

ORIGINAL UNIT COST
\$99.2 Million

CURRENT UNIT COST
\$95.9 Million
(3% decrease)

The E-3 Sentry Airborne Warning and Control System provides a highly-mobile, flexible, survivable theater battle management, wide-area surveillance, and command-and-control capability.

AWACS Block 40/45 is the most significant modernization in the fleet's history and is the foundation piece for all future E-3 modifications.

As of November 2018, 17 upgraded aircraft have been delivered to the Air Force for initial operational test and evaluation.

The Air Force anticipates a continued delivery schedule for the remaining fourteen deliveries to conclude with the seven buy-back aircraft through fiscal year 2022, and the declaration of full operational capability by fiscal year 2024, for a fleet total of 31 aircraft.

SCHEDULE

Initial operational capability was achieved three months ahead of schedule, in January 2014, with the delivery of six aircraft.

CONTRACTING

Production Kits &
Production Support to
Depot Modification
Activities
Cost-Plus-Incentive-Fee

BOEING COMPANY
Oklahoma City, Oklahoma

IMPLEMENTATION STRATEGY

Tinker Air Force Base, Oklahoma, is the home to 27 AWACS aircraft, while Kadena Air Base, Japan, and Joint Base Elmendorf-Richardson, Alaska, each have two AWACS - for a fleet total of 31 aircraft.

The Block 40/45 upgrade has been expanded to include all 31 aircraft (to include the 7 aircraft that the Air Force will buy back in FY19).



The Defense Enterprise Accounting & Management System, or DEAMS, is an ORACLE-based automated information system supporting the warfighter with timely, accurate, reliable and auditable financial information to enable efficient and effective decision-making.

In fiscal year 2018, the program delivered capability to the next set of users, demonstrated significant effectiveness improvements through an independent operational test, and took steps to prepare the financial management enterprise for a major software release in third quarter fiscal year 2019. Technical requirements, training, change management, and testing will all complete to support cutover to the next software baseline. The DEAMS enterprise management governance structure is being exercised regularly to control requirements, costs, schedule, and system performance updates.

In September 2018, the Air Force Service Acquisition Executive approved a rapid acquisition strategy to adopt agile software development methods with a new Increment 1 system integrator. This software development shift will posture the program to continuously deliver capability under a full agile software development strategy as a Fiscal Year 2018 NDAA Sec. 873 agile pilot program.

ORIGINAL PROGRAM COST
\$1.22 Billion

CURRENT PROGRAM COST
\$1.22 Billion

Since re-baselining in November 2017, the Air Force is on-cost and on-schedule

COST

2020 - 2024
President's Budget
\$272.3 Million

2020
\$48.7
Million

CONTRACTING

The Air Force awarded two firm-fixed-price contracts to support restructured Increment 1 requirements. The DEAMS Technical Upgrade and Sustainment and Increment 1 requirements continuation contracts were extended through October 2018 to account for additional end-to-end functional testing of the next major software release. Contract award adopting agile software development is scheduled for second quarter fiscal year 2019.

SCHEDULE

The full deployment decision is still on-track to the re-baselined dates from the 2017 critical change.

DEPLOYMENT STRATEGY

DEAMS Increment 1 is deployed to 13,800 of the expected 16,600 users at 145 Active Duty, Reserve, Air National Guard, and DFAS installations. All Air Force major commands have users processing financial actions on DEAMS.

The Air Force successfully deployed DEAMS to Pacific Air Forces in October 2017 and is preparing to deploy to 800 users in U.S. Air Forces in Europe in June 2018.



Reaper | MQ-9



INFORMATION
DOMINANCE

COST

2020 - 2024
President's Budget
\$3.9 Billion

2020
**\$1.05
Billion**

ORIGINAL UNIT COST
\$33.1 Million

CURRENT UNIT COST
\$30.4 Million
(8% decrease)



SCHEDULE

Initial Operational
Capability for the
MQ-9 weapon system
on December 21, 2015.

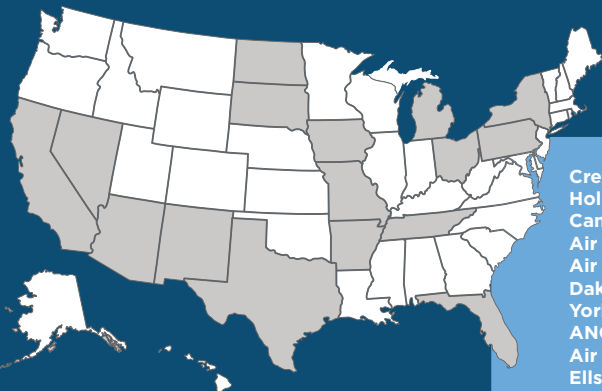
CONTRACTING

Research, Development,
Test & Evaluation, Software
Releases & Sustainment
Cost-Plus-Fixed-Fee

Production
Fixed-Price-Incentive-Firm
and Firm-Fixed-Price

GENERAL ATOMICS
Poway, California

BASING STRATEGY



Creech Air Force Base, Nevada,
Holloman AFB, New Mexico,
Cannon AFB, New Mexico, March
Air Reserve Base, California, Fargo
Air National Guard Base, North
Dakota, Hancock Field ANGB, New
York, Nellis AFB, Nevada, Kellogg
ANGB, Michigan, Niagara Falls
Air Reserve Station, New York,
Ellsworth AFB, South Dakota,
Whiteman AFB, Missouri, Hurlburt
Field, Florida, Springfield ANGB,
Ohio, Air Station State College in
Pennsylvania, Berryfield ANGB,
Tennessee, Ellington Field JRB,
Texas, Davis-Monthan AFB,
Arizona, Des Moines ANGB, Iowa,
and Fort Smith Air National Guard
Station, Arkansas.

The MQ-9 Reaper is an armed, multi-mission, medium-altitude, long-endurance remotely piloted aircraft, or RPA. The MQ-9 is primarily a hunter-killer, but it's also an intelligence-collection asset. Given its significant loiter time, wide-range sensors, multi-mode communications suite, and precision weapons, the MQ-9 can perform strike, coordination and reconnaissance against high-value, fleeting and time-sensitive targets. The Block 5 MQ-9 and Block 30 ground control station combination is among the most called-upon combat asset around the globe.

In November 2018, the Air Force awarded the contract to General Atomics for 16 additional MQ-9 Block 5 RPAs funded by the 2018 President's Budget. A fiscal year 2019 production buy is in work with efforts ongoing to finalize the associated budget and solidify the procurement plan. The MQ-9 Upgrade Program is an agile capability development program enabling rapid fielding of modernized hardware/software capabilities across the MQ-9 fleet on a 6-12 month schedule.

The MQ-9 enterprise implemented a common operational flight program that cuts development and sustainment costs while maintaining timely capability improvements. This ensures the MQ-9 enterprise continues delivering capabilities for Air Combat Command, Air Force Special Operations Command, and Air National Guard customers in the most efficient and cost-effective manner.



INFORMATION DOMINANCE

EC-37B

Compass Call Re-Host

Compass Call is a tactical airborne electronic attack weapon system that disrupts enemy communication and radar systems.

Compass Call currently supports U.S. and coalition tactical air, surface and special operations forces in contingency operations worldwide. However, growing threats in multiple theaters and rising sustainment costs on the legacy EC-130H platform have driven the Air Force to re-host the Compass Call capability to a modern, more cost-effective, commercial derivative aircraft.

In all, the Air Force plans to procure 10 re-hosted EC-37B aircraft while simultaneously retiring the EC-130H fleet in a phased approach.

In accordance with the National Defense Authorization Act for Fiscal Year 2018 an independent review of the program's acquisition process was conducted by the Center for Naval Analyses. Based on the findings of that review the Under Secretary of Defense for Acquisition and Sustainment certified that the program's acquisition process complied with all applicable laws, guidelines and best practices.

COST

2020 - 2024
President's Budget
\$1.0 Billion

2020
**\$251.5
Million**

CONTRACTING

Aircraft System Integration
Cost-Plus-Fixed-Fee

Commercial Aircraft
Procurement
Firm-Fixed-Price

SCHEDULE

The Air Force currently plans to deliver the first EC-37B Compass Call for test in calendar year 2021 with delivery to the warfighter in calendar year 2023.

L3 TECHNOLOGIES
(Aircraft integration)
Greenville, Texas

BAE SYSTEMS
(Mission systems)
Nashua, New Hampshire

BASING STRATEGY

Re-hosted EC-37B Compass Call aircraft will be delivered to the 55th Electronic Combat Group, located at Davis-Monthan Air Force Base in Tucson, Arizona. The 55th ECG is the sole operator of Compass Call aircraft in worldwide contingency operations.





COST

2020 - 2024
President's Budget
\$122.9 Million

2020
\$24.3
Million

ORIGINAL PROGRAM COST

\$156.2 Million

CURRENT PROGRAM COST

\$151.2 Million
(3% decrease)

CONTRACTING

ISPAN development contracts
are negotiated and awarded in
a competitive environment.

Program Development
Indefinite-Delivery/
Indefinite-Quantity

Program Management
Administration
Firm-Fixed-Price

SCHEDULE

Increment 4
estimated full
deployment in the
first quarter of
fiscal year 2020.

BAE SYSTEMS
Bellevue, Nebraska

DEPLOYMENT STRATEGY

ISPAN is housed and operated at
HQ USSTRATCOM facilities, Offutt
Air Force Base, Omaha, Nebraska.

The Integrated Strategic Planning and Analysis Network is a U.S. Strategic Command system. Its primary function is to provide strategic contingency planning.

ISPAN is a software tool for web-enabled, collaborative, adaptive, and crisis-action planning. It supports development of Joint Staff Level I through Level IV nuclear and conventional attack options.

The planning system will continue to evolve as weapon systems mature, new systems develop, and the threat changes, particularly in the area of worldwide proliferation of weapons of mass destruction.

The Increment 4 full deployment decision was granted on September 27, 2018. It reduces crisis-action planning and time-sensitive planning timelines, integrates nuclear and conventional kinetic weapon capabilities with non-kinetic effects, provides the capability to integrate the planning and analysis capabilities of future global strike weapons, and leverages new technologies to lower sustainment costs.

ISPAN Increment 5 will provide increased resiliency, access to enhanced consequence analysis tools, with improved deliberate, adaptive, and crisis action planning for strategic deterrence and Global Strike missions.

Increment 5 was designated as a Section 804 pilot program for rapid development and fielding. The program entry occurred in the first quarter of fiscal year 2019 with an estimated reduction of 2.5 years for delivery of initial capabilities to the field.



The Three-Dimensional Expeditionary Long-Range Radar, or 3DELRR, will provide detection of aerial threats to ground troops and Airmen operating in deployed locations. The radar can give commanders the ability to orchestrate friendly operations and detect a wide range of airborne targets.

Additionally, the 3DELRR program is an Air Force pilot program for the Defense Exportability Features initiative. This initiative promotes the incorporation of exportability features early in the design process to lower Department of Defense unit cost and increase potential for foreign military sales.

Ultimately, the 3DELRR engineering and manufacturing development contract was awarded to the Raytheon Company for \$53.6 million.

The fixed-price development contract was awarded at approximately 20 percent of the original program office estimate. The contract also included options for full production. Competition, in conjunction with a vigorous export market, resulted in much lower prices for both the development and production options.

COST

2020 – 2024
President's Budget
\$90.8 Million

2020
**\$37.3
Million**

CONTRACTING

Engineering & Manufacturing
Development
Fixed-Price-Incentive-Firm

Low-Rate Initial
Production Option
Fixed-Price-Incentive-Firm

Production Lot Options
Firm-Fixed-Price

SCHEDULE

The Air Force anticipates initial operational capability by the end of 2023. The program held its critical design review in early 2018 and plans to start system-level testing in 2019.

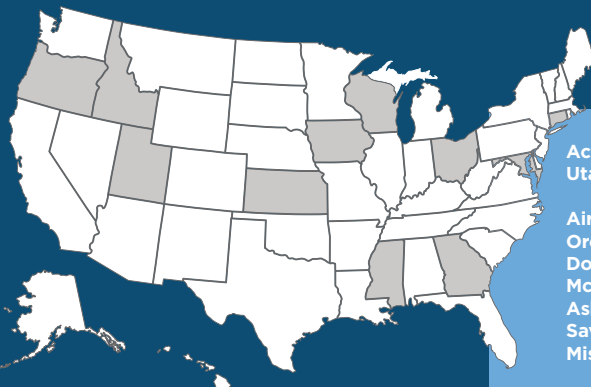
RAYTHEON COMPANY
Tewksbury, Massachusetts

BASING STRATEGY

Active Duty: Hill Air Force Base,
Utah, Mountain Home AFB, Idaho

Air National Guard: Astoria,
Oregon, Salt Lake City, Utah, Fort
Dodge, Iowa, Volk Field, Wisconsin,
McConnell AFB, Kansas, Blue
Ash, Ohio, Orange, Connecticut
Savannah, Georgia, Gulfport,
Mississippi

Total Quantity: 35 3DELRR Systems





The Air Force Integrated Personnel and Pay System will be a web-enabled, commercial, off-the-shelf enterprise resource planning solution that integrates existing military personnel and pay processes into a single, self-service system for the Total Force-active duty, guard, and reserve. AFIPPS awarded a cost-plus-incentive-fee contract for development to Accenture Federal Services on May 3, 2018.

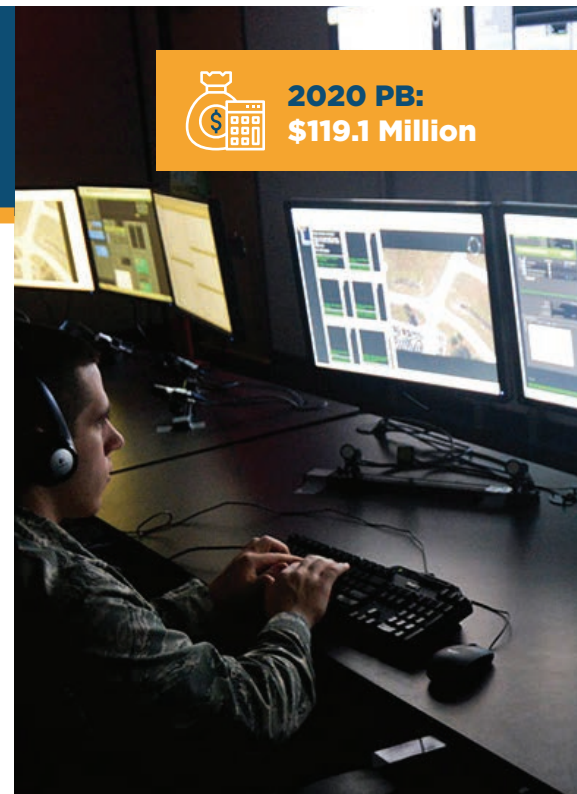


2020 PB:
\$61.5 Million

Distributed Common Ground System

DCGS

The Air Force Distributed Common Ground System is a regionally-aligned, globally-networked intelligence, surveillance, and reconnaissance enterprise, delivering tailored intelligence for immediate warfighter operations. It is a distributed weapon system capable of tasking ISR sensors and processing, exploiting, and disseminating intelligence from airborne, national, and commercial sensors, primarily the MQ-1, MQ-9, RQ-4 and U-2. The system is currently under migration through an agile development process to an open architecture, with three of four mission capability pilots complete and enterprise deployment to 27 worldwide sites that began in fiscal year 2018 and continues through fiscal year 2019.



2020 PB:
\$119.1 Million



INFORMATION DOMINANCE

MROi

Maintenance, Repair and Overhaul Initiative



2020 PB:
\$12.2 Million



The Maintenance, Repair, and Overhaul Initiative, once deployed, will provide Air Force Sustainment Center encompassing 11,500 users with an integrated capability for planning, scheduling, and executing organic depot maintenance to support agile planning, optimized workload assignment, resource allocation, and integrated quality.



2020 PB:
\$99.7 Million



UP

Unified Platform Narrative

Unified Platform operates under fiscal year 2016 National Defense Authorization Act Section 804 to use rapid prototyping and rapid fielding authorities. The program fulfills the need to fuse cyber data from multiple sources and classification levels, and is a central component of US Cyber Command's Joint Cyber Warfighting Architecture. The centralization of offensive and defensive mission, commercial, and third-party data allows analytics to be run against the data set to produce mission-relevant information. This enriched information source may be queried by cyber planners, operators and support personnel across the Cyber Mission Force and Service-specific cyber elements to enhance on-going cyber operations and planning. The scalability and interoperability of this architecture allows future expansion to new mission sets, integration of innovative technologies, and exploitation of emerging opportunities.

Unified Platform will be a cloud-based platform that will be incrementally delivered and accessible to 133 Cyber Mission Force teams.

CONTRACTING

Software Development:

Indefinite-Delivery/Indefinite-Quantity

Multiple vendors and contracts reaching nationwide to source expertise to realize the UP capability vision with Government as the primary integrator.

SCHEDULE

The Unified Platform minimum viable product will be delivered in the spring of 2019 with additional enhancements provided every three to six months thereafter.

ACAT II & III Program Highlights



INFORMATION
DOMINANCE



Counter Small Unmanned Air System

The U.S. Air Force's Counter small Unmanned Air System (C-sUAS) is responsible for the design, development, procurement, delivery, installation and sustainment of an \$800 million Joint Rapid Acquisition Cell directed urgent operational need portfolio with a five-year, \$3.2 billion scope of effort to include fixed site, mobile, portable, and handheld C-sUAS capabilities. In addition to covering the full kill chain - Detect, Track, ID, and Defeat, the program is developing and delivering operator, administrator, and maintenance training & the associated logistics network for base Security Forces personnel on more than 170 sites spanning Strategic Command, Central Command, European Command, and Pacific Air Forces. In fiscal year 2018 the team defined a comprehensive five phase C-sUAS program strategy, executed 85 contract actions, fielded the first ever mobile and fixed solutions to stateside sites, and confirmed the first sUAS non-kinetic kill by U.S. Air Forces Central Command.



Contracting Information Technology (BCAT II)

CON-IT provides a single contract writing system for the Air Force contracting community to support all global contracting needs including base operations, logistics, contingency and weapons system contracting. CON-IT is embracing agile acquisition in a variety of ways to deliver business capability faster and with less risk to the AF contracting community. In partnership with U.S. Department of Agriculture, CON-IT has completed 28 agile development sprints. Agile allowed a viable solution to be delivered to operational users in just nine months. CON-IT on-boarded 4,400 operational contracting users, migrated 41,212 contracts and shutdown 109 Standard Procurement System instances across the Air Force. CON-IT was tested during hurricane Michael when the legacy contract writing system, Standard Procurement System, became unavailable to the users of Tyndall Air Force Base. The CON-IT Integrated Program Office responded immediately, bringing users online with CON-IT and activating new accounts. However, the issue of gaining access to the user's SPS contract data, located on servers still at Tyndall, was a pressing concern. With a unique assistance from the Civil Air Patrol the team was able to physically recover the SPS servers from Tyndall and manually transfer the data into CON-IT at Maxwell AFB.



Battlefield Airborne Communications Node

The BACN program, enables tactical edge information interoperability across disparate tactical data networks by providing beyond line-of-sight voice and data relay and persistent command and control data link coverage over an austere area of responsibility during 24/7 operations. The BACN aircraft payload is comprised of various datalink terminals and radios that receive, translate, and transmit communications between ground and air participants and is currently deployed on a fleet of four E-11A commercial derivative aircraft and four EQ-4B remotely piloted aircraft. The BACN program has supported more than 12,000 missions and flown more than 160,000 combat flight hours, enabling seamless voice and data exchange within multiple locations.

“

We in C3I&N live by the creed, Deliver, Innovate and Grow....deliver capabilities in atmosphere of innovation while growing the skills of our workforce! Applying these principles is changing the culture of this organization into a 'capability delivery factory', resulting in innovative acquisition approaches and empowerment at all levels as we look to capture our place as the “go-to” communication, cyber, and data weaponization center of excellence.

*Brigadier General Michael Schmidt,
Command, Control, Communications,
Intelligence and Networks
Program Executive Officer*



Air Force Academy Civil Engineering Base Maintenance Support

The program provides improved facilities support for Air Force cadets to have a safe and functional environment for training and learning the Air Force way of life. The acquisition applied best practices/lessons learned from current contract to address installation management, facilities/infrastructure repair and maintenance, emergency and housing management across the entire academy grounds. Using a competitive best value evaluation, a \$221 million contract was awarded on September 10, 2018 to KIRA Training Services. Due to the high quality of the solicitation/proposals, the award was made four months ahead of schedule avoiding one and a half years in added discussions. Although a single protest was filed, it was later withdrawn due to the quality of the evaluation/decision documentation.



FISCAL YEAR 2020

BUDGET \$10.16B

RESEARCH,
DEVELOPMENT,
TEST & EVALUATION



\$7.73B

PROCUREMENT



\$2.43B

SATELLITE
COMMUNICATIONS
SPACE CONTROL



POSITIONING,
NAVIGATION AND TIMING

SPACE LAUNCH

OTHER

REMOTE SENSING

IN SOURCE SELECTION

- » Evolved Expendable Launch Vehicles

IN OPERATION / SUSTAINMENT

- » Advanced Extremely High Frequency System
- » Enhanced Polar System
- » Global Broadcast System
- » Global Positioning System IIF
- » Wideband Global SATCOM System

IN DEVELOPMENT / PRODUCTION

- » Enhanced Polar System-Recapitalization
- » Enterprise Space Battle Management Command and Control
- » Family of Advanced Beyond Line-of-Sight Terminals
- » Global Positioning System III and IIIF
- » Joint Space Operations Center Mission System
- » Military Global Positioning System User Equipment
- » Next Generation Operational Control System
- » Next Generation Overhead Persistent
- » Infrared Protected Tactical Enterprise Service
- » Space-Based Infrared System
- » Space Fence
- » Weather System Follow-on Microwave



PORTFOLIO



SATELLITE COMMUNICATIONS



POSITIONING, NAVIGATION
AND TIMING



SPACE LAUNCH



SPACE CONTROL



REMOTE SENSING

SPACE

Space has become a contested domain. The Air Force is taking steps to ensure space capabilities play their vital role in multi-domain operations today and in the future. This requires additional priority and focus on protecting our space capabilities as well as conducting global operations with speed, flexibility and precision. In 2018, the Air Force began implementing changes to enable the speed of acquisition.

The Air Force transformed the Space and Missile Systems Center to lead as an enterprise with greater speed and agility to outpace our adversaries. The Air Force is using rapid prototyping and rapid fielding authorities provided by Congress to accelerate acquisition timelines beyond historical norms. This will enable the Air Force to utilize innovative technologies to demonstrate new capabilities and meet emerging military needs.

Global operations are crucial to our approach to national security. In 2019, the Air Force will continue to strengthen international alliances and attract new partners to provide complementary capabilities and forces to maintain balance and deter aggression. Evolving our alliances and partnerships into an extended network, to include non-traditional vendors, will meet the shared challenges of our time.



SPACE SUPERIORITY

AEHF

Advanced Extremely High Frequency System (Satellite Communications)

The Advanced Extremely High Frequency system is a joint service effort that provides worldwide, survivable, secure, protected and jam-resistant communications for high-priority military ground, sea and air assets. The system enables presidential and senior leadership conferencing, as well as command and control of strategic forces across the full spectrum of conflict, including nuclear threat environments.

It also provides protected communications between combatant commanders and globally-deployed tactical users. The system augments and will replace the 1990s-era Milstar satellites, providing 10-times the capacity of the previous system.

Three satellites are operational and provide capability to the warfighter in concert with the remaining Milstar satellites. The final three satellites encountered an issue in production, causing launch delays while the contractor replaced hardware.

The production issue is now resolved, and AEHF-4 launched October 17, 2018. AEHF 5-6 are on track to launch in fiscal 2019-2020, respectively.

ORIGINAL UNIT COST

\$1.80 Billion
(For vehicles 5 and 6)

CURRENT UNIT COST

\$1.38 Billion
(For vehicles 5 and 6)
(23% decrease)

COST

2020 - 2024
President's Budget
\$366.5 Million

2020
\$149.2
Million

CONTRACTING

AEHF Satellites 1-3
Cost-Plus-Award-Fee

AEHF Satellites 4
Cost-Plus-Incentive-Fee

AEHF 5-6 Block Buy
Fixed-Price-
Incentive-Firm

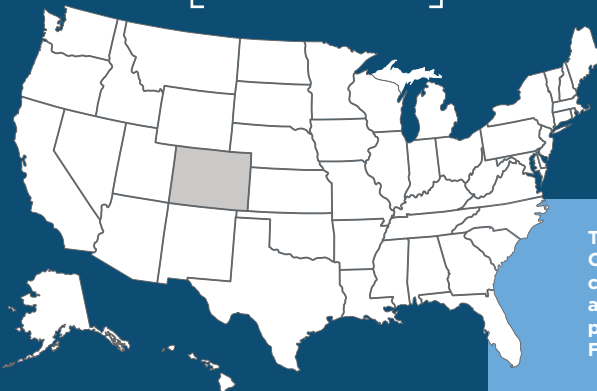
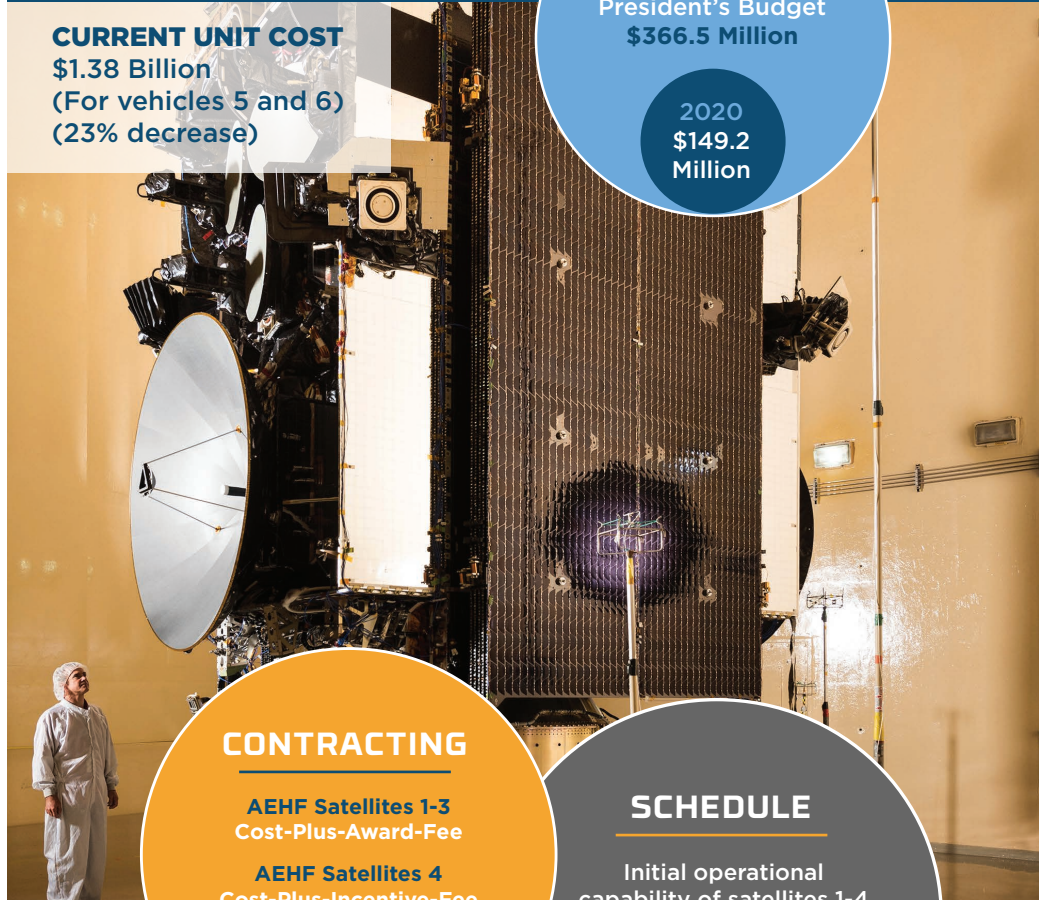
LOCKHEED MARTIN
Sunnyvale, California

SCHEDULE

Initial operational capability of satellites 1-4 was 13 months behind the original schedule. Satellite vehicle 5 is estimated to be available for launch in mid-2019.

BASING/ DEPLOYMENT STRATEGY

The Air Force 4th Space Operations Squadron controls the AEHF satellites and communications payloads from Schriever Air Force Base, Colorado.





COST

2020 - 2024
President's Budget
\$7.4 Billion

2020
**\$1.7
Billion**

ORIGINAL UNIT COST

(2013 - Program Recertification):
\$440.3 Million

CURRENT UNIT COST

\$348 Million
(21% decrease)

CONTRACTING

Procurement
Firm-Fixed-Price

**Rocket Propulsion System and
Launch Service Agreement**
Other Transaction Agreements

EELV Phase 1 Capability
Cost-Plus-Incentive-Fee

SCHEDULE

Phase 1: FY 2013-2017

Phase 1A: FY 2015-2019

Phase 2: FY 2020 - 2024

Phase 3: 2025 - TBD

UNITED LAUNCH ALLIANCE
Denver, Colorado

SPACEX
Hawthorne, California

Aerojet Rocketdyne
Sacramento, California

**NORTHROP GRUMMAN
INNOVATION SYSTEMS**
Dulles, Virginia

BASING/ DEPLOYMENT STRATEGY

Operated out of Cape Canaveral Air
Force Station, Florida, Kennedy Space
Center, Florida and Vandenberg Air
Force Base, California.

As of March 1, 2019, the Evolved Expendable Launch Vehicle will be renamed the National Security Space Launch program. This program provides space launch services for medium and heavy National Security Space satellites. All 73 NSS EELV launches from 2003 to October 17, 2018 have been successful.

The initial Phase 1 acquisition strategy established a "Block Buy" requirements-like construct with United Launch Alliance, which provided level unit pricing, resulting in cost savings of \$3.6 billion and stabilization of the industrial base.

Phase 1A of the strategy reintroduced competition into the program. The 2015 NDAA required the Air Force to transition from the Russian RD-180 engine by 2022. As a result, the Air Force is investing in the development of multiple launch systems through public-private partnerships, leveraging industry's commercial launch developments to ensure they meet government standards and requirements. The Air Force originally awarded cost-sharing agreements to SpaceX, Northrop Grumman Innovation Systems (formerly Orbital ATK), Aerojet Rocketdyne, and United Launch Alliance to develop rocket engines for future launch systems.

The Air Force awarded launch service agreements to Blue Origin, Northrop Grumman Innovation Systems, and United Launch Alliance to develop full launch systems on October 10, 2018. The Service will ultimately select two providers for the next generation of launch service procurements (Phase 2) in late 2019.



Enhanced Polar System payloads provide secure, protected, jam-resistant communications over the northern polar region, north of 65°N latitude. The EPS payloads provide improved capability and more than 26 times the capacity of the legacy polar communications satellites.

The program consists of two on-orbit communications payloads on classified host satellites in highly-elliptical orbits. The two payloads provide 24/7 coverage over the North Pole.

EPS will replace the current two payload Interim Polar System in fiscal year 2019. With the conclusion of payload on-orbit testing in December 2017 and the completion of the control and planning segment development, the EPS program initiated multi-service operational test and evaluation in early fiscal year 2019.

ORIGINAL UNIT COST
\$734.3 Million

CURRENT UNIT COST
\$725.9 Million
(1% decrease)



CONTRACTING

Two Payloads - Classified Host
Cost-Plus-Award-Fee

Control and Planning Segment
Cost-Plus-Incentive-Fee

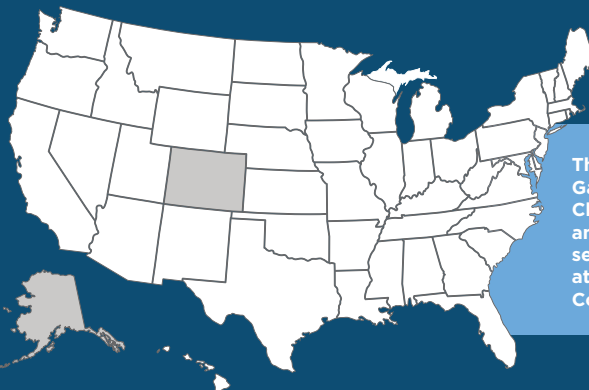
The Gateway
Developed by Navy with
Air Force funding

SCHEDULE

Both payloads
are available for
operational use
as of July 2018.

NORTHROP GRUMMAN
Redondo Beach, California

BASING/ DEPLOYMENT STRATEGY



The program includes the Gateway, a fixed installation at Clear Air Force Station, Alaska, and the control and planning segment, a fixed installation at Schriever Air Force Base, Colorado.

Family of Advanced Beyond Line-of-Sight Terminals

FAB-T



SPACE
SUPERIORITY

COST

2020 - 2024
President's Budget
\$838.3 Million

2020
\$173.2
Million

ORIGINAL UNIT COST

\$18.0 Million - CPT
\$17.7 Million - FET

CURRENT UNIT COST

\$16.8 Million - CPT
\$20.1 Million - FET
(7% decrease - CPT)
(14% increase - FET)

SCHEDULE

A revised FAB-T Acquisition Program Baseline was approved on 10 July 2018. The revised baseline includes a revised objective of June 2021 and threshold of December 2021 for initial operating capability.

CONTRACTING

Development &
Production
Firm-Fixed-Price

RAYTHEON
(Development)
Marlborough, Massachusetts
(Production)
Largo, Florida

BASING/ DEPLOYMENT STRATEGY

FAB-T has 84 terminals in airborne, ground mobile, and ground-fixed configurations. Airborne terminals will be installed on E-4 and E-6 aircraft. Ground-mobile terminals will be installed at geographically-separated locations. Ground-fixed configurations will be deployed to 37 locations worldwide.

The Family of Advanced Beyond Line-of-Sight Terminals program is developing satellite communication terminals designed to survive and operate through a nuclear event and are essential to the strategic deterrent of a nuclear weapons system.

FAB-T systems are capable of communicating with legacy satellites using a jam-resistant signal. FAB-T systems are compatible with other Air Force, Army and Navy terminals.

The FAB-T Command Post Terminals will enable Presidential and national voice conferencing, provide the command and control link for communications satellites, and relay information for missile warning. The FAB-T CPT will be deployed to fixed sites and mobile command locations worldwide, as well as on E-4 and E-6 aircraft. CPT has experienced delays in developmental qualification testing of all five terminal configurations, production qualification testing for initial terminals, and fielding. This resulted in a delay of the subprogram's full rate production decision and a requirement to re-baseline the program schedule. A revised Acquisition Program Baseline was approved in July 2018.

The FAB-T Force Element Terminals will provide nuclear survivable communications, emergency action messages, and force report-back for the B-52 and select RC-135 aircraft.



Global Positioning System III is the next-generation series of satellites for the GPS constellation that provides positioning, navigation, and timing capabilities to an unlimited number of users across the globe.

The GPS III program encountered multiple technical challenges in satellite development and production previously, but all known issues have been overcome at this point. GPS III Space Vehicle 1 launched in December 2018, and GPS III Space Vehicle 2 was declared available-for-launch August 10, 2018.

For the GPS III Follow-On (GPS IIIF) program, the Air Force conducted a full and open competition for no less than 22 additional satellites and awarded a contract to the incumbent, Lockheed Martin, on September 26, 2018. GPS IIIF is based on the GPS III technical baseline but also provides 4-times increased anti-jam capabilities over GPS III for military users in contested areas.

The program will also add new capabilities to assist with the global search-and-rescue mission and host a redesigned Nuclear Detonation Detection System that has a lower overall size, weight, and power requirement.

***ORIGINAL UNIT COST**
\$542.9 Million

***CURRENT UNIT COST**
\$568.8 Million
(5% increase)

*GPS III SV 01-10 only

COST

2020 – 2024
President's Budget
\$5.6 Billion

2020
**\$951.4
Million**

CONTRACTING

GPS III SV-01-10
Cost-Plus-Incentive-Fee/
Award-Fee

GPS IIIF SV-11-32
Fixed-Price-Incentive-
(Firm Target)/
Award Fee

LOCKHEED MARTIN
(GPS III SV-01-10) and
GPS IIIF SV-11-32)
Denver, Colorado

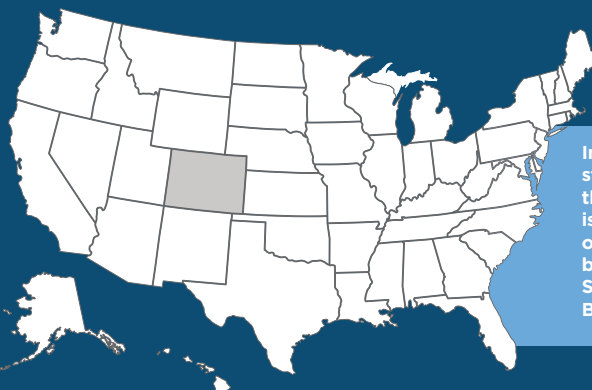
SCHEDULE

The first satellite has been available for launch since September 2017 and successfully launched in December 2018.

The second satellite was available for launch 11 months after the first satellite, per plan. For SV-11, the satellite is baselined to be available for launch in January 2028; however, the program is tracking to February 2026.

BASING/ DEPLOYMENT STRATEGY

In order to optimize signal strength and coverage area, the GPS satellite constellation is deployed in a medium-earth orbit. GPS satellites are operated by the 2nd Space Operations Squadron at Schriever Air Force Base, Colorado.





COST

2020 - 2024
President's Budget
\$77.7 Million

2020
\$11.4
Million

ORIGINAL PROGRAM COST
\$477.0 Million

CURRENT PROGRAM COST
\$484.0 Million
(1% increase)

The Joint Space Operations Center Mission System is a modernized hardware and software system that provides real-time integrated space situational awareness and enables informed, rapid decision-making, enhancing the ability to plan, direct, coordinate and control space operations.

JMS Service Pack 9 adds new capability to the operations center, including a High Interest Event Tracker. The Air Force Space and Missile Systems Center serves as the lead for contract management, and the Navy Space and Naval Warfare Systems Command serves as the lead systems engineering integrator. Two companies, AGI and a.i. solutions, provide commercial software licenses and engineering support.

The JMS program encountered issues during Operational Test in May 2018. The test identified two Category I deficiencies as well as multiple requirement gaps needed to support a contested space warfighting domain and require extensive resources to address. In 2018, the program completed Operation Test of Service Pack 9.

CONTRACTING

Commercial Software Licenses
AGI Solutions
Firm-Fixed-Price

Engineering Support Hours
a.i. solutions
Firm-Fixed-Price
Level-of-Effort

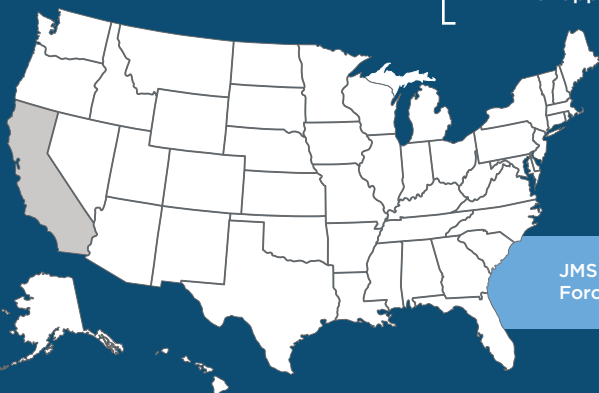
SCHEDULE

The full deployment decision is currently estimated to be in May 2019, 32 months later than the original estimate of June 2016.

The government is serving as the prime developer and lead integrator of the system of applications.

BASING/ DEPLOYMENT STRATEGY

JMS is located at Vandenberg Air Force Base, California.





The Next Generation Operational Control System replaces the legacy control segment and provides command, control, and mission support for all GPS satellites. The OCX system provides greater cybersecurity for the GPS system that is critical to the U.S. Armed Forces, the American economy, and billions of civilians.

The OCX program will allow effective use of the latest military and civil GPS signals, enabling navigation warfare capabilities for the warfighter and ensuring the Air Force can combat the latest threats. The OCX program has been troubled since early in the program due to poorly understood cybersecurity requirements, poor contractor systems engineering, and incorrect schedule assumptions.

In 2016, OCX breached Nunn-McCurdy thresholds for overruns against the current and original baselines. The OCX program was recertified in 2016 with an extended schedule. The Air Force is investing in modernizing Raytheon software development practices to mitigate the mission impact of the delayed delivery of the OCX capability.

In October 2017, the Air Force accepted OCX Block 0, which provides the Air Force a cyber-hardened ground system at Schriever Air Force Base capable of launching the GPS III satellites and performing initial on-orbit testing. The program recertified Milestone B with a new cost and schedule baseline on September 27, 2018.

ORIGINAL UNIT COST
\$6.13 Billion

CURRENT UNIT COST
\$6.30 Billion
(3% increase)

*Program recertified in
September 2018.

COST

2020 – 2024
President's Budget
\$1.8 Billion

2020
**\$445.3
Million**

SCHEDULE

The contractor's scheduled delivery date has been delayed by more than five and a half years, from October 2015 to April 2021, according to the latest estimate. Raytheon's recent performance has improved and the current schedule has held since August 2017.

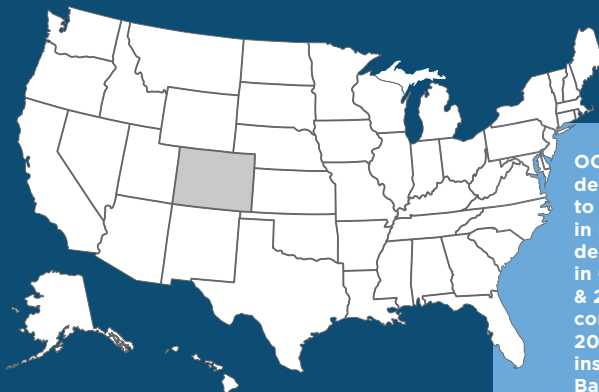
CONTRACTING

Cost-Plus-Award-Fee/
Cost-Plus
Incentive-Fee

RAYTHEON
Aurora, Colorado

BASING/ DEPLOYMENT STRATEGY

OCX is a software-intensive development program structured to deliver capability incrementally in Blocks 0, 1 and 2, with two deliveries (Block 0 accepted in October 2017 and Blocks 1 & 2 to transition to operations concurrently in Fiscal Year 2022). OCX will be delivered and installed at Schriever Air Force Base, Colorado.



Next-Generation Overhead Persistent Control

OPIR



SPACE
SUPERIORITY

COST

20120 - 2024
President's Budget
11.4 Billion

2020
\$1.40
Billion

SCHEDULE

The Air Force Initial Launch Capability goal for the Next-Generation Overhead Persistent Infrared system is 2023 with a threshold of 2025 utilizing Section 804 authorities.

CONTRACTING

Geosynchronous Orbit
Undefined

Polar Orbit
Undefined

(Geosynchronous)
LOCKHEED MARTIN
Sunnyvale, California

(Polar)
NORTHROP GRUMMAN
AEROSPACE SYSTEMS
Redondo Beach, California

DEPLOYMENT STRATEGY

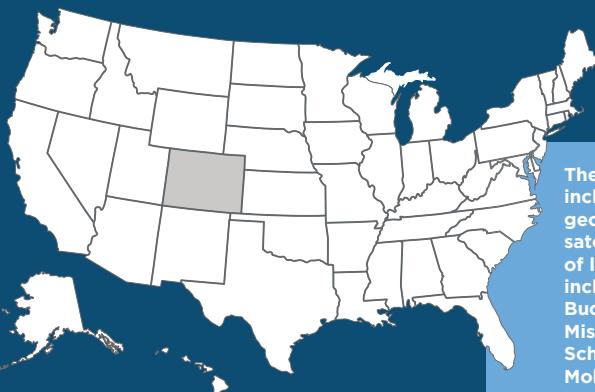
The Next-Gen OPIR constellation includes satellites in both geosynchronous and polar orbits. The satellite bus and payloads use a variety of locations for command and control, including: Mission Control Station, Buckley Air Force Base, Colorado; Mission Control Station Backup, Schriever Air Force Base, Colorado; Mobile Ground Stations, Greeley Air National Guard Base, Colorado.

As the Air Force's follow-on program to the Space Based Infrared System, Next-Generation Overhead Persistent Infrared will remain the unblinking eye delivering missile warning, missile defense, battlespace awareness, and technical intelligence for the U.S. and its allies.

Next-Gen OPIR will provide improved strategic missile warning from a survivable constellation of geosynchronous and polar orbit satellites, developing resiliency features needed in a contested environment. Next-Gen OPIR will leverage legacy SBIRS developments to improve payload sensitivity, add resiliency features, and strengthen bus survivability.

The acquisition strategy for the program implements rapid authorities to accelerate the delivery of advanced capabilities. The Next-Gen OPIR acquisition will also update the ground control segment through the Future Operational Resilient Ground Evolution. FORGE will develop an open architecture framework for mission data processing and transition command and control to Enterprise Ground Services.

The Next-Gen OPIR system will also reduce risk through the Space Modernization Initiative, where it will mature technology, exploit data with algorithm development, and perform in-space technology demonstrations.





The Protected Tactical Enterprise Service will deliver a software-intensive ground system to provide worldwide, anti-jam protection. This will be done via the Protected Tactical Waveform, a waveform that enables anti-jam capability, over the Wideband Global SATCOM system. PTES will aid warfighters who are currently unable to operate through interference on the ground.

The program will consist of nine capability prototypes, first supporting the U.S. Navy in addressing a requirement driven by emerging threats in the Pacific to provide operational prototypes installed on two carrier strike groups. It will leverage fiscal year 2016 National Defense Authorization Act Section 804 Rapid Prototyping authorities to deliver this requirement 1.5 years earlier than a conventional acquisition's path to initial operational capability. The overall PTES program is expected to award its development contract in fiscal year 2019.

COST

2019 - 2023
President's Budget
\$456.2 Million

2019
**\$105.0
Million**

CONTRACTING

Development Contract
in Source Selection

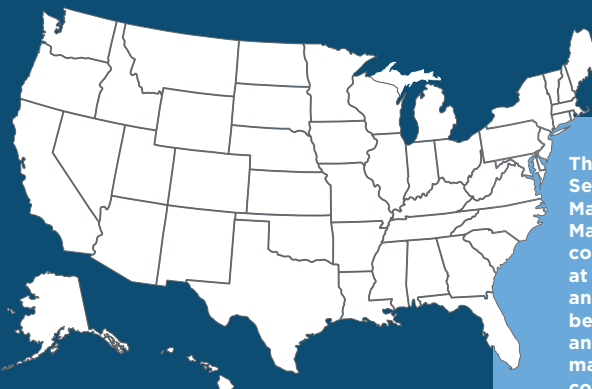
SCHEDULE

Early Operations Capability
2 Navy Carrier Strike Groups
in Pacific region
early fiscal year 2022

Initial Operational Capability
Single Theater WGS PTW Service
mid fiscal year 2023

Full Operational Capability
Worldwide WGS PTW Service
early fiscal year 2026

BASING/ DEPLOYMENT STRATEGY



The Protected Tactical Enterprise Service provides a Hub, Mission Management System and a Key Management System. Equipment comprising Hubs will be hosted at existing SATCOM gateway sites and will provide connectivity between user terminals. The MMS and KMS software applications will manage the allocation of tactical communications resources and will be hosted on commercially-available servers.

SPACE FENCE



SPACE
SUPERIORITY

COST

2020 - 2024
President's Budget
\$83.1 Million

2020
**\$71.8
Million**

ORIGINAL UNIT COST

\$1.65 Billion

CURRENT UNIT COST

\$1.56 Billion
(6% decrease)

CONTRACTING

Engineering & Manufacturing
Development,
Production and
Deployment
Fixed-Price-
Incentive-Firm

SCHEDULE

System development
is on schedule and
currently 94% complete,
with initial operational
capability currently
scheduled for
summer 2019.

LOCKHEED MARTIN
Moorestown, New Jersey

BASING/ DEPLOYMENT STRATEGY

Increment 1 funding delivers a radar site at Kwajalein Atoll, Marshall Islands, with an operations center in Huntsville, Alabama. Construction commenced on Kwajalein Atoll in 2014, with installation on island nearly complete. Testing began in September 2018.

Space Fence is a ground-based radar system that tracks satellites and space debris in Earth's orbit. It provides space flight safety, early detection of potential threats to satellites and situational awareness for manned space flight operators.

It is designed to provide assured coverage of low-earth orbit for objects as small as 10 centimeters, and provides a search capability for objects at higher orbits. Data from Space Fence will continuously feed into the Air Force's tracking database. Space Fence is a second-generation space surveillance system and will be the most accurate high-capacity radar in the Space Surveillance Network.

The increased sensitivity, coupled with the added computing capabilities of the Joint Space Operations Center Mission System, will yield a greater understanding of the space operating environment and associated threats.

Contracts were issued for development and construction in 2014, and Space Fence is expected to be operational in 2019.



Wideband Global Satellite Communications is a system of the highest-capacity communication satellites owned and operated by the Department of Defense. It replaced the Defense Satellite Communications System as the DoD's primary high-data-rate satellite communications system.

The deployment of the WGS system exponentially increases the DoD's communication capacity provided by the previous Defense Satellite Communications System. The DoD uses WGS to deliver the Global Broadcast Service, distributing messages to users across all military services, federal agencies and international partners. Originally planned as a three satellite gap-filler system, WGS is now a 10-satellite system and is the backbone of DoD's high-data-rate satellite communication.

Multiple international partners use the WGS system, including Australia, Canada, Denmark, Luxembourg, the Netherlands and New Zealand. Since the launch of WGS-9 in March 2017, Norway and the Czech Republic have also joined the WGS partnership. The fiscal year 2018 Consolidated Appropriations Act includes a \$600 million Congressional add to "fully fund" WGS 11-12. On June 21, 2018, the Air Force released a sole-source Request for Proposal to Boeing for WGS-11 and -12. The contract award is expected in early 2019.

ORIGINAL UNIT COST
\$583.3 Million

CURRENT UNIT COST
\$539.3
(11 percent decrease)

COST

2020 - 2024
President's Budget
\$164.2 Million

2020
\$1.9
Million

CONTRACTING

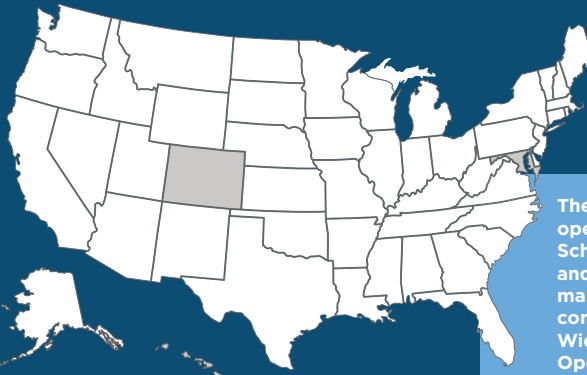
Nine of 10 satellites are operational and the tenth satellite is projected to launch in 2019.

Block II Follow-On
(WGS-7 through WGS-10)
Firm-Fixed-Price

SCHEDULE

Initial operational capability was declared in January 2009, 49 months behind the originally scheduled date of December 2004. Full operational capability was declared in May 2014.

BOEING SPACE SYSTEMS
El Segundo, California



Overseas Locations:
Landstuhl, Germany, and Okinawa, Japan

BASING/ DEPLOYMENT STRATEGY

The 4th Space Operations Squadron operates the WGS satellites from Schriever Air Force Base, Colorado, and the U.S. Army operates and manages funding for the WGS communications payloads at five Wideband Satellite Communications Operations Centers around the world: Fort Detrick and Fort Meade, Maryland; and Wahiawa, Hawaii.

Enhanced Polar System Recapitalization

EPS-R



SPACE
SUPERIORITY

To prevent a military satellite communications gap in the northern polar region, this program will recapitalize the Enhanced Polar System payloads and ground segment. The Air Force is pursuing hosting Enhanced Polar System-Recapitalization payloads on Space Norway satellites, to be launched in late 2022. A sole-source request for proposal for two EPS functional-equivalent payloads was released to Northrop Grumman Aerospace Systems in November 2017 and the contract was definitized on August 10, 2018. This international partnership has the potential to save the U.S. government \$900 million compared to cost estimates for procuring two “free-flyer” satellites and associated launch vehicles.



2020 PB:
\$427.4 Million

Enterprise Space Battle Management Command and Control Program

ESBMC2

The Enterprise Space Battle Management Command and Control program is designed to allow the Air Force to command and control space forces by integrating data for operational commanders. The system will create decision-relevant views of the space environment, rapidly detect, track, and characterize objects of interest, identify and exploit traditional and non-traditional sources, perform space threat analysis, and enable efficient distribution of data across the Space Surveillance Network. It will help commanders develop courses of action to address threats to critical space assets.

ESBMC2 will be hosted on a common government infrastructure with open standards to allow for rapid prototyping and integration of capabilities. Open Mission System and Universal C2 Interface standards will allow for maximum flexibility. Agile DevOps software development methodology will closely involve operators in providing feedback to developers to quickly iterate and deliver capabilities to meet operational needs.

ESBMC2 is currently in the Technology Maturation Risk Reduction phase and will deliver a subset of the requirements using industry software development best practices in fiscal year 2019. An operational prototype is scheduled to be delivered in fiscal year 2021.



2020 PB:
\$72.8 Million



SPACE
SUPERIORITY

GSSAP

**Geosynchronous
Space Situational
Awareness Program**

The Geosynchronous Space Situational Awareness Program currently has four operational satellites on orbit that have been formally accepted by Air Force Space Command. The vehicles are tasked by the National Space Defense Center to characterize resident space objects in geosynchronous earth orbit. All four satellites have the capability to conduct rendezvous proximity operations to characterize their targets. This capability is used to collect data to contribute to anomaly and threat analysis as well as satellite catalog maintenance. Vehicles 5 and 6 are on contract and are projected for launch in late fiscal year 2020.

**Funding is
classified**



MGUE

**Military Global
Positioning System
User Equipment
Increment 1**

Military Global Positioning System User Equipment Increment 1 program is executing three contracts to develop GPS receivers that will use the modernized military code signal broadcast from the GPS satellites. These modernized receivers will deliver significantly improved capability to counter current and emerging positioning, navigation and timing threats and enable military operations in GPS-denied and navigation warfare environments where current legacy receiver performance would be compromised. The MGUE Increment 1 program is performing integration and operational testing for the service-nominated lead platforms: the Army Stryker, the Marine Corps Joint Light Tactical Vehicle, the Navy Arleigh Burke Class Destroyer, and the Air Force B-2 Spirit. The Services are then responsible for production and sustainment of the modernized receivers for their individual weapons systems.

**2020 PB:
\$142.6 Million**





MGUE Increment 2 will continue to employ military code receiver technology into additional applications (space receiver, precision-guided munitions and handheld receiver) to meet service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while addressing producibility of military code integrated circuits far into the future.



**2020 PB:
\$187.4 Million**

Space Rapid Capabilities Office

SpRCO

In accordance with the fiscal years 2018 and 2019 National Defense Authorization Acts, the Operationally Responsive Space Office is now the Space Rapid Capabilities Office. Its mission is being expanded to rapidly develop and field new classified space capabilities for immediate and near-term needs. Key operating principles include a short and narrow chain of command, overarching programmatic insight and early and prominent warfighter involvement with small integrated operating teams within a single office. Within the former ORS portfolio, the Space RCO will execute the following activities:

- » ORS-7, a low-cost automated manufacturing initiative which will support the Coast Guard's Arctic region search and rescue mission (November 2018 launch)
- » ORS-9, a USSTRATCOM Commander's validated urgent need for persistent all-weather tactical intelligence, surveillance and reconnaissance
- » The Solar Power project developing the capability to collect solar energy and provide uninterrupted, assured power to expeditionary forces operating in unimproved areas such as forward operating bases



**2020 PB:
\$33.7 Million**



SPACE SUPERIORITY

SPACE-BASED SPACE SURVEILLANCE FOLLOW-ON

2020 PB:
\$412.9 Million



The Space-Based Space Surveillance Follow-On program is partnering with the National Reconnaissance Office to satisfy common DoD and intelligence community requirements. Known as Silent Barker, the program will include both the space elements and the telemetry, tracking and command elements. Silent Barker will provide space situational awareness and indications and warning to detect geosynchronous orbit threats. The Silent Barker program remains on schedule and on budget, initiating its engineering and manufacturing development in April 2018, and is on track for completing the design review by 4th quarter of fiscal year 2019.

2020 PB:
\$225.7 Million



WSF

Weather System Follow-On

Weather System Follow-On is a space-based solution to satisfy weather gaps in monitoring ocean surface vector winds and tropical cyclone intensity. It addresses a unique military mission not supported by civil or commercial capabilities. Additionally, an energetic charged particle sensor will be installed to characterize low earth orbit energetic charged particles to aid in the attribution of satellite anomalies. The WSF-Microwave objective system contract was awarded to Ball Aerospace in November 2017. The WSF-Microwave satellite is estimated to be available for launch in fiscal year 2023.

ACAT II & III Program Highlights



SPACE
SUPERIORITY



GPS M-Code Early Use

GPS M-Code Early Use program provides early use of GPS Military Code signal beginning in 2020 until the Next Generation Operational Control System Block 1 is ready for transition to operations. M-Code is an advanced, new signal, designed to improve anti-jamming and protection from spoofing, as well as to increase secure access to military GPS signals for U.S. and allied armed forces. MCEU will modify the existing Architecture Evolution Plan Operational Control System in order to receive, upload, and M-Code tasking within the constellation.

The MCEU program incentivizes innovative solutions and reduces development risk by leveraging parallel and agile software development processes. During fiscal year 2018, this program received Milestone B approval and completed Critical Design Review.



United States Nuclear Detonation Detection System

The United States Nuclear Detonation Detection System program provides joint unambiguous, worldwide, highly survivable capability to detect, locate, characterize, and report nuclear detonations in the earth's atmosphere or near space. USNDS is responsible for several mission areas including treaty monitoring, nuclear force management, integrated tactical

warning and attack assessment, and space control. This program also provides supports to the GPS III and Space-Based Infrared System Survivable/Endurable Evolution programs. During FY18, USNDS delivered Universal Ground NDS Terminals 2-4 to the SBIRS S2E2 mobile trailers and completed acceptance testing for UGNT 5.



Defensive Cyber Operations

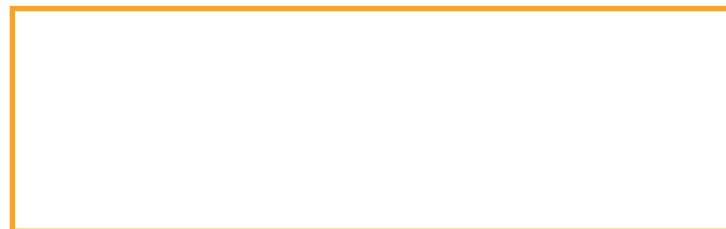
The Defensive Cyber Operations team successfully stood up a new program office to rapidly field space mission systems cyber defense capability and scaled that capability from zero to three mission systems. The Air Force tasked the Space Missile Systems Center with a "go-fast" initiative to demonstrate the first-ever deployment of an enterprise DCO detect capability on multiple space mission systems. The DCO team was challenged with delivering this new capability with an aggressive timeline of six months. The team completed the first milestone in only 90 days in April 2018 by fielding a minimum viable product DCO suite of tools, known as Manticore, to defend the Space Test Program second satellite at Kirtland Air Force Base. Subsequently, the team completed fielding of a full Manticore deployment to Buckley AFB in support of the Space Based Infrared System. The team established connection between Schriever AFB and Manticore at Kirtland AFB on July 31, 2018, providing Schriever AFB the ability to remotely detect cyber anomalies at Kirtland AFB.



SPEED IN ACQUISITION

Speed in any sport is the key to success! The speedy delivery of state-of-the-art equipment to the team's players adds an edge that drives swift success on the scoreboard.

Much like in sports, our nation is in constant competition with other state and non-state actors. Thankfully, with collaboration among members in Congress and the DoD, the Air Force continues to maximize non-traditional resources to deliver much-needed national security capabilities faster and smarter. This has led to the utilization of fiscal year 2016 National Defense Authorization Act Section 804 authority to reduce delivery time through the development of prototypes, and the use of a tailored approach to the processes in DoD Instruction 5000.02. These efforts allow us to shave years off of acquisition programs schedule times without sacrificing quality.





HOW WE'RE DOING



FISCAL YEAR 2018 ACQUISITION ENTERPRISE PERFORMANCE SUMMARY

Since the National Defense Authorization Act of 2011, the Air Force has conducted annual performance assessments on its ability to acquire capabilities effectively and efficiently. Data was aggregated up to provide an enterprise or total system perspective, rather than focusing on individual program-by-program compliance against established cost, schedule, and technical performance objectives.

The 2018 enterprise portfolio included 30 Acquisition Category (ACAT) I and 27 ACAT II programs that met the criteria for assessment: (1) an established baseline they were executing against, and (2) reported programmatic data consistently on a recurring basis.

The ACAT III programs were not included in the assessment because they do not have sufficient data to analyze. Additionally, all, non-Air Force led programs (e.g., F-35) were not included.

Over fiscal year 2018 Air Force Acquisition Enterprise cost estimate performance increased from the previous year by 0.4% for the Acquisition Category I portfolio and by 2% for the Acquisition Category II portfolio. Schedule performance within the Acquisition Category I portfolio showed improvement by reducing the rate of growth over the year to 2.1%; the Acquisition Category II portfolio saw annual schedule growth of 5.1%.

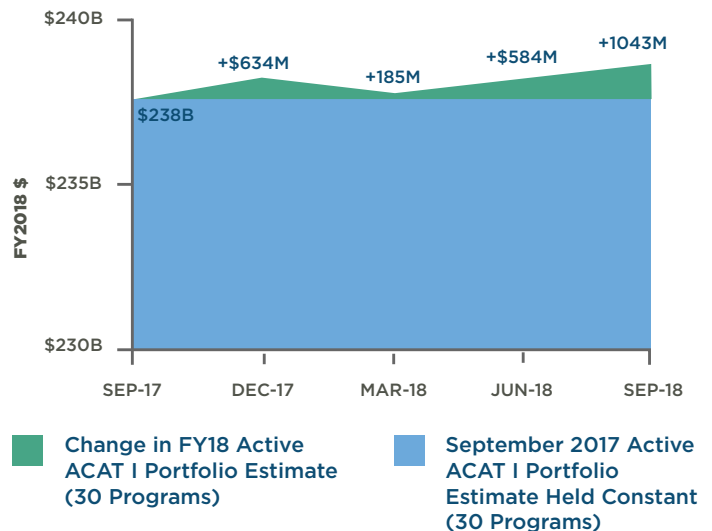
Fiscal year 2018 Enterprise results are reported below with comparisons to the trends from recent fiscal years.

ACAT I | COST PERFORMANCE SUMMARY

Efforts to control cost growth resulted in a mixed performance based on an assessment of both cost estimate performance and unit cost performance.

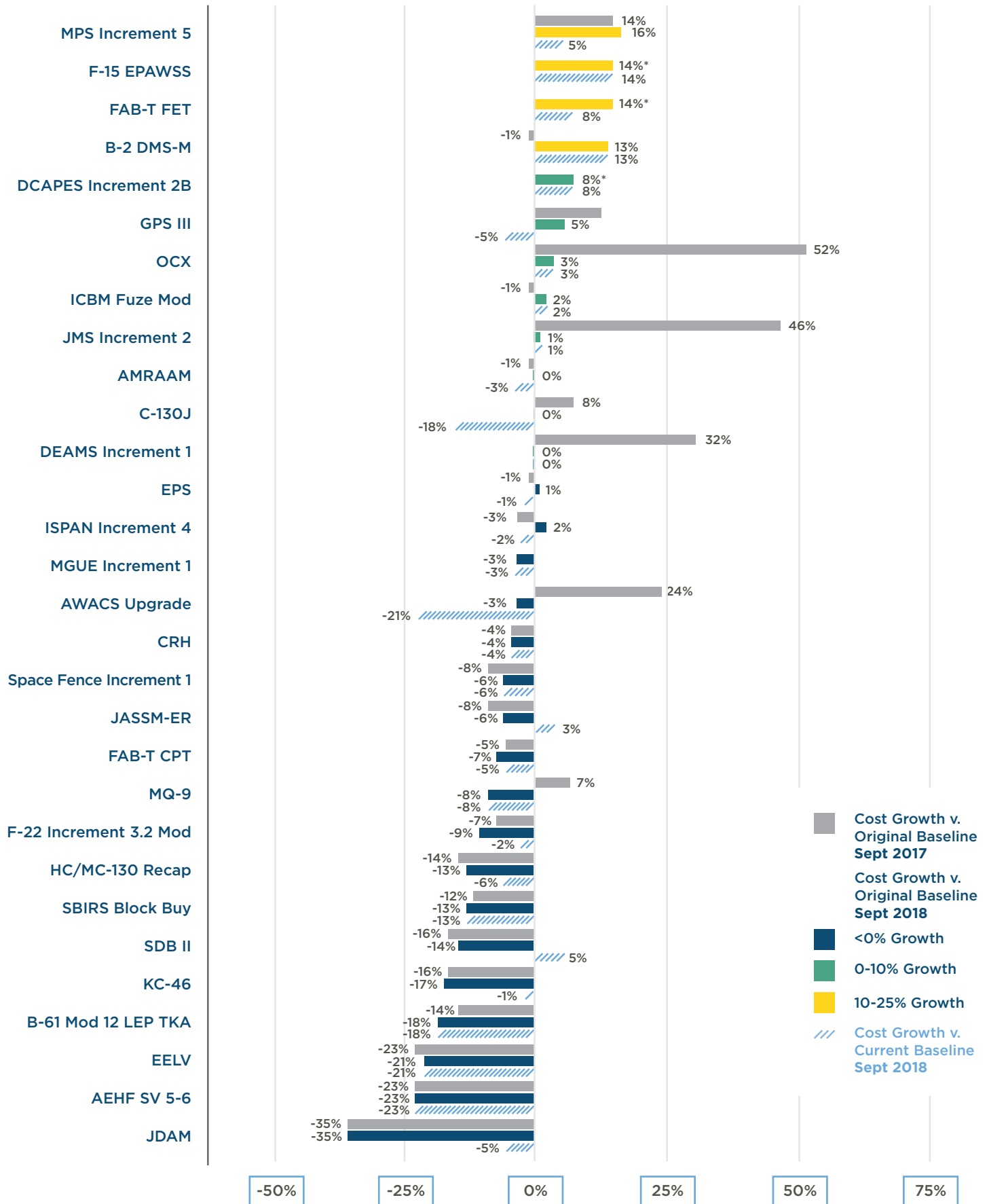
The total cost of the portfolio (based on current cost estimates) increased \$1 billion, from \$237.6 billion to \$238.7 billion, resulting in an increase of 0.4%. Eighteen of the 30 programs in the portfolio increased their estimates, 11 programs decreased their estimates, and one program had no change.

In comparison, the rate of growth for 2017 was -2.2% and the five-year average was -1%; fiscal year 2018 reversed what was a sustained trend of annual cost reductions.



Unit cost performance, which compares estimates of programs versus their original and current unit cost baselines, showed improvement. For the 30 programs assessed in 2018, the average Program Acquisition Unit Cost (PAUC) was 4.4% below original baselines and 3.6% below current baselines.

ACAT I UNIT COST GROWTH (Percent) ORIGINAL and CURRENT BASELINE



* Not included in the FY2017 Report

The Nunn-McCurdy Act mandates the reporting of programs exceeding certain thresholds of cost growth against current and original baselines. Unit cost measures are used by Congress to monitor excessive Service program cost growth. In 2018, 63% of 30 programs were below their original baselines and 87% reported less than 10% growth. Current baselines show 70% as below their current baselines, and 83% of the programs reported less than 5% growth.

ACAT II | COST PERFORMANCE SUMMARY

Overall cost control showed a mixed performance.

The total cost of the portfolio (based on current cost estimates) grew \$436 million, a 1.9% increase from 2017. Eight of the 27 programs increased their estimates, one program decreased, and the remaining 18 programs stayed the same, reporting no change.

Unit cost performance showed an improvement for the third consecutive year. 70% (19) of the programs executed at or below their current program baselines, and 96% (26) of the programs reported below 10% growth. Due to a lack of historical data, ACAT IIs cannot be tracked against their original baselines.

ACAT I | SCHEDULE PERFORMANCE SUMMARY

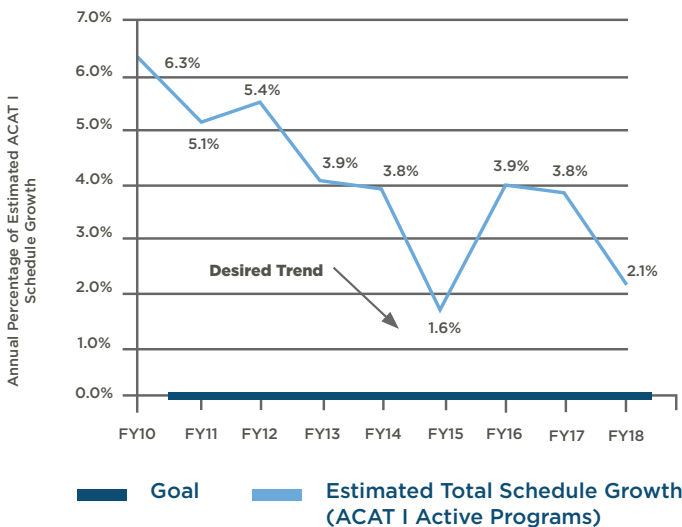
Efforts to control schedule growth showed improvement based upon the assessments of: (1) Schedule Growth, which measures Enterprise performance, and (2) Initial Operational Capability (IOC) Timeline, which measures individual program performance.

The portfolio added 51 months to the aggregate schedule in fiscal year 2018, resulting in schedule growth of 2.1%. This amounts to a 9% decrease over the last 5 years, but a .4% increase from

fiscal year 2017. Fiscal year 2018 growth was driven primarily by seven programs, to include one which grew more than 12 months. One program shortened its overall schedule length.

Initial Operational Capability averaged approximately one month of growth over fiscal year 2018, a growth rate in line with the last five years. On average, programs have achieved IOC approximately 18 months later than the originally schedules estimated.

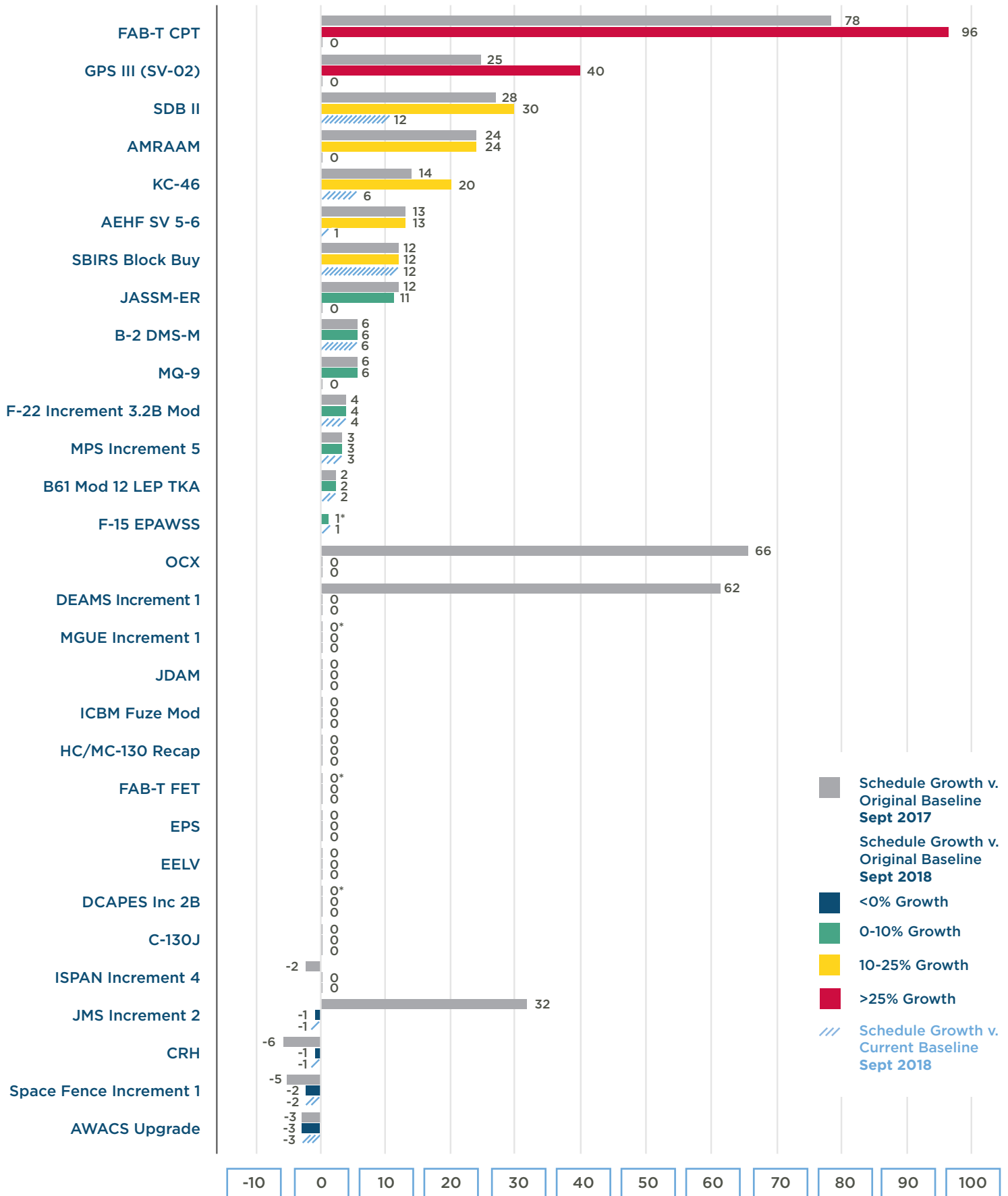
ANNUAL SCHEDULE GROWTH PERFORMANCE



ACAT II | SCHEDULE PERFORMANCE SUMMARY

The ACAT II portfolio added 72 months of growth in fiscal year 2018 at a rate of 5.1% over fiscal year 2017. Six programs experienced schedule growth, two of which grew by more than 12 months. Nineteen programs estimate achievement of their next milestone within six months of their baseline date.

ACAT I IOC SCHEDULE GROWTH (Months) ORIGINAL and CURRENT BASELINE



* Not included in the FY2017 Report

ACAT I | TECHNICAL PERFORMANCE SUMMARY

All Air Force ACAT I programs with future Initial Operational Capability milestones projected which Key Performance Parameters will be met between program thresholds and objective trade-spaces with no pending breaches. Additionally, no changes to KPP requirements were identified in fiscal year 2018 for any unclassified ACAT I program approved at an electronic Air Force Requirement Oversight Council.



18 ACQUISITION HIGHLIGHTS 2018

IMPROVED ACQUISITION PROCESSES IN 2018 ARE FIELDING TOMORROW'S AIR FORCE FASTER AND SMARTER

1 RAPID ACQUISITION -

Set goal to strip 100 years of unnecessary schedule from our programs, reached 62 years as of September 30 2018.

2 PROGRAM EXECUTIVE

OFFICE DIGITAL - Battle Management Directorate re-designated PEO Digital and charged with championing inclusion of Agile Development Operations.

3 GPS IIIF -

Contract award for 22 satellites that will provide greater accuracy and improved anti-jamming capabilities.

4 C-5 - 50th anniversary of the C-5.

Completed 52 contract deliveries for C-5M Reliability Enhancement and Reengining Program production aircraft.

5 RAPID SUSTAINMENT

OFFICE - Established to develop, test and deploy new technologies for implementation across enterprise improving readiness and reducing costs.

6 VC-25A HEAVY MAINTENANCE -

Boeing continues to execute to their 437-day challenge schedule, which is 71 days shorter than their 508-day contractual schedule.

7 BALLISTIC MISSILE EARLY WARNING SYSTEM/PRECISION ACQUISITION VEHICLE ENTRY PHASED ARRAY WARNING SYSTEM AND PERIMETER ACQUISITION RADAR ATTACK CHARACTERIZATION -

the Air Force signed a contract with Northrop Grumman to modernize these early missile detection systems.

8 SPACE AND MISSILE SYSTEMS

CENTER 2.0 - Changing Space acquisition to expedite delivery of capability to the warfighter.

9 T-X ADVANCED PILOT

TRAINER - Awarded \$9.2 billion Boeing contract without protest.

CHIEF ARCHITECT STAND UP - This position will manage the trade space between traditional requirements and acquisition roles, manage family-of-systems design margin and define interfaces and standards.

10

11 F-16 - Awarded Other Transactions

Authority for Cockpit Communication Control Panel Organizer backup radio controller providing capabilities one year earlier and \$1.3M cheaper.

12 EVOLVED EXPENDABLE LAUNCH VEHICLE LAUNCH SERVICES AGREEMENT -

Contracts awarded to develop three launch system prototypes and enable competitive selection of two launch service providers.

13 F-35A -

Awarded fourth Order for ALE-70 Countermeasure Dispenser System decoys to support Initial Operating Capability, saved \$1.2M.

UH-1N CONTRACT - The Air Force awarded a \$2.38 billion fixed-price type contract to The Boeing Company in September 2018.

14

RELEASE OF AFGM 2018-63-146-01 -**15**

Published Air Force Guidance on how to implement Section 804 as authorized in the fiscal year 2016 National Defense Authorization Act.

SHOULD-COST SAVINGS \$1.9 BILLION IN FY 18 -**16**

Should-Cost is the concept that program managers should strive to set cost targets below independent cost estimates or program office estimates and manage with the intent to achieve them.

AIR OPERATIONS CENTER**17**

PATHFINDER - Pushed the "Slapshot" product into operations at the 609th Combined Air Operations Center at Al Udeid Air Base, Qatar. Slapshot visualizes the pairing of missions with appropriate aircraft, which aids in leadership communication and guides the creation of the authority to operate.

LITENING ADVANCED TARGETING POD: -**18**

Awarded a contract modification to retrofit Environmental Control Units, saved the DoD \$25.4 million by combining multiple Major Command requirements.

We've had years of acquisition reform, continuous process improvement, and re-organization that had limited impact on how we actually execute programs. Agile development operations changes everything starting with requirements, contracting, testing, delivery and how we support systems.

*Steven Wert,
Digital Program Executive Officer*



SPEEDING UP ACQUISITION

Congressional authority given in the Fiscal Year 2016 National Defense Authorization Act Section 804, Rapid Prototyping/Rapid Fielding, is revolutionizing procurement. Tailored acquisition programs result in faster and smarter practices that deliver critical solutions to America’s warfighters.

Program schedules are tailored using the traditional DoD Instruction 5000.02 procedures, beginning with a conventional acquisition plan that removes unneeded steps. Additionally, Air Force program decision authority was delegated to the lowest appropriate levels, resulting in streamlined contracting processes.

The rapid prototyping pathway provides for the use of innovative technologies to quickly develop fieldable prototypes demonstrating new capabilities and meeting emerging military needs. The objective for rapid prototyping is to

develop a prototype that can be demonstrated in an operational environment within five years.

The objective of a rapid fielding program is to begin production within six months and complete fielding within five years.

“

Agile Combat Support has embraced iterative prototyping and fielding, along with rapid authorities that enable us to deliver faster. Sometimes, it simply means we get to the wrong answer, but we’re doing it faster than ever.

Colonel Brady Hauboldt,
(Acting) Agile Combat Support
Program Executive Officer

Examples of the Air Force’s use of Section 804 authorities afforded by Congress include:

PROGRAM	BENEFIT
Next Generation Overhead Persistent Infrared	Rapid iteration and insertion of new technologies to stay in front of advances in adversary threat
Air-launched Rapid Response Weapon	Accelerated tech transition from DARPA
Hypersonic Conventional Strike Capability	Leverage proven Conventional Prompt Strike Glide Body
F-22 Capability Pipeline: Tactical Mandates, TacLink-16, GPS M-Code	Agile software development delivers incremental capabilities as they mature: months, not years
Unified Platform (cyber)	Deliver increased capability, incrementally, to deliver warfighting capability at the speed necessary in the cyber domain
Integrated Strategic Planning and Analysis Network Increment 5	Frequent software deliveries that are more responsive and aligned with customer needs
B-52 Engine Replacement	Immediately “hands-on” with competitive prototyping using industry best practices
Protected Tactical Enterprise Service	Agile software development for earlier IOC for Carrier Strike Groups
Other Potential or PEO-managed Sec 804 Programs	Programs from across AF enterprise rapidly providing capability to the warfighter



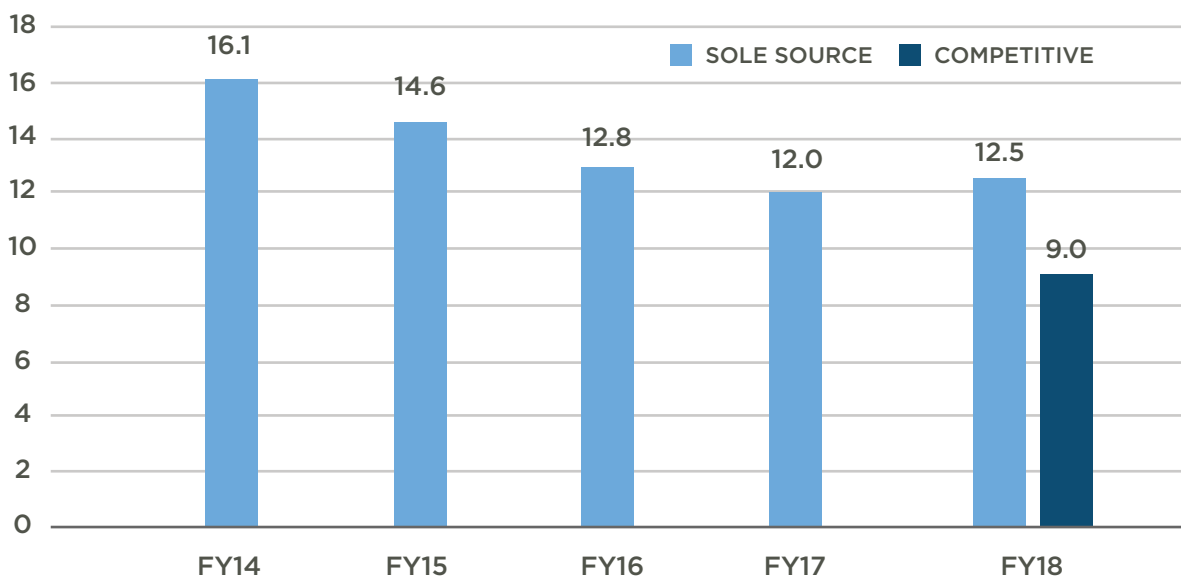
CONTRACTING TIMELINES

Since fiscal year 2014, Air Force Acquisition has tracked and analyzed award timelines, from release of requests for proposal to contract award, for sole-source contracts. Initial review of collected data found that, on average, two-thirds of the ‘to award’ acquisition schedule consisted of two factors: waiting to receive a qualifying proposal from industry and the government’s technical evaluation. To help reduce this timeline, Air Force Acquisition implemented a number of ‘best practices’ from program executive offices. These best practices included the use of a draft RFP to industry, early coordination with the Defense Contract Management Agency and Defense Contract

Audit Agency, and technical evaluation training. A new initiative implemented in fiscal year 2018 was the Sole Source Streamlining Toolkit. As a result of these cumulative initiatives, Air Force Acquisition has been successful in reducing the timeframe from RFP release to award for sole-source contracts, ranging from \$50 million to \$500 million, from an average of 16.1 months in fiscal year 2014 to an average of 12.5 months in fiscal year 2018. The slight uptick in award timeline from fiscal year 2017 to 2018 resulted from slower than planned contractor proposal deliveries. Finally, to more holistically evaluate contract award timelines; during fiscal year 2018, Air Force Acquisition began tracking competitive contract awards ranging from \$50 million to \$1 billion in order to establish a baseline and potential best practices. The average time to award was 9.0 months for those competitive contracts.

REQUEST FOR PROPOSAL TO AWARD TIMELINE

Sole-Source Contracts, \$50 Million - \$500 Million (Average time in months);
Competitive Contracts, \$50 Million - \$1 Billion



DELEGATION OF AUTHORITIES

In the fiscal year 2016 National Defense Authorization Act, Section 825 made the Service Acquisition Executive the milestone decision authority for major defense acquisition programs that reach Milestone A after Oct. 1, 2016, unless otherwise designated by the Secretary of Defense.

From October 2015 to present, the Air Force shifted milestone decision authority to the SAE level for 19 of 49 Acquisition Category I/IA programs to 39 of 50, speeding up both the decision process and delivery to the warfighter.

PROGRAM DELEGATIONS BY YEAR

ACAT I	Oct 2015	Oct 2017	Nov 2017	Oct 2018
ACAT ID/IAM (DoD)	30	20	12	11
ACAT IC/IB/IAC (AF)	19	31	39	40
TOTAL	49	51	51	51*

ACAT II	41 of 41 delegated from Service Acquisition Executive to Program Executive Officer
ACAT III	298 of 371 delegated from Program Executive Officer to Deputy Program Executive Officer or O-6 level Program Directors. Delegations decreased to 80.1%

* This number includes 2 BCAT I programs and 1 BCAT II programs formerly identified as ACAT IAC programs

Additionally, program executive officers for Acquisition Category II programs and deputy program executive officers or program directors for Acquisition Category III programs were empowered as milestone decision authorities, further accelerating acquisition efforts.

As of Nov. 30, 2018, all Acquisition Category II programs and 296 of 371 Acquisition Category III programs have been delegated to the appropriate authorities.

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Leveraging a new culture in acquisition, the Intelligence Surveillance, Reconnaissance and Special Operations Forces PEO portfolio has achieved full implementation of acquisition authority delegation to the Division level and remains among the most delegated Air Force acquisition portfolios. To date, an estimated four weeks of staff process time has been saved for each major acquisition decision—the time savings continues to grow through delegation of acquisition authority to the Division level. Additionally, efforts continue to delegate authorities down to the Materiel Leader level, when appropriate.

Colonel Dale White,
Intelligence, Surveillance,
Reconnaissance/Special Operations Force
Program Executive Officer



MILITARY GLOBAL POSITIONING SYSTEM USER EQUIPMENT INCREMENT 2

Milestone Decision Authority for the Military Global Positioning System User Equipment Increment 2 program was given to the Air Force in 2017 resulting in development of an innovative acquisition strategy leveraging rapid acquisition authorities. This program is postured to deliver capability to the Air Force, Army, Navy, Marines, and Special Operations Command two years earlier than estimated.



B-61-12 TAILKIT ASSEMBLY

The Air Force received authority for the B61-12 Tailkit Assembly program in August. The Service Acquisition Executive held a meeting in October for approval of Milestone C, entry into the Production and Deployment Phase, and award of Low Rate Initial Production. The Air Force Milestone Decision Authority saved this crucial nuclear program months associated with previously-required Office of the Secretary of Defense-level review.



ACQUISITION OF SERVICES

Services acquisitions are aligned in the Air Force's vector to increase the speed and agility of our acquisition processes, the Defense Department's reform management initiatives to find efficiencies, and the President's Category Management efforts to leverage the whole of government purchasing power.

The Air Force continues to see significant improvements in the governance and management of the \$27 billion spent annually on services acquisition. The Program Executive Officer for Combat and Mission Support uses a

model centered on the following key tenets: (1) ensuring mission owners are deeply involved in the requirements, acquisition and execution phases; (2) providing transparency on individual acquisitions and organizational processes; and (3) growing and educating the services acquisition workforce. The Air Force has adopted a continuous feedback loop to build off advances made, apply critical thinking and pick the right acquisition strategies and sources, while creating a learning environment to keep improving the tradecraft of services acquisition.





Enterprise approaches continue to provide opportunities for the Air Force. The Combat Air Forces Close Air Support (aka Adversary Air) acquisition, currently in progress, is to reduce the demand on active duty pilots. The Air Force is moving forward on enterprise acquisitions regarding aircraft and helicopter maintenance. In addition, the Air Force awarded several major services acquisitions this year including:

Remotely Piloted Aircraft Maintenance:
\$0.8 billion; provides global RPA maintenance and aircrew support

National Advertising and Event Marketing:
\$0.8 billion; supports recruitment from national to local markets

Solid State Phased Array Radar System:
\$0.4 billion; supports radar systems world-wide.

Program Managers are being recognized as vital leaders in services acquisition. As requirements have grown more complex, their interface with mission owners and their knowledge and training in the acquisition process help ensure mission success.

Beginning in a policy memo issued April 2018, program managers working on a services acquisition receive program office credit, prioritized training and certifications allowing operational programs to benefit from skilled and trained program managers. Three major commands recognized these benefits and began realigning existing positions into program manager positions to run their larger services acquisitions.

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We are seeing more enterprise solutions in the operational Air Force, lynchpins in providing resilient support (e.g., critical aircraft/helicopter maintenance) while keeping costs down, and are maintaining a competitive environment and stabilizing the industrial base

*Nancy Andrews,
Combat & Mission Systems Support
Program Executive Officer*

ACQUISITION OF SOFTWARE

The Air Force is facing a rapidly innovating adversary who is challenging us. We have to be willing to adopt new acquisition strategies to create a faster decision-making and assessment process. This is particularly true when it comes to software. We're going to accelerate to a new future driven by the threat that we face and move to a new paradigm for software development.

Adopting a modern software acquisition plan will lead to a faster implementation of the National Defense Strategy. The ability to dominate adversaries in every domain relies on our capacity to modernize our software acquisition process to keep up with the technological advances of adversaries.



Integrated Maintenance Data System (BCAT III)

The Air Force's Business and Enterprise Systems Program Executive Office partnered with Air Force Life Cycle Management Center and Information Technology industry leaders to migrate a major automated information system, IMDS, that supports operational readiness at bases worldwide from a monolithic mainframe platform to the Air Force's cloud-based Common Computing Environment. This partnership greatly reduced acquisition lead time to less than six months and will result in an estimated savings of approximately \$24 million per year. To date, 12 programs have successfully migrated to a cloud environment using lessons learned from IMDS.



We established six internal pilot programs to evaluate Agile Software Development approaches. Due to the success of pilot programs in delivering capability faster, 36 out of 103 business and enterprise system programs have transitioned to agile software development.

*Richard Aldridge
Business & Enterprise Systems
Program Executive Officer*



IT Business Analytics Office

The IT Business Analytics Office partnered with the General Services Administration to redefine the Information Technology Product Services Codes used throughout the Federal Government. By standardizing the IT Category Management taxonomy, the reformed production surveillance category will increase data accuracy and produce more actionable IT analysis. The team recently designed and implemented a categorization taxonomy directly into the Defense Priorities and Allocations System catalog, thus ensuring categorization of assets upon entry into Defense Priority Allocation System. All Air Force IT hardware asset data will migrate from Air Force Equipment Management System-Asset Inventory Management database into DPAS database by March 31, 2019.

PEO DIGITAL

On the modern battlefield, software must adapt in near real-time to ensure success in the fight. The focus of Agile Development Operations is to deliver valuable software on a frequent cadence of days or weeks, rather than months or years, with regular user feedback and engagement during the development process. This approach contrasts the status quo of monolithic software delivery, which most often results in non-intuitive and non-valuable software that is already obsolete by the time it arrives on the battlefield.

In August 2018, the Battle Management Directorate, located at Hanscom Air Force Base, Mass., was redesignated Program Executive Office Digital. This new PEO is charged with continuing current Agile DevOps programs and championing the inclusion of Agile DevOps wherever practical across the Air Force.

PEO Digital has implemented Agile DevOps across programs ranging from intelligence collection, battle management, weather forecasting, nuclear planning, mission planning, and F-35 maintenance. Additionally, PEO Digital has already engaged with leaders at U.S. Strategic Command and the Space and Missile Systems Center to aid in the stand-up of their own software factories.

PEO Digital garnered valuable lessons learned on digital transformation and agile development from forerunners like Kessel Run, Integrated Strategic Planning and Analysis Network programs, and Personnel Recovery C2 programs. PEO Digital is now charged with sharing these lessons across the Air Force.



Personnel Recovery Command and Control

The program used organic software developers at the 517th Software Maintenance Squadron at Ogden Air Logistics Center and were able to implement Agile DevOps practices to the extent that they produce Personnel Recovery Mission Module and Personnel Recovery Mission Software ready for release every two weeks, outpacing Air Combat Command's ability to field the software. The PRC2 team now builds the software at a two-week cadence, but only fields every other build, at the warfighter's request. This two-week cadence is maintained for when the warfighter needs an emergency fix or critical upgrade.



As programs shift to agile development, where they're pushing code out every month, where they are working directly with the user, where they are measuring their output using metrics that tell them whether it's good code or bad code. PEO Digital will provide Air Force standards for doing it and a playbook for making it work.

*Dr. Will Roper
Assistant Secretary of the Air Force
for Acquisition, Technology and Logistics*



KESSEL RUN

Kessel Run is changing how the Air Force builds and delivers software to users by bringing modern commercial software practices and technologies into the Air Force acquisition system. Success in Kessel Run is driven through the implementation of agile software development that emphasizes User-Centered Design, Continuous Testing and Security, and Continuous Delivery of software to the warfighter. These software development methodologies are modeled on best practices from the commercial sector and are being adopted by other organizations inside the Department of Defense.



MAD HATTER

In September 2018, the Mad Hatter project, a joint effort between Kessel Run, the Joint Program Office and 309th Software Maintenance Group and Lockheed Martin, began implementing a new approach to fielding and updating F-35 maintenance software capabilities. Focused at a single squadron, the team will use agile software development techniques to solve problems based on direct user feedback, creating new software products and resolving legacy F-35 Autonomic Logistics Information System issues. Objectives include speeding maintenance actions, reducing the cost and manpower required to operate the software, and increasing the mobility of F-35 ALIS to support deployed operations.



JIGSAW & MARAUDER

Successful applications developed by Kessel Run include JIGSAW, which has introduced automation into the tanker planning process at the Air Operations Center at Al Udeid Air Base, Qatar. Transitioning planning away from white boards and spreadsheets and into a modern software application enabled planners to increase efficiency, saving over \$250,000 per day in fuel costs on an application that only cost \$2 million to build. Another successful tool is MARAUDER, which increased the speed to create post-mission reports and provided high-quality data for mission analysis. The program went from idea to initial release in three months. Within 11 months was declared the program of record for mission recording for all air operations in the Central Command area of responsibility. The tool is now being prepared for use worldwide.

SMC 2.0

The new Space and Missile Systems Center 2.0 is changing space acquisition to get capability from the lab bench to the warfighter faster through additional authorities granted by Congress. Space capability is the linchpin in many capabilities in the air, land, and sea. The center will continue to leverage Congressional authorities to maintain dominance in space. SMC 2.0 will flatten the decision-making structure by removing three layers of program management. The center will also expand from one program executive officer to four, linking program leadership directly to acquisition decision authorities.

SMC 2.0 is focused on providing the workforce the tools and processes necessary to deliver warfighter needs quickly, drive innovation to remain ahead of threats, and dominate the space domain with superior capabilities. Key payoffs include the ability to leverage industry solutions and industrial partnerships and the investment of money and resources into game-changing technologies.

“

Our focus is on developing capabilities for the warfighter at a faster pace so we can always remain the predator and never the prey. By adding additional program executive officers we are eliminating mission-area stovepipes while flattening the organization for decision-making, allowing us to rapidly field acquisition capabilities to our nation's space warfighters to outpace our adversaries. To achieve this objective, SMC continues to focus on *EPIC* speed while delivering resilient solutions to the warfighter operating as a single *Enterprise*, improving its *Partnerships*, driving *Innovation*, and reinvigorating its *Culture*.

.....
Lieutenant General John F. Thompson
Commander, Space and Missile Systems Center



SCIENCE & TECHNOLOGY

The Air Force's science and technology investment hedges against the unpredictable future and provides pathways to a flexible, precise and lethal force. Air Force innovations arising from technology breakthroughs create new, previously unimagined capabilities that stand to re-shape future military operations. At approximately \$2.6 billion per year, we focus S&T on advancing technologies into those capabilities ensuring sustained freedom of access and action in air, space and cyberspace.

“Building Blocks” of S&T:

- » Basic research is the scientific study and experimentation directed toward increasing fundamental knowledge and understanding in the physical, engineering, environmental, and life sciences related to long-term national security needs.
- » Applied research advances technology through studies, investigations, and non-system specific efforts directed toward more general military needs with a view toward developing and evaluating the feasibility and practicality of proposed solutions and determining their parameters.
- » Advanced technology development efforts move technologies closer to being capabilities for the warfighter by developing subsystems and components, and integrating them into system prototypes for field experiments and/or tests in a simulated environment.

At over 6,200 military and civilian Airmen strong, the Air Force Research Laboratory conducts this unparalleled research, develops tomorrow's technology and enhances strategic partnerships, giving our warfighters unmatched advantage in the field. The AFRL engages with industry, small business, academia, and other partners across the United States and in 34 different countries. Balancing a legacy of success with a pursuit of innovation, AFRL is uniquely positioned to support the warfighter's urgent needs and evolving demand to defend America.





HIGHLIGHTS 2018

WORLD'S LARGEST NEURO-SYNAPTIC SUPERCOMPUTER

On July 19, 2018, AFRL debuted the world's largest neuro-synaptic supercomputer. This brain-inspired supercomputer consists of 64 million neurons and 16.3 billion synapses, and enables large-scale machine learning and artificial intelligence applications. The entire system consumes only 67 watts, about the same power as a light bulb. Typical supercomputers use up to 100 times more power for the same applications. This supercomputer is being applied to demanding real-time Air Force problems such as wide-area surveillance and object detection and classification.

OPEN SEEKER ARCHITECTURE

AFRL successfully developed and published the Open Seeker Architecture v1.0 standard, and the first Software Development Kit to support single weapon integration. This new architecture enables extensions to collaborative GPS-denied navigation and cooperative target acquisitions, and is a critical aspect of rapidly upgrading software functionality in future weapon seekers, as well as breaking "vendor lock" on legacy weapon seeker solutions. Some of these future open-standard concepts have been developed for the Gray Wolf Cruise Missile S&T Demonstration, in conjunction with DARPA and Office of Naval Research.

WORLD RECORD IN HIGH ENERGY LASER POWER

AFRL's Fiber Laser Beam Combination program reached a world record 4.5kW per narrow gain fiber amplifier. Once packaged commercially, this will enable the scaling of high energy laser power from the current 60kW to over 150kW which opens up a much wider target set for high energy laser weapons.

PHOTONICS PROCESSOR

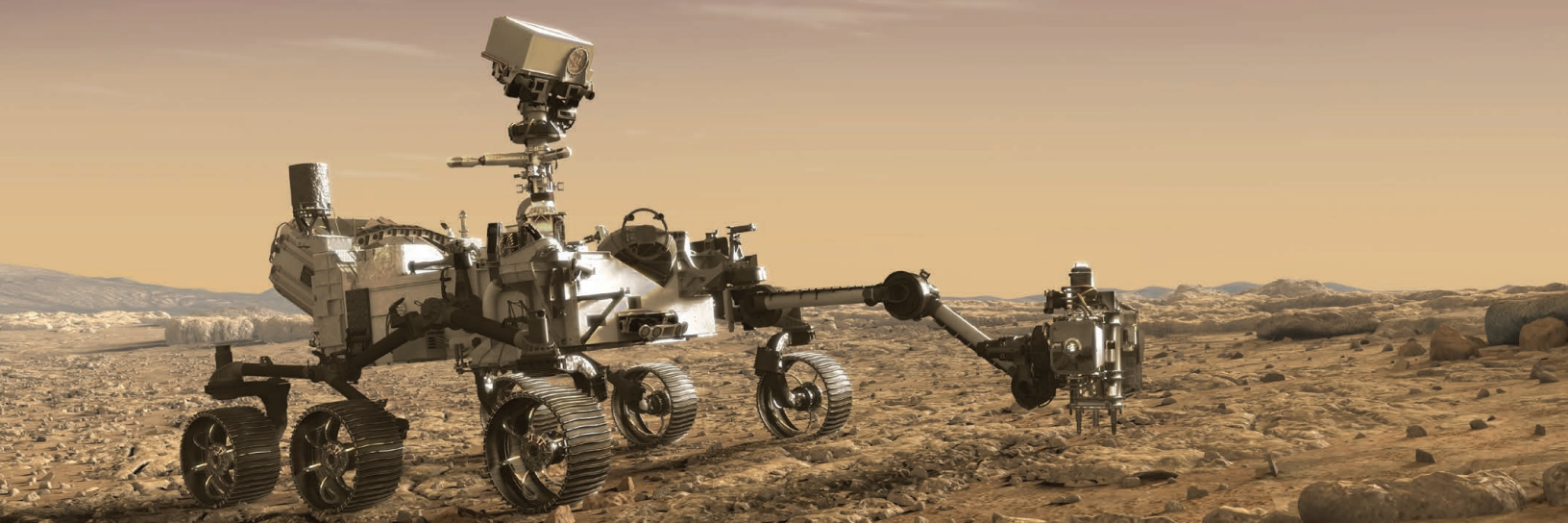
AFRL recently designed and developed the first AFRL Quantum Integrated Photonics Processor. This processor allows a 100 times reduction in size compared to classical optical systems, which is not even feasible to build with traditional bulk optics. A reconfigurable quantum circuit allows for the implementation of quantum applications such as quantum computation, secure communication, quantum networking, and quantum key distribution.

DISCOVERED A NEW WAY TO GROW AND TRANSFER MATERIALS

AFRL research is enabling next-gen flexible, wireless communications. By optimizing just six atoms 1/1000 the width of a human hair, AFRL experts discovered a new way to grow and transfer Gallium Nitride—a material revered for its exceptional ability to power communications systems—laying the groundwork for 5th-generation, high-speed, agile communication systems of the future. GaN is the basis for many communication devices and is often used in high-performance amplifiers or as a component of a radar or wireless system. AFRL demonstrated the ability to grow and place the material on a flexible substrate, enabling the potential to power wearable devices or electronic devices that are not necessarily flat.

GLOBAL OPERATIONAL TACTICAL INFORMATION TECHNOLOGY

The week of June 7, 2018, AFRL successfully demonstrated an integrated combination of Information Management technologies designed to bridge the gaps that exist between enterprise and tactical networks and applications. This technology promises to enable unprecedented exchange and synchronize of battlespace information across warfighter boundaries whether they are located within the networks of forward deployed or rear positioned forces.



MARS ROVER PARTICLE EROSION TESTING

AFRL recently performed particle erosion testing for the Mars 2020 Rover at the request of the Jet Propulsion Laboratory, who was seeking to examine viable next-generation, abrasion-resistant coating materials that could withstand the rover's entry, descent, and landing. AFRL's Dust and Rain Environmental Effects Group, the only organization capable of replicating the potential dust and rock suspension damage for a rocket plume, conducted realistic testing that simulated varying particle sizes, velocities, and impingement angles. The team's test effort provided a cost-effective validation of the candidate coatings.

SAFER COATING SYSTEMS FOR KC-46

AFRL recently identified, evaluated, and fully qualified two non-chromium outer moldline coating systems for use on the KC-46, thereby aiding in the estimated savings of \$2 million a year on chromium abatement and control. The two systems are Skydrol hydraulic fluid resistant, removable with DoD-approved chemical strippers, and galvanic corrosion-resistant. No appropriate non-chromium coatings systems had been previously qualified to the outer moldline specifications. The use of chromium-based coatings causes health and environmental concerns, and leads to excessive worker hours spent on HAZMAT-related activities. The safer, newly-qualified systems are being transitioned to depots, and all KC-46 aircraft will be required to use non-chromium systems on outer moldlines.

AIRFRAME DIGITAL TWIN

AFRL completed efforts in Airframe Digital Twin to develop an integrated system of data, models, and analysis tools that enable better decisions regarding fleet lifecycle management and sustainment. AFRL validated Individual Aircraft Tracking structural damage methods on two F-15 wings in-house. In addition, AFRL completed development of engineered residual stress methods (laser peening) for airframe life extension which will be used as part of a F-15 C/D program office life extension program.

DEMONSTRATION OF COMMON INTERFACE FOR MULTIPLE VEHICLES AND SENSOR PAYLOADS

AFRL and Wright State Research Institute Unmanned Aerial Systems (UAS) researchers conducted integration and risk reduction flight tests to demonstrate a common interface for multiple vehicles and sensor payloads. This team is chartered to enable multi-UAS command and control by a single operator using AFRL's Vigilant Spirit Control Station™. The team demonstrated command and control of the vehicle and connectivity to the sensor payload, as well as sensor control for road following and sensor slaving to a fixed target.



SCIENCE & TECHNOLOGY 2030 STRATEGY EFFORT

In 1944, Theodore von Karman envisioned a new Air Force through his study, **Toward New Horizons**. The technologies identified more than 70 years ago are the reality that keeps America safe today. Over the course of 2018, the Air Force's Science and Technology 2030 initiative echoed this study by engaging with industry and universities, asking their help in identifying ideas that will invent the future for 2030 and beyond.

The Air Force Research Laboratory partnered with businesses and universities to host Technology Listening Sessions/Forums with

students, faculty and interested parties from across the country. AFRL co-hosted listening forums with six universities and ran eight business listening sessions over the span of one year across the country.

The outreach events yielded valuable ideas that are driving force behind the new Air Force Science and Technology Strategy. The strategy, developed from the findings, ideas, and data gathered over the past year, will launch in 2019.

TEST & EVALUATION

The Air Force Test and Evaluation enterprise consists of developmental and operational test professionals and infrastructure that ensure a lethal, resilient, and rapidly adapting Air Force. An integral part of Air Force acquisition programs, T&E reduces uncertainty as new capabilities are developed by providing objective, relevant data to acquisition and warfighter decision makers so they can accurately evaluate the risk in fielding new systems. Testers support rapid acquisition by tailoring traditional T&E approaches to the needs of each program. As we build a more lethal Air Force, T&E is investing in new capabilities to test emerging technologies and is postured to enable rapid capability deliveries to the warfighter.



AVIONICS CYBER RANGE

A \$100 million Air Force T&E infrastructure development scheduled for initial operational capability at the end of 2021, the Avionics Cyber Range will provide both developmental and operational cybersecurity evaluation of aircraft, space, nuclear, command and control, and logistics systems. The ACR offers full-spectrum cybersecurity testing: software on virtual machines, functional and penetration tests of individual components, hardware and software in the loop, and end-to-end operational tests of complete systems.



JOINT SIMULATION ENVIRONMENT

The Joint Simulation Environment is a government-owned, high-fidelity modeling and simulation environment developed to test current- and next-generation aircraft including the F-35 and B-21. Based on a modular architecture, JSE integrates operator-in-the-loop blue/red aircraft, threats, weapons, terrain, and weather into a single environment to complement open air testing. JSE provides the Air Force the capability to test against high-density, high-end threats, as well as conduct cross-platform interaction and multi-domain operations that are not possible on open-air ranges. Currently, JSE is located at Naval Air Station Patuxent River, expanding to Edwards AFB, Nellis AFB, and Wright-Patterson AFB.





DIRECTED ENERGY WEAPONS

The Air Force T&E enterprise is investing in high-energy laser and other directed energy test infrastructure. New test measurement tools at White Sands Missile Range and other locations will enable developmental and operational test and evaluation of next-generation systems, accelerating the modernization and delivery of key capabilities to build a more lethal force.



HYPERSONICS

The Air Force continues to execute DoD investments in hypersonic test and evaluation capabilities. The Arnold Engineering Development Complex is expanding arc jet heater, hypersonic aerodynamics, and ground-based scramjet test capabilities to improve hypersonic materials development, system-level testing, and propulsion technology. The Hypersonics Combined Test Force is developing test methodologies for planned flight test activities at Edwards AFB, Eglin AFB, and the NASA Kennedy Space Center. Establishing these key hypersonic test and evaluation capabilities ensures the Air Force's ability to further develop and sustain our nation's hypersonics weapons inventory.



EMERGING TECHNOLOGY AND AUTONOMOUS TESTING

In response to the National Security Strategy's call to prioritize emerging technologies critical to security, the Emerging Technology Combined Test Force is testing advanced autonomous systems, artificial intelligence, machine learning, and other innovative systems. The ET CTF, at Edwards AFB, has easy access to restricted and controlled airspace to safely test unproven systems. The ET CTF has completed multiple rapid development programs including the test of a counter small Unmanned Aircraft System to meet a Strategic Command Joint Emergent Operational Need. To do so, the ET CTF adopted an integrated Agile Dev Ops and fly-fix-fly approach that achieved a more than 25-fold increase in sortie generation.

ACQUISITION WORKFORCE

Attracting and Recruiting:

The direct and expedited hiring authorities and the Defense Acquisition Workforce Development Fund have significantly improved the Air Force's ability to recruit and train people. Additionally, the Air Force was able to support a robust talent acquisition cell and provide incentives for use in attracting top talent, executing more than 425 recruiting events and offering enhanced recruiting incentives and/or student loan repayments to more than 95 talented individuals.

HIRING AUTHORITY USE	EXPEDITED	DIRECT
2016	810	2
2017	1,530	66
2018	1,944	51

Professional Development:

The development of the Air Force's workforce is based on the Acquisition Professional Development Program, which ensures workforce members have the training, education and experience to meet the Defense Acquisition Workforce Improvement Act requirements. The Air Force acquisition workforce finished the year with more than 96 percent of the workforce meeting certification requirements, while 30 of 35 ACAT 1 program managers are fully-qualified in accordance with mandated key leadership position requirements. Air Force-specific, enhanced training programs and courses are utilized to fully round out the development of the Air Force workforce beyond the department-wide certification requirements. The Air Force leverages programs like the Acquisition Leadership Challenge Program and courses taught by the Air Force Institute of Technology. The Air Force Institute



of Technology School of Systems and Logistics provides online and resident acquisition training courses targeted at specific competency gaps and mission-enhancing skills for members of the Air Force acquisition workforce. In fiscal year 2018 there were more than 400 course offerings that enabled over 13,000 individual graduations from Air Force specific training courses covering multiple acquisition disciplines, ranging from acquisition fundamentals to engineering, contracting to cyber familiarization, as well as numerous logistics courses. An additional tool is the Defense Acquisition Workforce Development Fund. In 2018, the Air Force utilized over \$24 million to conduct training and other development activities across the entire human resources life cycle of the acquisition workforce.

Talent Management:

The ability to leverage the variety of experiences, specialized skills and exceptional potential residing in the Air Force acquisition workforce is critical to its future success. On an annual basis, the Air Force considers all aspects of over 310 Acquisition Leadership positions: Senior Materiel Leader, Materiel Leader, Squadron Command, and Contract Management Office Command.

This holistic look ensures that the development efforts for the acquisition workforce lead to an appropriate pool of eligible officers for each position. There are many functional forums and activities that share the goal of optimizing talent, such as the Civilian Force Development Panel, Military and Civilian Development Teams, and Functional Advisory Panels. These panels have slated more than 130 officers for acquisition program leadership roles, sent over 600 officers and civilians to selective developmental training opportunities, and provided career development feedback to more than 50 percent of the Air Force's acquisition workforce.

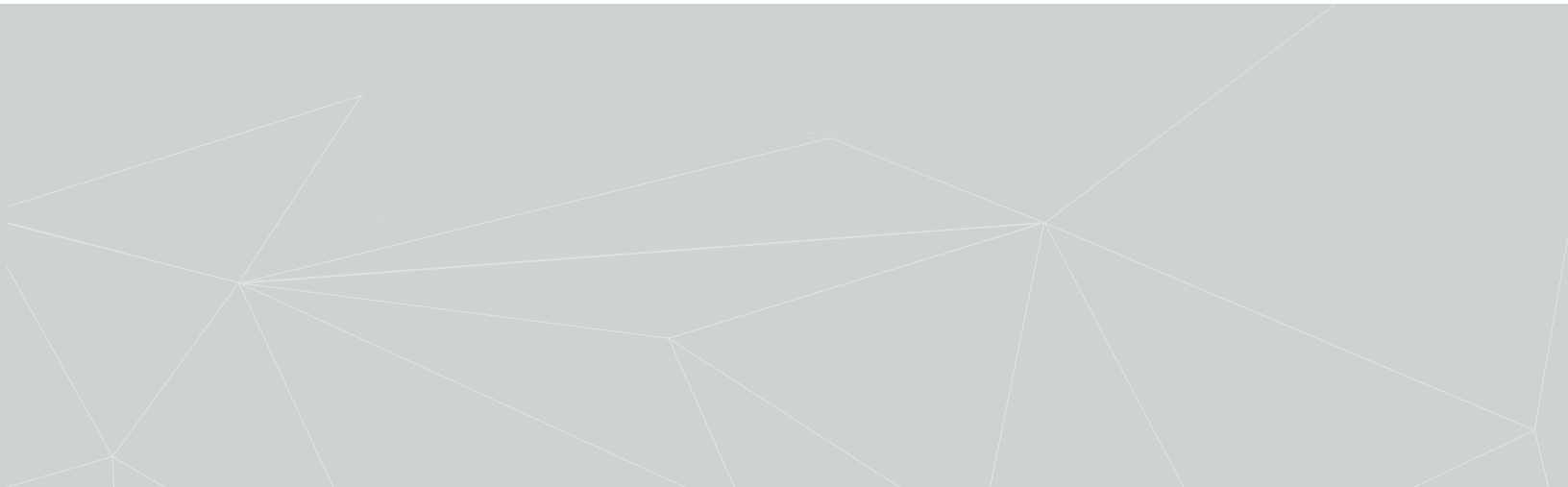
In addition, the Acquisition Leadership Development Program ensures that high performing officers are identified, tracked, and managed. In 2018, the Air Force actively managed the career paths of 290 high performing officers.

Acquisition Demonstration Project:

The Air Force now has more than 17,500 civilian participants in the Department of Defense Acquisition Demonstration Project. This is a flexible civilian personnel system designed to enhance the ability of leaders to manage the talent present in the workforce through a comprehensive system that rewards contributions and drives feedback, while managing expectations between employee and supervisor. Through the Acquisition Demonstration Project personnel program, the Air Force is strengthening its force with the ability to reward individuals based on contributions to the mission. By rewarding our higher-performing employees, the Air Force expects to retain our top talent.

Career Development:

The Service Acquisition Executive approved implementation of the Civilian Materiel Leader and Senior Materiel Leader program. This program will identify and professionalize acquisition Program Managers for key positions in a similar process to military peers. It will also provide for the professional development of high-potential, experienced civilian personnel with the potential to become a Program Manager of a major defense acquisition program.



PROTOTYPING



HYPERSONIC WEAPON PROTOTYPING

The Air Force is focusing on technologies that amplify many of the enduring attributes of airpower—speed, range, flexibility, and precision. We need game-changing technologies to keep the fight unfair. Hypersonics, which refers to flight at five times the speed of sound (“Mach 5”) or faster, is one of these game-changers.

The Air Force is using the rapid prototyping authorities provided by Section 804 of the fiscal year 2016 NDAA to further accelerate its hypersonic weapon research and development and provide an early operational capability to the warfighter in fiscal years 2021-2022. The Air Force is pursuing two hypersonic weapon rapid prototyping efforts called the Hypersonic Conventional Strike Weapon and the Air-launched Rapid Response Weapon.

The HCSW effort is using mature technologies that have not yet been integrated for an air-launched delivery system. In April 2018, the Air

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Utilized Section 804 to jumpstart Hypersonic weapons capability. The ability to work with Air Force Global Strike Command to shape requirements allows for rapid trades in cost, schedule and performance. Projected to realize five years of schedule savings.

*Brigadier General Anthony Genatempo,
Weapons Program Executive Officer*

Force selected Lockheed Martin for the HCSW prototyping effort. In June 2018, HCSW activities were included in a Memorandum of Agreement signed between the Services, the Office of the Secretary of Defense, and the Missile Defense Agency. The MOA enables the collaboration on hypersonic technology development and synchronization schedules. HCSW activities included starting the development of a common rocket motor to support current and future hypersonic systems, and begun integration work on Air Force platforms.

The ARRW rapid prototyping effort is pushing the art-of-the possible by leveraging the technical base established by the long-standing Air Force and Defense Advanced Research Projects Agency partnership. In August 2018, the Air Force awarded Lockheed Martin a contract for critical design review, test, production, and readiness support to facilitate fielded prototypes. The ARRW effort is continuing to develop and execute test and manufacturing readiness activities for the early operational capability.



EXPERIMENTATION



LIGHT ATTACK EXPERIMENTATION

Following successful experimentation activities in 2017, the Air Force executed Phase II of the Light Attack Experiment in 2018 at Holloman Air Force Base, New Mexico.

The Light Attack Experiment was initiated to assess current industry concepts for low-cost non-developmental attack platforms and to strengthen alliances and attract new partners in support of our National Defense Strategy to Counter Violent Extremism Organizations. Light Attack platforms could potentially provide a deployable and sustainable multirole attack capability, capable of performing a diverse array of attack missions.

During Phase II, the Air Force assessed logistics and maintenance support requirements, outstanding weapons and sensor issues, networking and future interoperability with partner forces.



We are flattening the decision process by empowering leaders at the lowest appropriate level and challenge the norm...the way we've always done it. We want to empower out people to seek creativity and innovation.

*Lynda Rutledge,
Mobility Program Executive Officer*



We experiment within the bounds of statute, to discover and recommend new methods, processes and techniques. We are challenging traditional approaches to act as an agent of change.

*Richard Aldridge
Business & Enterprise Systems
Program Executive Officer*

At this time, the Air Force has decided to continue and broaden Light Attack experimentation efforts to ensure the U.S. and international partners get the right mix of capability to address the C-VEO mission.

Additionally, moving forward the Air Force will procure a small number of aircraft from our industry partners to continue testing and develop tactics, techniques and procedures as we examine all options alongside Joint and international partners to determine the best solution for addressing the priorities laid out for the Light Attack experiment.



LIFE CYCLE SUSTAINMENT & READINESS

Life cycle sustainment and readiness are national and mission imperatives.

Life cycle sustainment involves much more than supporting a weapon system in the operations & support phase of the acquisition and procurement timeline. Sustainment activities begin early with designing the weapon system for supportability, to enable a comprehensive, affordable, effective performance driven logistics product support strategy and carry the weapon system through fielding, its useful life, and eventual disposal.

U.S. adversaries are closing the gap, and in some cases have closed the gap, on competitive advantages the US has enjoyed in the past. To ensure the Air Force is ready to deliver the mission in a contested peer-to-peer environment, the Air Force has put an emphasis on innovation across the life cycle of a weapons system. Since nearly all of our weapons systems are in the Operations and Support Phase of their life cycle, this emphasis on innovation has the greatest impact in sustainment.

As a result, the Secretary of the Air Force has stood up the Rapid Sustainment Office. The RSO will seek out enterprise-level requirements that can be satisfied through the agile, rapid, and responsive introduction of mature, new and emerging technology solutions into Air Force sustainment to improve readiness, enhance weapon system capability and reduce life cycle cost.



Transportable Antenna System

The Air Force Satellite Control Network Operations and Sustainment Division rapidly deployed a transportable antenna system from mothball status to fully operational in just four months. The rapid deployment provided full mission capability at a remote tracking station while antenna repairs caused by catastrophic hardware failures were occurring on both of the permanent site systems.

Thus, the transportable systems ensured mission needs could continue in supporting 170 multi-agency satellites and 14 launches from June through the end of 2018. In addition, a replacement for a deflated radome at a tracking station was procured, manufactured, and installed in only five months. The team ensured the tracking systems were available for launch, vehicle emergencies, and critical satellite contacts for 63% of the repair cycle time instead of being completely out of service and losing up to 30 satellites contacts a day, approximately 4,500 over the five month period.



Armament Directorate's Small Arms Program Office

The Armament Directorate's Small Arms Program Office developed a rifle based on the M4 carbine that is designed to fit in the survival kit found under the ejection seat of fighters and bombers and equipping the crews with more than 2,700 GAU-5A Aircrew Self Defense Weapons. This innovative concept utilizes a quick release barrel that allows crews to assemble/disassemble the full-sized ASDW rifle in less than 60 seconds and providing long-range self-defense fire power if aircrews are downed behind enemy lines.



E-8 Joint Surveillance Target Attack Radar System

The E-8 Joint Surveillance Target Attack Radar System delivers persistent wide-area surveillance and robust communications for on-scene battle management and intelligence. To increase the number of aircraft available for operations and training as the service transitions to the Advanced Battle Management System, a capability that will fuse global air and space intelligence, surveillance and reconnaissance information, the program office initiated an organic depot proof of concept at Warner-Robins Air Logistics Complex.

The first aircraft, 95-0122, was inducted on July 17, 2018 for depot maintenance. This proof of concept will not only increase overall depot capability for the E-8, but it will also drive cost savings and assist in evaluating a future workload shift to an organic run depot, enabling structural, avionics and equipment enhancements that will keep the system viable to 2030 and beyond.



KC-135 Keel Beam

In April 2018 severe corrosion was discovered on the Upper Keel Beam during a KC-135 depot overhaul. The Keel Beam is an integral part of the aircraft structure and a failure would have catastrophic results. As a result, a 15-day fleet-wide safety time compliance technical order was issued to specifically inspect the targeted area for evidence of corrosion. By May 2018, 15 KC-135s were identified with Keel Beam corrosion and began a first-ever keel beam replacement with organically manufactured material.

The program office demonstrated innovative ability to organize required work and orchestrate management of aircraft inputs across 15 field units assigned to three Major Commands. The unequivocal coordination efforts resulted in accomplishing approximately 28,500 hours and approximately \$8.3 million of repairs by October 7, 2018, beating planned schedule by 40%. Unified teamwork and synchronization between Air Force Life Cycle Management Center and Air Force Materiel Command positively contributed Aircraft Availability for the KC-135 Tanker.



Simulators Common Architecture Requirements and Standards Program

This program is a sustainment initiative that will incorporate an open and common architecture for simulators and training systems, allowing for adaptable interfaces via standardized specifications. Commonality and open standards applied to the multi-layered architecture of simulators and training devices will enable proactive cyber management in addition to addressing obsolescence and logistics issues. This will enhance the ability of the warfighter to receive training in a current and cyber-secure environment while ultimately reducing the maintenance cost of dozens of training systems. The program office continues to support Government Verification Testing with select training systems such as the A-10 Full Mission Trainer which has demonstrated the ability to connect to a SCARS Operations Center proxy. Initial Operational Capability for the first spiral is scheduled for February 2020 and will demonstrate remote scanning at two training sites on two different simulator platforms in addition to demonstrating the ability to operate in classified/unclassified environments. Future spirals will incorporate SCARS on distributed mission networks and higher classification security domains.

RAPID SUSTAINMENT OFFICE: COST ↓ READINESS ↑

COLD SPRAY

F-15 Aircraft
Mounted
Accessory Drive



\$1.2M

TOTAL
SAVINGS



\$384K

SAVINGS
PER YEAR



COROSION WASH

C-130 Fleet

\$150K

ANNUAL
COST AVOIDANCE



ADDITIVE MANUFACTURING



DELTA

PUBLIC/PRIVATE PARTNERSHIPS DELTA



NEW
PARTNERSHIP



\$367K

COST
AVOIDANCE



INNOVATION CENTERS FY17 REACT LAB



ROBOTIC PAINT/ LASER DE-PAINT

76 X F-16s



\$1.9M

SAVINGS
PER YEAR



\$6.2M

TOTAL
SAVINGS



CONDITION BASED MX CBM+

B-1B Fleet

SMART BLEND REPAIR/INTEGRALLY BLADED ROTORS MODELING

Engines



\$200M

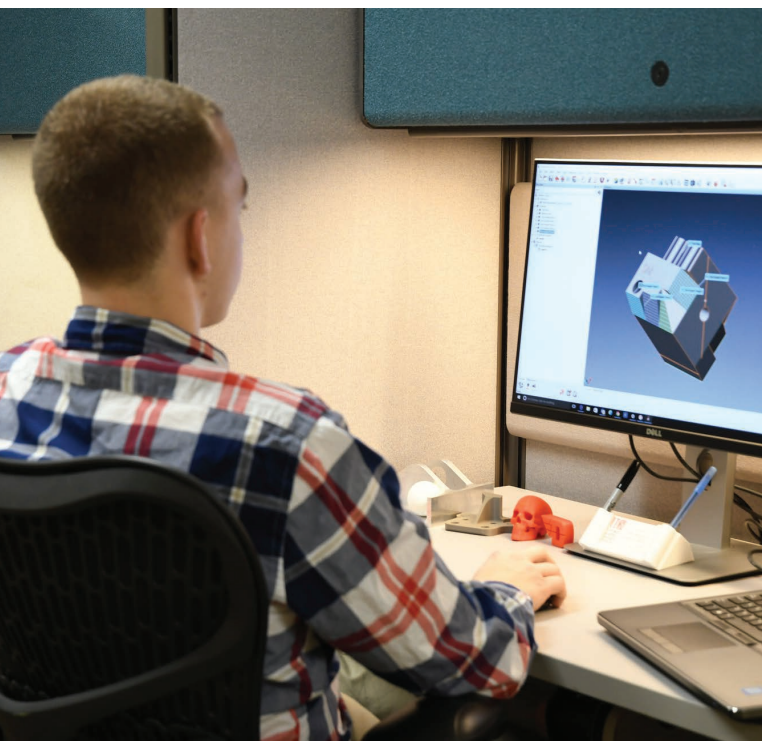
EXPECTED
SAVINGS



RAPID SUSTAINMENT OFFICE

Established in 2018, the Secretary of the Air Force directed Secretary of the Air Force for Acquisition, Technology and Logistics and Air Force Materiel Command to establish the Air Force Rapid Sustainment Office to leverage emerging, mature, and new technologies to reduce sustainment costs and improve readiness. The RSO vision is to be a center of excellence and partner of choice for the logistics and sustainment enterprise by rapidly fielding sustainment capabilities.

The RSO will collaborate across industry, academia and government to build upon the development of others and to conduct operations and technical assessments supporting delivery of critical technologies. Examples of RSO technology efforts include additive manufacturing, cold spray, condition based maintenance, automation and lasers.



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Using new and proven technologies to solve sustainment challenges of today – and to do so rapidly – that is why we’ve stood up the Rapid Sustainment Office. We need to field airworthy solutions now.

*Lieutenant General Robert McMurry,
Rapid Sustainment Office
Program Executive Officer*



ADDITIVE MANUFACTURING

Additive manufacturing is an enabling technology capable of addressing aging weapons systems parts availability challenges. AM is the process of joining materials to make objects from three-dimensional model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies.

The Air Force has successfully designed and printed tools, fixtures, prototypes, and non-critical polymer and metal components. Air Force Life Cycle Management Center is the lead for enterprise implementation of AM.



ROBOTIC LASER DE-PAINT

The newly-approved Robotic Laser Coating Removal System vaporizes paint in a self-contained process that significantly reduces environmental hazards to maintainers. Paint removal is a common maintenance procedure for military aircraft and is performed for a variety of reasons, most notably for inspections and for repainting purposes.

Typically, this process is performed manually with maintenance crews applying a chemical solution, performing media blasting, or by meticulously scraping or sanding off the paint. It is also labor-intensive, requiring teams of maintainers equipped with multiple types of safety gear.

The Robotics Laser Coating Removal System has been approved for use on production F-16s and transitioned to the Ogden Air Logistics Complex at Hill Air Force Base where it will be incorporated into the regular maintenance toolset for the platform.



CONDITION BASED MAINTENANCE PLUS

CBM+ is the application and integration of appropriate processes, technologies, and knowledge-based capabilities to achieve the target availability, reliability, and operation and support costs of Air Force Life Cycle Management Center systems and components across their life cycle.

At its core, CBM+ is maintenance performed based on evidence of need, integrating Reliability Centered Maintenance analysis with those enabling processes, technologies, and capabilities that enhance the readiness and maintenance effectiveness of Air Force systems and components.

CBM+ uses a systems engineering approach to collect data, enable analysis, and support the decision-making processes for system acquisition, modernization, sustainment and operations.

INTELLECTUAL PROPERTY CROSS FUNCTIONAL TEAM

On February 21, 2018, the Under Secretary of the Air Force tasked the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics and the General Counsel of the Air Force to co-lead an Intellectual Property Cross Functional Team. The objectives of the CFT are to examine issues and make recommendations in a variety of areas, including:

- » Developing strategies and techniques for leveraging appropriate IP rights to reduce “vendor lock”
- » Educating and training program managers, contracting offices, and source selection teams in identifying and negotiating IP license rights needed to support competitive sustainment
- » Assisting program managers in challenging improper vendor IP assertions and proprietary markings
- » Ensuring policies accurately and properly communicate our IP needs for future sustainment to industry
- » Establishing an enduring cadre of IP experts to ensure a consistent and knowledgeable approach to IP

SAF/AQ and SAF/GC established a CFT that included experts from program management, contracting, logistics, engineering, and legal.

The CFT determined that two deliverables needed to be developed: (1) A guidebook that identifies recurring IP issues encountered by programs and provides strategies for resolving these issues, and (2) A final report that provides recommendations on IP policies and practices within the Air Force.

The CFT has been aggressively working through IP issues as they construct the guidebook. Among the issues being addressed are:

- » Challenging improper markings
- » Dealing with contractor assertions
- » Aligning the IP strategy with other programmatic documentation
- » Leveraging data required for FAA certification
- » Commercial software issues
- » Operation, maintenance, installation, and training data

Concurrently, the CFT has identified a variety of regulatory deficiencies that could be resolved in order to improve the Air Force’s IP posture.

SUPPLY CHAIN RISK MANAGEMENT

In today's environment, battlefields are flatter with multiple avenues of penetration for the enemy to gain unexpected advantage. As the appetite for physical war with our peer adversaries fades, disrupting supply chains continues to be a means of winning wars. The US pivoted national strategy to mitigate supply chain threats and secure the home front through trusted logistics to supply Combatant Commands with capable and ready weapons systems.

The Air Force Supply Chain Risk Management community developed a multi-pronged approach to increase awareness, build partnerships, and form lines of effort toward a common vision: a Supply Chain Risk Management structure

(including the environment and players) that provides policies, processes, and resources that enable an integrated Air Force, enterprise-wide capability to identify, prioritize, and address (mitigate, accept, or manage) risks to force/mission that may exist in supply chains for material or services for weapon systems and infrastructure throughout their lifecycle and to logistics processes supporting missions.

The Air Force's largest effort focuses on Supplier Assessments to illuminate supply chain risks for each supplier. Identifying trusted suppliers within the supply chain ensures the foundation of weapon system security.



FOREIGN MILITARY SALES



TOTAL ACTIVE FMS

113



COUNTRIES

\$188B



TOTAL PORTFOLIO

\$11.1 B



FY18 NEW SALES

The Foreign Military Sales program bolsters our international partnerships and is a fundamental tool of U.S. foreign policy. When we transfer a capability to a foreign partner, we are affecting regional balances of power by sending a signal of support. FMS also establishes or sustains relationships that may last for generations. For example, the United States FMS partnership with Saudi Arabia supports counterterrorism efforts and regional stability. An enabler of those efforts is the largest foreign military sale in history which occurred in fiscal year 2012 with the \$29.4 billion Royal Saudi Air Force purchase of F-15SA aircraft under the RSAF Fleet Modernization Program.

Arms transfers also support the U.S. defense industrial base and DoD procurement. Purchases made through the foreign military sales system often can be combined with DoD orders to reduce unit costs for our own military.

The Air Force Materiel Command leads an extensive Foreign Military Sales program consisting of 113 Partner Nations, 8 NATO agencies, and more than 2,900 FMS cases with a portfolio value of over \$188 billion and work in-progress of \$91 billion. SAF/AQ

Program Executive Officers execute 90% of the FMS portfolio. New sales for FY18 reached \$11.1 billion.



MQ-9 Program *France*

In 2018, the Air Force awarded a contract to double the size of the French MQ-9 fleet. Six new Block 5 MQ-9s will deliver in late in 2019 and early 2020. Additionally, the Air Force already delivered an MQ-9 simulator to the French air base in Cognac, France. France signed and implemented four high-priority Letters of Offer and Acceptance during 2018 which will greatly increase the capability of its MQ-9 fleet. These efforts include weaponization of both the block 1 and the planned block 5 aircraft, as well as developing and integrating an external sensor payload for the block 5 aircraft. Both the weapons and the sensor pod will significantly increase the effectiveness and lethality of the French MQ-9 fleet currently deployed and in operation fighting terrorism in Africa.



F-15 Saudi Advanced Fleet Modernization Program *Saudi Arabia*

The \$29.4 billion F-15SA Fleet Modernization Program provides 84 new F-15SA aircraft, converts 67 existing F-15S aircraft to the SA configuration, and provides personnel training to support the fleet. It also provides construction, base and range readiness activities, stand-off weapons integration, and sustainment support for the fleet of 154 F-15SA aircraft and F-15 legacy aircraft.

In fiscal year 2018, 21 F-15SA production aircraft were delivered for a total of 45 F-15SA aircraft in-Kingdom. Additionally, Phase II retrofit, consisting of the Advanced Display Core Processor II upgrade and outstanding Time Compliance Technical Orders, was completed. Finally, an in-Kingdom conversion program using a Saudi contractor was initiated, consisting of construction of back-shop maintenance facilities and installation of support equipment at King Faisal Air Base. These facilities will be completed in early fiscal year 2019.



C-17 Production Aircraft *India*

The Government of India signed a \$282 million Letter of Offer and Acceptance for FMS procurement of the final C-17 Production Aircraft. This effort was expedited upon request of the President of the United States.

The sale of the final C-17 production aircraft increases overall global allied airlift capacity and enhances the political and military relationship between the Governments in India and the U.S.

The C-17 program office issued an Undefined Contract Award to The Boeing Company on March 30, 2018. The UCA was negotiated and Defined for a final aircraft cost of \$236 million and awarded within 4 months. The final C-17 production aircraft will deliver to the Indian Air Force in August 2019 and will increase the IAF C-17 fleet from 10 to 11 aircraft, making India the largest C-17 International operator/user.



Enhanced Polar System Recapitalization *Norway*

The U.S. and Norway share common defense interests and recognize the benefits from standardization and interoperability of communications systems. Both countries aim to strengthen their satellite communication capabilities with emerging technology. We are also working together to increase the capacity on future military satellite communication to best meet warfighter needs. By sharing research, development, and production capacities, we are able to eliminate unnecessary work and achieve efficient and cost-effective results.

The partnership between the U.S. and Norway includes the Norway Ministry of Defence hosting a U.S. protected satellite communications payload in a highly elliptical orbit. This system, the Enhanced Polar System – Recapitalization, is the protected satellite communication follow-on to the EPS, providing a 24/7 protected satellite communication capability to the North Polar Region. The EPS-R payloads integrated on two separate Space Norway satellites are scheduled for launch in 2023.



F-16 Base Life Support, Base Operations Support, and Security *Iraq*

The Iraq F-16 Base Life Support, Base Operating Support, and Security contract completed its fifth year of execution in fiscal year 2018. This effort supports F-16 beddown, operations, and Logistics/Maintenance on 21 F-16 Block 52 aircraft with 13 additional aircraft coming in fiscal year 2019. The contract also supports Iraqi F-16 pilots and U.S. Air Force Air Advisors to the Iraqi Air Force. The next phase of the contract will focus on transition and assistance to the Iraqi Air Force to become proficient and self-sufficient.



AIM-120 Advanced Medium-Range- Air-to-Air-Missile

The AIM-120 Advanced Medium-Range Air-to-Air Missile provides aircrews with beyond-line of-sight lethality and combat flexibility day and night. In fiscal year 2018, FMS drove new contracts for 279 AMRAAMS used on Partner Nation fighter aircraft, United States and foreign made, adding to the total of approximately 10,000 weapons ordered and delivered internationally. AIM-120 variants are now procured by 39 allies and partners on 118 active FMS programs delivering or supporting the weapon system, enhancing security around the world.

CONCLUSION

We are fielding tomorrow's Air Force faster and smarter.

In 2019, the Air Force will focus on the following:

- » Achieve our Century Goal – 100 years of time savings by using Fiscal Year 2016 NDAA Section 804 authorities and the tailoring of DoDI 5000
- » Introduce Small Business “Start-Up Days” to attract non-traditional industry partners and rapidly fund innovation
- » Growing the Rapid Sustainment Office to its full potential to reduce the cost of maintaining equipment, which is more 70 percent of our expenses
- » Review feedback loops and modify processes for delegated programs so that problems are identified and action is taken without slowing programs that are executing successfully
- » Review and continue to improve space acquisition processes to support space as a contested domain
- » Aggressively use prototyping and experimentation to reduce risk and increase speed of procurement
- » Expand “Pitch Days” to more cities and problem sets.



These authorities granted to us by Congress do not sidestep key decisions or oversight, and we will not sacrifice quality for speed.”

.....
Heather Wilson
Secretary of the Air Force

GLOSSARY

Acquisition Category (ACAT): Categories established to facilitate decentralized decision making and execution, as well as compliance with statutorily imposed requirements. The categories determine the level of review, decision authority and applicable procedures.

Automated Information System (AIS): A combination of computer hardware and computer software, data and/or telecommunications that collects, processes, stores, transmits and displays information.

Average Procurement Unit Cost (APUC): APUC is calculated by dividing total procurement cost by the number of articles to be procured. Total procurement cost includes flyaway cost (recurring and nonrecurring costs associated with production of the item, like hardware, software, systems engineering, engineering changes and warranties), plus the costs of procuring technical data, training, support equipment and initial spares.

Commercial Off-The-Shelf (COTS): A commercial item sold in substantial quantities in the commercial marketplace and offered to the government under a contractor subcontract at any tier, without modification, in the same form in which it was sold in the marketplace.

Engineering & Manufacturing Development (EMD): The purpose of the EMD phase is to develop, build and test a product to verify that all requirements have been met and to support production and deployment decisions.

Future Years Defense Program (FYDP): A DoD database and internal accounting system that summarizes forces and resources associated with programs approved by the Secretary of Defense. Its three parts are the organizations affected, appropriations accounts (research, development, test and evaluation; operation

and maintenance, etc.) and the 11 major force programs (strategic forces, mobility forces, research and development, etc.).

Information Technology (IT): Any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency. IT includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services) and related resources, including National Security Systems.

Initial Operational Capability (IOC): In general, attained when some units and/or organizations in the force structure scheduled to receive a system have received it and have the ability to employ and maintain it. The specifics for any particular system IOC are defined in that system's capability development document and capability production document.

Major Defense Acquisition Program (MDAP): An acquisition program that is designated by the Under Secretary of Defense for Acquisition and Sustainment or estimated to expend a total of more than \$365 million in RDT&E or more than \$2.19 billion in procurement (in fiscal year 2000 constant dollars).

Milestone (MS): The point at which a recommendation is made and approval sought regarding starting or continuing an acquisition program (i.e. proceeding to the next phase).

Program Executive Officer (PEO): A military or civilian official who has responsibility for directing several major defense acquisition programs and for assigned major system and non-major system acquisition programs. A PEO

normally reports to and receives guidance and direction from the DoD component acquisition executive.

Required Assets Available (RAA): The specific number of items that must be delivered to the government to support initial operational capability.

Request for Proposal (RFP): A solicitation used in negotiated acquisition to communicate government requirements to prospective contractors and to solicit proposals.

System Program Office (SPO): The office of the program manager and the single point of contact with industry, government agencies and other activities participating in the system acquisition process.

Technology Maturation & Risk Reduction (TMRR): The purpose of the Technology Maturation & Risk Reduction Phase is to reduce technology risk, engineering integration, life cycle cost risk and to determine the appropriate set of technologies to be integrated into a full system. The TMRR phase conducts competitive prototyping of system elements, refines requirements, and develops the functional and allocated baselines of the end-item system configuration.



CONTRACTING DEFINITIONS

COST-PLUS-AWARD-FEE

A cost-reimbursement contract suitable for level-of-effort contracts where mission feasibility is established, but measurement of achievement must be by subjective evaluation rather than objective measurement. A CPAF contract provides for a fee consisting of both a base amount, which may be zero, fixed at inception of the contract, and an award amount, based upon a judgmental evaluation by the government, sufficient to provide motivation for excellence in contract performance. A CPAF contract may not be used to avoid establishing a cost-plus-fixed-fee contract when the criteria for CPFF contracts apply, or developing objective targets so a cost-plus-incentive-fee contract can be used.

COST-PLUS-FIXED-FEE

A cost-reimbursement-type contract that provides for the payment of a fixed-fee to the contractor. The fixed fee, once negotiated, does not vary with actual cost, but may be adjusted as a result of any subsequent changes in the scope of work or services to be performed under the contract.

COST-PLUS-INCENTIVE-FEE

A cost-reimbursement-type contract with provision for a fee, which is adjusted by formula in accordance with the relationship that the total allowable costs bear to target costs. The provision for increase or decrease in the fee, depending upon allowable costs of contract performance, is designed as an incentive to the contractor to increase the efficiency of performance.

FIRM-FIXED-PRICE

Provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the contract. This type of contract places upon the contractor maximum risk and full responsibility for all costs and resulting profit or loss. Provides maximum incentive for the contractor to control costs and imposes a minimum administrative burden on the government.

FIXED-PRICE-INCENTIVE-FIRM

A fixed-price contract that provides for adjusting profit and establishing the final contract price by application of a formula based on the relationship of total final negotiated cost to total target cost. The final price is subject to a price ceiling, negotiated at the outset.

TIME-AND-MATERIALS

A contract that provides for acquiring supplies or services on the basis of 1) Direct labor hours at specified fixed hourly rates that include wages, overhead, general and administrative expenses, and profit; and 2) Actual cost for materials. A T&M contract may be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence.

INDEFINITE-DELIVERY CONTRACT

There are three types of indefinite-delivery contracts: 1) Definite-quantity contracts, 2) Requirements contracts, and 3) Indefinite-quantity contracts. The appropriate type of indefinite-delivery contract may be used to acquire supplies and/or services when the exact times and/or exact quantities of future deliveries are not known at the time of contract award.



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