





# UNITED STATES AIR FORCE RESERVE MODERNIZATION 2018









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## RESERVE

WINGS OF HERITAGE, SHAPING THE FUTURE

The Air Force Reserve (AFR) is an operational Reserve force of 70,000 Airmen charged with being ready for the fight tonight and sharpening our edge to compete, deter, and win alongside our joint force, allies and partners to prevail in conflict and preserve peace through strength.

Our Reserve Citizen Airmen provide critical surge capacity to respond quickly to unexpected and emerging threats, national crises and catastrophes within 72 hours. At the same time, we maintain our day-to-day operational capability to support ongoing missions. On any given day, we have over six thousand (6,000) Reserve Citizen Airmen on active duty orders supporting overseas and stateside operations, providing effective Global Vigilance, ensuring Global Reach and projecting Global Power. Reserve Citizen Airmen



provide expertise in all Air Force Core Missions and in 2017 they were the fourth largest Air Force Major Command contributor to Air Force Air Expeditionary Forces requirements.

To build the future total force we must continue to modernize our fleet. In order to maintain combat and support capabilities, sustained equipment modernization efforts are critical. The National Guard and Reserve Equipment Account (NGREA) is essential to maintaining the ability of the Reserve Component to meet national defense requirements and commitments. The average age of our Air Force fleet is 27 years old, and the Air Force Reserve is currently flying some of the oldest airframes in the inventory, with aircraft that are almost 60 years old. Historically, the AFR has used NGREA to bolster our capability and replace obsolete equipment. NGREA is primarily used to recapitalize equipment in Rapid Global Mobility, Air Superiority, Personnel Recovery, and Special Operations arenas. All of these support, modernization, and procurement actions directly enable the ability of the AFR to deploy as part of the Total Force and respond to future threats. This funding is even more crucial as continuing resolutions negatively impact our readiness.

The AFR prioritizes modernization proposals by collecting and validating warfighter-requirements to develop and approve a Prioritized Integrated Requirements List (PIRL). PIRL items that can be executed comprise the AFR Modernization List which determines the AFR's Fiscal Year Procurement List. This edition describes the AFR's highest modernization and NGREA-related priorities needed to sustain and maintain our warfighting capability.

The nation has called on us to support national security objectives across the full spectrum of military operations since our foundation 70 years ago, and we continue to stand ready to fly, fight, and win. Properly equipped and modernized, the AFR will continue to provide strategic depth and an operational capability for the joint force and Combatant Commanders. Thank you for supporting our Reserve Citizen Airmen.

MARYANNE MILLER

Lieutenant General, USAF

Chief of the Air Force Reserve

Air Force Reserve Modernization - i.

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Foreword	i
Contacts	ii
Table of Contents	iii
Introduction	1
Summary of Critical Modernization Efforts	2
Economic Impacts	4
Weapon Systems by State	5
A-10	6
B-52	14
C-5	18
C-17	22
C-130H	26
C-130J / WC-130J	38
F-16	44
Guardian Angel	50
HH-60	52
KC-135	56
C-40	60
Agile Combat Support	64
Medical/Aeromedical Evacuation	70
Abbreviations and Acronyms	73



**The Air Force Reserve** provides our nation's Reserve Citizen Airmen - an agile, combatready force answering our nation's call...always there! As an integral component of the Air Force team, the Air Force Reserve supports our national defense in every Air Force core function and in several unique homeland missions with operational capability, strategic depth, and an unparalleled capacity to surge forces quickly, when America needs us most.

For the AFR to remain an integrated, flexible, and combat-ready force and to ensure both the effectiveness and survivability of our Citizen Airmen in future contingencies, we must continue to invest in the modernization of the AFR's aging fleet of aircraft and equipment.

The 2018 Air Force Reserve Modernization Book captures the most critical capabilities and associated resources to achieve the AFR's near-term modernization requirements.

Requirements Process – Requirements are evaluated, validated, and prioritized through the AFR's bottom-up process, which begins at the AFR's Combat Planning Councils (CPCs) and culminates with the AFR's Fiscal Year Procurement List. This procurement list is subsequently vetted through the AFR's corporate structure, as well as socialized with partner MAJCOMs, the AFMC Life Cycle Sustainment Center (AFMC/LCMC) Program Executive Officers (PEOs), and associated System Program Offices (SPOs) to ensure a comprehensive acquisition strategy is developed to meet AFR's requirements.

**Critical Requirements** – The following pages present the AFR's highest priority, critical modernization efforts, each of which are needed and ready to procure immediately or within the next three to five years. Mission failure and/or loss of life become increasingly likely without continued modernization efforts.

#### **Modernization Investment Today...**







... Combat Capability, Effectiveness & Survivability Tomorrow!

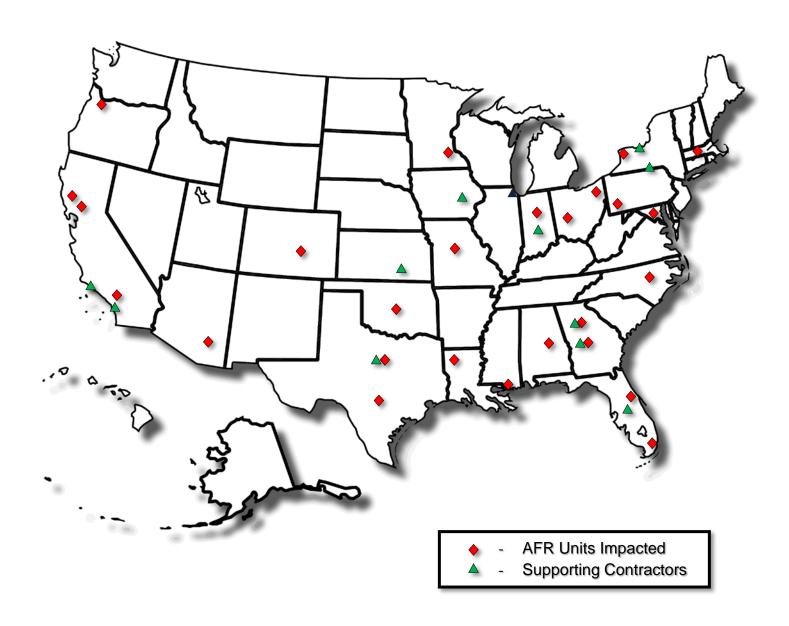
### Summary of AFR's Critical Modernization Efforts (\$M)

A-10	
MISSILE WARNING SYSTEM (MWS)	39.0
HIGH RESOLUTION DISPLAY SYSTEM	22.1
ALR-69A DIGITAL RADAR WARNING RECEIVER	49.2
COMMUNICATIONS UPGRADES	21.1
LINK 16	33.2
LITENING ADVANCE TARGETING POD (ATP) COLOR SENSOR UPGRADES	27.0
TOTAL	\$191.6
B-52	
DIGITAL MISSION DATA RECORDER (DMDR)	.1
LITENING ADVANCED TARGETING POD	15.0
COLOR SENSOR KITS AND UPGRADES	16.0
TOTAL	\$31.1
C-5M	
REAL-TIME INFORMATION IN THE COCKPIT (RTIC)	8.0
TOTAL	\$8.0
C-17	
REAL-TIME INFORMATION IN THE COCKPIT (RTIC)	9.3
TOTAL	\$9.3
	ψ3.3
C-130H	
INTEGRATED DATA LINK AND DEFENSIVE SYSTEM SUITE	6.3
SINGLE PASS PRECISION AIR DROP	33.1
IMPROVED NIGHT VISION COMPATIBLE LIGHTING	17.3
DIGITAL RADAR WARNING RECEIVER	65.0
NEXT GENERATION AGRICULTURE GLOBAL POSITIONING SYSTEM	1.3
LED POSITION LIGHTING	2.5
LARGE AIRCRAFT INFRARED COUNTERMEASURES (LARICM) BLOCK 30 UPGRADE C-130H PROPULSION SYSTEM UPGRADES	194.0 231.0
Total	\$550.5
	Ψ330:3
C-130J/WC-130J	
AIRCRAFT INTEGRATED PROCESS /BROKER	2.2
REAL-TIME INFORMATION IN THE COCKPIT (RTIC)	2.0
RADAR IMAGE CAPABILITY	5.0
Total	\$9.2

#### Summary of AFR's Critical Modernization Efforts (\$M)

<b>,</b>	(4)
F-16	
MISSILE WARNING SYSTEM (PIDS+)	50.5
F-16 RADAR UPGRADE	91.0
Link-16 Capability	29.0
LITENING ADVANCE TARGETING POD (ATP) COLOR SENSOR UPGRADES	28.0
TOTAL	198.5
GUARDIAN ANGEL	
PERSONNEL RECOVERY MISSION EQUIPMENT	10.2
Total	\$10.2
HH-60	
PERSONNEL RECOVERY SITUATIONAL AWARENESS	32.2
TOTAL	\$32.2
	Ψ02.2
KC-135	
REAL-TIME INFORMATION IN THE COCKPIT (RTIC)	73.0
LARGE AIRCRAFT INFRARED COUNTERMEASURE (LAIRCM)	93.0
Total	\$166.0
C-40C	
CREW REST SEATS	4.0
Total	\$4.0
AGILE COMBAT SUPPORT	
SUPPORT EQUIPMENT	27.6
VEHICLES	14.1
EXPEDITIONARY TACTICAL EQUIPMENT	7.8
Total	\$49.5
MEDICAL/AEROMEDICAL EVACUATION	
ISTAN HIGH-FIDELITY PATIENT SIMULATORS	6.3
AIRCREW WIRELESS INTERCOMMUNICATION SYSTEM (AWIS)	3.9
Total	\$10.2
	<b>V.O.</b>

AFR Total \$1254.2



#### **Weapon Systems by State**



AFRC Inventory	A-10	B-52	C-5	C-17	C-40	C-130H	C-130J WC-130J	HC-130N/P	F-16	HH-60	KC-135
AL						8					
AZ	28									6	
CA				9							20
CO						8					
FL								0	28	9	
GA						8					
IL					4						
IN											16
LA		16									
MA			8								
MD											8
MN						8					
MO	27										
MS							20				
NC											12
NY											8
ОН				9		8					
OK											8
PA				8							
TX			8						26		
TOTAL	55	18	13	26	4	40	20	0	54	15	72





## Close Air Support (CAS) Forward Air Control – Airborne (FAC-A) Combat Search and Rescue (CSAR) Precision Engagement / Attack

The A-10 is the Air Force's go-to ground attack fighter for CAS, FAC-A, and CSAR missions, due to its excellent maneuverability at low altitude and airspeeds, its ability to loiter near battle areas for extended periods of time, and its precision engagement capabilities. Ideally suited to conduct its missions during day or night from austere forward operating locations, the A-10 brings its potent GAU-8/A 30mm Gatling gun and impressive array of precision guided ordnance to defeat the most hardened ground threats, including armored vehicles that pose a threat to U.S. and coalition forces.

The Air Force Reserve operates two A-10 units: the 442nd Fighter Wing, Whiteman AFB, MO; and the 924th Fighter Group, Davis Monthan AFB, AZ. The AFR also teams with Air Combat Command (ACC) to maintain the 476th Fighter Group, an associate unit of over 200 Reservists supporting ACC's 23rd Wing at Moody AFB, GA. Air Force Reserve Command's A-10s require avionics and systems modernization upgrades to enhance their combat effectiveness and survivability.

#### **Modernization Summary**

- Missile Warning System (MWS) Replaces current outdated sensors and processors using newer off-the-shelf missile warning systems
- **High Resolution Display System (HRDS)** Replaces obsolete mechanical/analog fight instruments with digital instrumentation, improving targeting and coordination with ground forces
- ALR-69A Digital Radar Warning Receiver Replaces obsolete analog system with an all-digital system, providing improved survivability with improved surface-to-air and air-to-air radar-guided missile warning
- Communications Upgrade Upgrades primary radios to operate at new robust crypto standards and provides compatibility with modern satellite communication technology
- Link-16 Provides a secure jam-resistant, high-speed digital data link near-real time capability, supporting the exchange of text messages, imagery data and provides two channels of digital voice
- LITENING Advanced Targeting Pod (ATP) Color Sensor Upgrades Replaces legacy black and white sensors in the LITENING (ATP) with digital color sensors enabling high definition video

A-10 Programs	Cost (\$M)
Missile Warning System (MWS)	39.0
High Resolution Display System	22.1
ALR-69A Digital Radar Warning Receiver	49.2
Communications Upgrade	21.1
Link-16	33.2
LITENING Advanced Targeting Pod (ATP) Color Sensor Upgrades	27.0
Total Cost of Remaining Efforts	191.6

#### Missile Warning System

Replaces current AAR-47 IR missile warning system

#### **BACKGROUND**

- The Air Force Reserve's A-10 missile warning system has not kept pace with advancements in battlefield shoulder-fired weapons. The outdated AAR-47 system places pilots and mission success at an increasing risk, given the proliferation of missile threats
- Current outdated sensors and processors are to be replaced using newer off-the-shelf missile warning systems

#### **IMPACT IF NOT FUNDED**

Aircraft will remain increasingly vulnerable to missile threats and survivability will be degraded

#### **UNITS IMPACTED**

- 357th Fighter Group, Davis Monthan AFB, AZ
- 442nd Fighter Wing, Whiteman AFB, MO

#### **CONTRACTOR**

To Be Determined (sensors/processors)

PROGRAM ELEMENT CODE: A-10: 52713F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			6.0
Group A Kits/Install	56	50	2.8
Group B Kits	56	525	29.4
Support Equipment	2	400	.8
Total Cost of Remaining Efforts			\$39.0

#### **High Resolution Display System (HRDS)**

Replace A-10 mechanical/analog fight instruments with a digital display. Provides a modern high definition display compatible with the capabilities of the targeting pods used on the A-10

#### **BACKGROUND**

- Replace A-10 mechanical/analog fight instruments with a digital display
- Analog instruments are becoming increasingly difficult to maintain and are affected by diminishing material and manufacturing sources
- Digital instruments reduce maintenance, and significantly increase aircraft processing capacity
- Digital displays allow the pilot to make full use of available aircraft sensors increasing targeting accuracy and aircraft survivability by increasing standoff range

#### **IMPACT IF NOT FUNDED**

Aircraft will become increasingly difficult to maintain and mission/pilots placed at greater risk

#### **UNITS IMPACTED**

- 357th Fighter Group, Davis Monthan AFB, AZ
- 442nd Fighter Wing, Whiteman AFB, MO

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: A-10: 52713F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			9.0
Group A Kits/Install	56	80	4.5
Group B Kits	56	150	8.4
Support Equipment	4	60	.2
Total Cost of Remaining Efforts			\$22.1

#### **ALR-69A Digital Radar Warning Receiver (RWR)**

Replaces obsolete analog RWR with an all-digital system, providing improved survivability with improved surface-to-air and air-to-air radar-guided missile warning

#### **BACKGROUND**

- The current analog RWR in AFR's A-10s is obsolete and needs to be replaced with an alldigital system
- The ALR-69A reduces pilot workload by providing 360-degree detection and warning of unobserved radar based threats, and automatically cueing onboard countermeasures dispensers to help defeat incoming missiles
- The all-digital system provides enhanced spectral and spatial coverage for high-sensitivity detection in dense signal environments

#### **IMPACT IF NOT FUNDED**

Current analog RWR does not provide sufficient missile warning, degrading survivability

#### **UNITS IMPACTED**

- 442nd Fighter Wing, Whiteman AFB, MO
- 924th Fighter Group, Davis Monthan AFB, AZ

#### **CONTRACTOR**

Raytheon Corp, Goleta, CA

PROGRAM ELEMENT CODE: A-10: 52713F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration	1		10.0
Group A Kits/Install	56	200	11.2
Group B Kits	56	500	28.0
Total Cost of Remaining Efforts			\$49.2

#### **Communications Upgrade**

Upgrades primary radios to operate at new robust crypto standards and provides compatibility with modern satellite communication technology

#### **BACKGROUND**

- New DOD cryptographic and satellite communication standards have made the A-10's primary radios obsolete
- Legacy A-10 radios lack the capability to maintain secure communications as cryptologic requirements become more stringent
- New Mobil User Objective System (MUOS) SATCOM communication waveforms are also out of reach of the legacy A-10 radios
- Rapidly establishing and maintaining intelligible secure line of sight and beyond line of sight communications is essential to interoperability and mission success
- Upgrading the A-10's radios to the ARC-210 Generation 6 radio is a form/fit solution that meets new crypto and SATCOM requirements

#### **IMPACT IF NOT FUNDED**

- If not funded A-10 radios will become non-crypto compliant, isolating the A-10 from all battlefield communication and will not be able to communicate beyond line of sight using current satellite technology
- Mission success and aircraft survivability will be in jeopardy

#### UNITS IMPACTED

- 442nd Fighter Wing, Whiteman AFB, MO
- 924th Fighter Group, Davis Monthan AFB, AZ

#### CONTRACTOR

Rockwell Collins, Cedar Rapids, IA

PROGRAM ELEMENT CODE: A-10: 52713F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration	1	5,100	5.1
Group A Kits/Install	56	23	1.3
Group B Kits	56	263	14.7
Total Cost of Remaining Efforts			\$21.1

## LINK-16 Capability with growth potential for Fifth-Fourth Generation Fighter Interoperability

Provides a secure jam-resistant, high-speed digital data link near-real time, supports the exchange of text messages, imagery data and provides two channels of digital voice

#### **BACKGROUND**

- Reserve A-10 aircraft require Link-16 data link capability to effectively employ in the current operational environment
- Link-16 is the Air Force standard for airborne fighter data links
- Legacy Situational Awareness Data Link equipment has proven inadequate due to lack of fielded support infrastructure, frequency band constraints, and Joint Interface Control Cell support
- Link-16 is the Air Force standard for airborne fighter data links

#### **IMPACT IF NOT FUNDED**

Aircraft will become increasingly data-link isolated

#### **UNITS IMPACTED**

- 357th Fighter Group, Davis Monthan AFB, AZ
- 442nd Fighter Wing, Whiteman AFB, MO

#### **CONTRACTOR**

ViaSat, Carlsbad, CA

PROGRAM ELEMENT CODE: A-10: 52713F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration	1	7,000	7.0
Group A Kits/Install	56	178.6	10.0
Group B Kits	56	285.7	16.0
Support Equipment	4	60	.2
Total Cost of Remaining Efforts			\$33.2

## LITENING Advance Targeting Pod (ATP) Color Sensor Upgrades

Replaces legacy black and white sensors in the LITENING Advance Targeting Pod (ATP) with digital color sensors enabling high definition video

#### BACKGROUND

- LITENING ATPs currently displays cockpit video via a black and white Narrow Field of View (NFOV) and a black and white Wide Field of View (WFOV) sensor. These sensors are reaching the end of their useful life and are due for replacement
- The display of the high resolution color video on the Center Display Unit (CDU) or tablet is expected to bring increased capability and situational awareness to the pilot. This upgrade will provide A-10 pilots improved resolution of air-to-ground (A/G) targets
- The color sensors will add NFOV & WFOV color sensors, a laser spot tracker, an extended laser range finder, recording of digital video and the ability to display feeds on a tablet

#### **IMPACT IF NOT FUNDED**

 A-10 aircrews ability to detect, acquire, auto-track and identify targets at long ranges for weapon delivery or nontraditional intelligence, surveillance and reconnaissance missions will decline

#### UNITS IMPACTED

- 442d Fighter Wing, Whiteman AFB, MO
- 924th Fighter Wing, Davis-Monthan AFB, AZ

#### CONTRACTOR

Northrop Grumman Corp, Rolling Meadows, IL

PROGRAM ELEMENT CODE: A-10: 52713F



Program Data	#	Unit Cost (\$K)	Cost (\$M)
Color Sensor Upgrades	27	1,000	27.0
Total Cost of Remaining Efforts			\$27.0



### Global Attack Precision Engagement

The B-52 Stratofortress is the most combat capable bomber in the United States inventory. The B-52 is capable of performing a variety of missions, including strategic attack, precision strike, air interdiction, offensive counter-air, and maritime interdiction. Due to its high mission-capable rate, long range, persistence and ability to employ accurate standoff weapons, the B-52 continues to be a major contributor to the U.S. and allied forces.

The AFR maintains and operates B-52 aircraft assigned to the 307th Bomb Wing, Barksdale AFB, Louisiana. Currently, the 307th BW is the only unit that produces new aircrews for this aircraft through the Flying Training Unit (FTU), providing 100% of the formal training for B-52 aircrew combat employment.

The B-52 will remain an integral asset in any significant air campaign in the future. As such, continued modernization investments are required to ensure the airframe's viability in an ever-challenging mission environment.

#### **Modernization Summary**

- B-52 Digital Mission Data Recorder (DMDR) Interim Contract Support (ICS) Sustainment (repair & maintenance) of the B-52 DMDR is required to keep the equipment functional
- LITENING Advanced Targeting Pod (ATP) Procurements and Color Sensor Upgrades Procures additional pods and replaces legacy black and white sensors with digital color sensors enabling high definition video

B-52 Programs	Cost (\$M)
Digital Mission Data Recorder (DMDR) ICS	.1
LITENING Advanced Targeting Pod	15.0
Color Sensor Kits & Upgrades	16.0
Total Cost of Remaining Efforts	\$31.1

#### **Digital Mission Data Recorder (DMDR)**

Provides mission playback station software and event cueing capabilities to enhance training evaluation and mission reconstruction

#### **BACKGROUND**

- The 93rd BS, 307th Bomb Wing, Barksdale AFB, LA, requires a multi-channel audio/video mission data recording system to effectively accomplish their B-52 Flying Training Unit (FTU) mission
- Currently, the only means of data capture on the B-52 is manual/mental note taking by the student and instructor; this method is most vulnerable during task saturation when the need for data capture is often the most important
- The ability to recreate the mission from all of the various data sources on the aircraft would be an invaluable training aid enabling the 93rd BS to more effectively satisfy their mission requirements
- Installing DMDRs in AFR B52s would yield significant training, mission re-construction, and crew resource management improvements by providing the capability to record and playback video, audio and data from targeting pods, radios and intercom sources

#### **IMPACT IF NOT FUNDED**

 Quality of training provided to newly-assigned B-52 crews will be degraded, resulting in the subsequent degradation of combat capability and/or increased training costs to overcome resulting deficiencies

#### **UNITS IMPACTED**

307th Bomb Wing, Barksdale AFB, LA

#### CONTRACTOR

Calculex Corp, Las Cruces, NM

PROGRAM ELEMENT CODE: B-52: 51720F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
DMDR Interim Contractor Supt (ICS)	1	.1	.1
Total Cost of Remaining Efforts			\$.1

## LITENING Advanced Targeting Pod (ATP) Procurements and Color Sensor Upgrades

Procures additional pods and replaces legacy black and white sensors with digital color sensors enabling high definition video

#### **BACKGROUND**

- Primary Aircraft Inventory at the 307th BW has increased from 8 to 16 aircraft. Acquisition of 6 more LITENING Pods ensures all AFRC B-52s are equipped with precision targeting capabilities
- Legacy LITENING ATPs currently displays cockpit video via a black and white Narrow Field of View (NFOV) and a black and white Wide Field of View (WFOV) sensor. These sensors are reaching the end of their useful life and are due for replacement
- Color sensors will add NFOV & WFOV color sensors, a laser spot tracker, an extended laser range finder, recording of digital video and the ability to display feeds on a tablet

#### **IMPACT IF NOT FUNDED**

- Precision engagement capabilities and the mission to train to them will be degraded
- F-16 aircrews ability to detect, acquire, auto-track and identify targets at long ranges for weapon delivery or nontraditional intelligence, surveillance and reconnaissance missions will decline

#### UNITS IMPACTED

307th Bomber Wing, Barksdale AFB, LA

#### CONTRACTOR

Northrop Grumman Corp, Rolling Meadows, IL

PROGRAM ELEMENT CODE: B-52: 51720F

Program Data	#	Unit Cost (\$M)	Cost (\$M)
LITENING Advance Targeting Pods	6	2.5	15.0
Color Sensor Kits & Upgrades	16	1.0	16.0
Total Cost of Remaining Efforts			\$31.0







#### C-5M Super Galaxy

The C-5 Galaxy was first introduced to the AF inventory in 1969. As the largest airframe in the western world, its purpose was to transport military personnel and cargo across the globe at any given time in support of wartime, peacetime, and humanitarian operations. Often compared with its counterpart, the C-17 Globemaster III, the cargo capacity of the C-5 exceeded all other aircraft. Its ability to deliver expansive cargo loads over great distances significantly contributed to the Air Force core mission of rapid global mobility. The C-5 achieved many successes in supporting a breadth of national objectives to include humanitarian relief, presidential support, airdrop support, and outsized cargo missions.

While a successful aircraft, the C-5 had several limiting factors that hindered its reliability. To minimize those problems, the Air Force decided to significantly upgrade the C-5. The first complete C-5M aircraft upgraded under Reliability Enhancement Re-Engineering Program (RERP) was completed in 2006. The RERP upgrades included better avionics, advanced navigation equipment, an enhanced communications system, a new autopilot system, and flat panel displays.





## Rapid Global Mobility Strategic Airlift Outsized / Oversized Cargo Airlift

The C-5M is the largest airlift aircraft in the Air Force inventory and is capable of simultaneously carrying 36 standard pallets and 81 troops. It is also capable of rapidly transporting outsize and oversize cargo over intercontinental ranges to airfields as short as 6,000 feet. Entering the Air Force inventory in 1970, the C-5 has been extensively modernized over the past several decades. Today, the C-5M teams with the C-17 to provide the Air Force's strategic airlift capacity. Continued modernization efforts are required to maximize the C-5M's effectiveness and survivability.

The Air Force Reserve operates C-5M aircraft at the 433rd Airlift Wing, Lackland AFB, TX, and the 439th Airlift Wing, Westover ARB, MA. The 433rd Airlift Wing is home to the Air Force's C-5 Formal Training Unit (FTU), which provides aircrew training for the entire C-5 fleet. Air Force Reserve Airmen also associate with active component C-5M aircraft at the 512th Airlift Wing, Dover AFB, DE and 349th Air Mobility Wing, Travis AFB, CA.

#### **Modernization Summary**

 Real-Time Information in the Cockpit (RTIC) – Upgrades C-5's voice, data link, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms, including Air Operations Centers and airborne assets

C-5 Programs	Cost (\$M)
Real-Time Information in the Cockpit (RTIC)	8.0
Total Cost of Remaining Efforts	\$8.0

## Real-Time Information in the Cockpit (RTIC) (Common MAF Mission Computer)

Upgrades C-5M's voice, data link, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms

#### **BACKGROUND**

- Effective air operations in today's information-reliant battlespace requires secure voice and data communications between coalition aircraft, command and control (C<sup>2</sup>) platforms, and Joint forces
- Communications upgrades to C-5M fleet will provide aircrews the ability to report and receive battlespace and mission information to and from C<sup>2</sup> platforms and others
- Increased situational awareness and near real-time communications between aircrews and C<sup>2</sup>
  assets will benefit decision making and optimize operational flexibility, thus significantly
  improving the synchronization of supporting and supported forces

#### **IMPACT IF NOT FUNDED**

 Without RTIC enabled SLOS/BLOS communications and data link upgrades to the Air Force Reserve's C-5 fleet, aircrew, and associated C<sup>2</sup> platforms will not adequately interface in current and evolving mission environments, resulting in degraded mission performance, including the inability to adjust mission profiles real time, and increased risk to aircrew and passengers

#### **UNITS IMPACTED**

- 433rd Air Wing, Lackland AFB, TX
- 439th Air Wing, Westover ARB, MA

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-5: 54219F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			1.0
Installs	16	25	0.4
Group B Kits/GFE	16	415	6.6
Total Cost of Remaining Efforts			\$8.0





## Rapid Global Mobility Strategic Airlift Aeromedical Evacuation

The C-17 Globemaster III provides the Air Force with inter-theater and intra-theater airlift in support of U.S. national security. It is capable of performing combat airdrop and is able to land on short, austere airfields. The inherent flexibility and performance of the C-17 fleet improves the ability of the total airlift system to meet the worldwide air mobility requirements of the United States.

The Air Force Reserve maintains and operates C-17s at the 452nd Air Mobility Wing, March ARB, CA, 445th Air Wing, Wright-Patterson AFB, OH and the 911th Air Wing, Pittsburgh, IAP, ARS,PA. The Air Force Reserve also associates with active component C-17 aircraft at the 315th Airlift Wing, Charleston AFB, SC; the 446th Airlift Wing, McChord AFB, WA; the 514th Air Mobility Wing, McGuire AFB, NJ; the 512th Airlift Wing, Dover AFB, DE; 349th Air Mobility Wing, Travis AFB, CA; and the 730th Air Mobility Training Squadron, Altus AFB, OK.

#### **Modernization Summary**

 Real-Time Information in the Cockpit (RTIC) – Upgrades C-17's voice, data link, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms, including Air Operations Centers and airborne assets

C-17 Programs	Cost (\$M)
Real-Time Information in the Cockpit (RTIC)	9.3
Total Cost of Remaining Efforts	\$9.3

## Real-Time Information in the Cockpit (RTIC) (Common MAF Mission Computer)

Upgrades C-17's voice, data link, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms

#### **BACKGROUND**

- Effective air operations in today's information-reliant battlespace requires secure voice and data communications between coalition aircraft, command and control (C<sup>2</sup>) platforms, and Joint forces
- Communications upgrades to C-17 fleet will provide aircrews the ability to report and receive battlespace and mission information to and from C<sup>2</sup> platforms and others
- Increased situational awareness and near real-time communications between aircrews and C<sup>2</sup>
  assets will benefit decision making and optimize operational flexibility, thus significantly
  improving the synchronization of supporting and supported forces

#### **IMPACT IF NOT FUNDED**

Without SLOS/BLOS communications and data link upgrades to the Air Force Reserve's C-17 fleet, aircrew and associated C<sup>2</sup> platforms will not adequately interface in current and evolving mission environments resulting in degraded mission performance, including the inability to adjust mission profiles real time, and increased risk to aircrew and passengers

#### **UNITS IMPACTED**

- 452nd Air Mobility Wing, March ARB, CA
- 445th Air Wing, Wright-Patterson AFB, OH
- 911th Air Wing, Pittsburgh IAP ARS, PA

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-17: 54214F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			1.0
Installs	18	30	0.5
Group B Kits/GFE	18	435	7.8
Total Cost of Remaining Efforts			\$9.3





## Rapid Global Mobility Tactical Airlift / Specialized Missions Aeromedical Evacuation

The C-130H Hercules is the Air Force's tactical airlift workhorse with the capability to take-off and land on short, unimproved strips often found during austere, downrange operations. The C-130H has an unrefueled range of 3,000 nautical miles with a maximum payload of 42,000 pounds, and is the primary intra-theater airlift vehicle for delivering troops and equipment into hostile territory.

Legacy C-130H aircraft make up the bulk of the Air Force Reserve's combined C-130 fleet. These provide responsive airlift of personnel and cargo for delivery day or night by parachute or landing, as well as, aeromedical evacuation of critically-injured personnel. Specially-equipped C-130Hs also provide aerial spray and aerial firefighting capabilities.

The Air Force Reserve maintains and operates C-130H2 aircraft at airlift wings located at Maxwell AFB, AL; Youngstown ARS, OH; and with C-130H3 aircraft at Dobbins ARB, GA; Minneapolis-St Paul IAP ARS, MN; and Peterson AFB, CO.

#### **Specialized Missions**

**Aerial Spray** – The Department of Defense's only aerial spray capability resides exclusively within the Air Force Reserve at the 910th Airlift Wing, Youngstown ARS, OH, where C-130H2s are equipped with Modular Aerial Spray System (MASS) modules when needed in support of Defense, Homeland, or Center for Disease Control Requirements.

**Aerial Firefighting** – In a shared homeland support mission with the Air National Guard, the Air Force Reserve maintains Modular Airborne Fire Fighting System (MAFFS) equipped C-130H3 aircraft at the 302nd Airlift Wing, Peterson AFB, CO.



#### **Modernization Summary**

- Integrated Data Link and Defensive System Suite Upgrades to the C-130H RTIC system
  increase the overarching network capability provide a common processing and display platform for
  previously federated systems resulting in a consolidated situational awareness picture
- **Single-Pass Precision Air Drop** Incorporates precision targeting pod application to provide highly accurate, all-weather, single-pass airdrop capability and minimize human-induced errors
- Improved Night Vision (NVIS) Compatible Lighting Installs permanent NVIS compatible lighting enhancing aircrew situational awareness while operating with night vision goggles
- **Digital Radar Warning Receiver (RWR)** Provides an advanced, all-digital RWR system to increase survivability with improved surface-to-air and air-to-air radar-guided missile warning
- Next Generation Agriculture (AG) Global Positioning System (GPS) Upgrades current AG
  GPS to Next Gen GPS enabling the 910 AW to meet EPA requirements for precision pesticide
  application
- LED Position Lighting Replaces current position lights with LED position lights
- Large Aircraft infrared Countermeasures (LAIRCM) Block 30 upgrade Upgrades current Block 10 configuration with Block 30 components (upgraded MWS, GLTA-tracking, jamming and LSPR processor)
- C-130H Propulsion System Upgrades Upgrades engines and propellers to enhance performance in high density altitudes, improve fuel efficiency, and extend service life of the aircraft
  - **Improved Propeller (NP2000)** Replaces four-bladed propellers with eight-bladed propellers, increasing thrust for heavy weight and short field operations; increases fuel efficiency
  - T-56-A-16 Series 3.5 Engine Enhancement Package (EEP) Increases engine life cycle, improves fuel economy, reduces takeoff distance, and increases the max acceptable cargo load

C-130H Programs	Cost (\$M)
Integrated Data Link and Defensive System Suite	6.3
Single-Pass Precision Air Drop	33.1
Improved Night Vision (NVIS) Compatible Lighting	17.3
Digital Radar Warning Receiver (RWR)	65.0
Next Generation Agriculture Global Positioning System	1.3
LED Position Lighting	2.5
Large Aircraft Infrared Countermeasures (LAIRCM) Block 30 Upgrade	194.0
C-130H Propulsion System Upgrades:	
Improved Propeller (NP2000)	84.0
T-56 Series 3.5 Engine Enhancement Package (EEP)	147.0
Total Cost of Remaining Efforts	\$550.5

#### **Integrated Data Link and Defensive System Suite**

Upgrades to the C-130H RTIC system increase the overarching network capability and provide a common processing and display platform for previously federated systems, resulting in a consolidated situational awareness picture

#### **BACKGROUND**

- C-130H Real-Time Information in the Cockpit (RTIC) system allows C-130H aircraft to participate on multiple data link networks by utilizing technologies already fielded on other DoD assets
- Integration with the advanced integrated electronic combat system provides the capability for on-board/off-board threat correlations, data sharing, on-board radar threat system geo-location, route re-planning, and automated countermeasures
- Combining the control and outputs of multiple systems into one common graphical interface reduces crew workload, decreases "heads-down" time, and provides improved decision support for aircrews operating in the tactical environment

#### **IMPACT IF NOT FUNDED**

 Without this capability aircrews lack situational awareness, terrain awareness warning system, electronic takeoff and landing data systems

#### **UNITS IMPACTED**

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL
- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F



Program Data	#	Unit Cost (\$K)	Cost (\$M)
Group A & B Kits/Installs	42	150	6.3
Total Cost of Remaining Efforts			\$6.3

#### **Single-Pass Precision Air Drop (SPPAD)**

Incorporates precision targeting pod features to provide highly accurate, allweather, single-pass air drop capability and minimize human-induced errors.

#### **BACKGROUND**

- The C-130's ability to precisely deliver loads via air drop in contested environments is currently deficient, resulting in degraded mission effectiveness increasing exposure in threat envelopes
- Current precision air drop methods require multiple passes over the drop zone for atmospheric calculations before dropping actual bundles, significantly increasing threat exposure
- Effective SPPAD operations require early identification of the drop zone, regardless of environmental conditions, including both day and night, and both Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC)
- Targeting pods with Light Detection and Ranging (LIDAR) can provide this capability during VMC operations; software and hardware upgrades to the APN-241 radar will provide Synthetic Aperture Radar (SAR) and wind sensing data to meet these requirements for IMC air drops
- One meter high resolution radar imagery and the addition of LITENING targeting pods provide a highly accurate all-weather SPPAD capability with significant reduction in human errors

#### **IMPACT IF NOT FUNDED**

• Without improved precision air drop capabilities, C-130s will not meet air drop criteria, while subjecting aircrews and troops to excessive threat exposure during multiple drop zone passes

#### UNITS IMPACTED

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL

#### **CONTRACTORS**

- Northrop Grumman; Raytheon
- Rockwell Collins; Esterline Corp.

PROGRAM ELEMENT CODE: C-130: 54343F

- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN



5.110 1 1101 IEE:			
Program Data	#	Unit Cost (\$K)	Cost (\$M)
LITENING Targeting Pod Integration			4.0
APN-241 Radar Upgrade	42	N/A	N/A
Hard-point Pylons	42	350	14.7
LITENING Pods	12	1,200	14.4
Total Cost of Remaining Efforts			\$33.1

### Improved Night Vision (NVIS) Compatible Lighting

Installs permanent NVIS compatible lighting to enhance aircrew performance and situational awareness while operating with night vision goggles

#### **BACKGROUND**

- The current NVIS lighting wiring harness installed on Air Force Reserve C-130Hs was intended to serve as a temporary solution, pending the installation of the C-130H Avionics Modernization Program (AMP)
- Given the indefinite delay with AMP implementation, along with increased NVG employment requirements and a more complex and demanding night tactical environment, a permanent and more effective NVIS lighting solution is required to maintain combat effectiveness and maximize survivability

#### **IMPACT IF NOT FUNDED**

Unimproved C-130H NVIS lighting places aircrews at increased risk of task saturation and loss
of situational awareness during night operations due to poor and obstructive cockpit lighting

#### **UNITS IMPACTED**

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL
- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN

#### CONTRACTORS

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			0.5
Group A Kits/Installs	42	200	8.4
Group B Kits	42	200	8.4
<b>Total Cost of Remaining Efforts</b>			\$17.3

#### **ALR-69A Digital Radar Warning Receiver (RWR)**

Replaces obsolete analog RWR with an all-digital system, providing improved survivability with improved surface-to-air and air-to-air radar-guided missile warning

#### **BACKGROUND**

- Most of Air Force Reserve C-130s are not equipped with an RWR; those that are equipped rely
  upon an obsolete, analog RWR system that suffers from significant performance, reliability,
  and maintainability shortfalls
- The currently-fielded analog RWR system is not capable of ensuring adequate defensive situational awareness against some legacy and the majority of new radar missile threats
- The all-digital ALR-69A reduces aircrew workload by providing precise 360-degree detection, identification, and warning of unobserved missile engagements, and automatic cueing of onboard countermeasures to help defeat incoming missiles
- The ALR-69A also provides enhanced spectral and spatial coverage for high-sensitivity detection in dense signal environments

#### **IMPACT IF NOT FUNDED**

Detection, identification, and warning of unobserved missile threats will be insufficient against
a growing number of surface-to-air missile systems, risking the loss of aircraft, cargo, and crew

#### **UNITS IMPACTED**

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL
- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN

#### **CONTRACTORS**

Raytheon, Goleta, CA

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			2.0
Group A Kits/Installs	42	500	21.0
Group B Kits	42	1,000	42.0
Total Cost of Remaining Efforts			\$65.0

#### **Next Gen Agricultural Global Positioning System (AG GPS)**

Upgrades current AG GPS to Next Gen GPS enabling the 910th AW to meet Environmental Protection Agency requirements for precision pesticide application

#### **BACKGROUND**

- Current Agricultural Global Positioning (AG GPS) being used on spray modified C-130H2 aircraft at Youngstown has become obsolete and vendor has no new or reconditioned parts available to replace broken components
- Central Processing Unit (CPU) is also no longer being manufactured and software updates to the system are not planned. The lack of parts make the system unsupportable within 1 year
- AG GPS is critical for the Aerial Spray mission allowing the proper application of pesticides

#### **IMPACT IF NOT FUNDED**

 Without the AG GPS, the Air Force Reserve spray unit will be unable to carry out its DOD directed Aerial Spray mission

#### **UNITS IMPACTED**

910th Airlift Wing, Youngstown ARS, OH

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Group A & B Kits/Installs	9	150	1.3
Total Cost of Remaining Efforts			\$1.3



#### **LED Position Lighting**

Replaces current incandescent position lights with LED position lights

#### **BACKGROUND**

 Current incandescent position lights are required to be set in the dim setting to allow adequate night vision goggle (NVG) operations in formation. New LED lights are not only more user friendly for NVG use, but it provides better visibility to the unaided eye

#### **IMPACT IF NOT FUNDED**

 Without LED Position Lighting, aircrew will continue to operate less safe, especially during NVG operations. Further, incandescent lights drive higher sustainment costs

#### **UNITS IMPACTED**

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL
- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN

#### **CONTRACTORS**

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration	1	200	0.2
Group A Kits/Installs	42	50	2.1
Group B Kits	42	5	0.2
Total Cost of Remaining Efforts			\$2.5

## Large Aircraft Infrared Countermeasures (LAIRCM) Block 30 upgrade

Provides integral self-protection system to defend large aircraft against infrared (IR) missile threats

#### **BACKGROUND**

- C-130Hs are the only aircraft in the Mobility Air Force (MAF) fleet that do not have the Block 20 or Block 30 LAIRCM upgrade as the baseline configuration to counter potential IR missile threat envelopes
- As threats continue to proliferate, the aircraft is placed at ever-increasing risk without effective countermeasures
- Shoulder-fired, Man-Portable Air Defense Systems (MANPADs) are a significant threat to C-130H aircraft during operations
- An advanced IRCM Block 30 system is required to counter the proliferation of IR missile threats

#### IMPACT IF NOT FUNDED

 Without effective defensive systems, advanced IR missile systems maintain a high probability of kill against C-130H aircraft. C-130H operational effectiveness will be limited and survivability degraded

#### **UNITS IMPACTED**

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL

- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN

#### **CONTRACTOR**

Northrop Grumman Electronics Systems, Rolling Meadows, IL

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$M)	Cost (\$M)
Integration			5.0
Group A Kits/Installs	42	2.0	84.0
Group B Kits	42	2.5	105.0
Total Cost of Remaining Efforts			\$194.0

#### **Propulsion System Upgrades**

Upgrades engines and propellers to enhance performance in high density altitudes, improve fuel efficiency, and extend service life of the aircraft

#### **BACKGROUND**

- The current C-130H propulsion system performs deficiently in high density altitude environments and drives excessive maintenance costs; it requires a comprehensive upgrade to improve performance and reliability; increase fuel efficiency; reduce airframe fatigue due to excessive vibration; decrease maintenance costs; and increase safety margins during critical phases of flight
- Fuselage, avionics and wing box life-span considerations have driven initiatives to reduce the sources of airframe stress due to excessive vibrations; aircrew fatigue and other human factors are also impacted
- Upgrading the T56-A-16 engine with the 3.5 Engine Enhancement Package (EEP) will increase
  engine life span, improve fuel economy, reduce takeoff distances, and increase the effective
  cargo capacity
- Replacing dated four-bladed propellers with improved, modular eight-bladed propellers (NP2000) will provide improved thrust for heavy weight and short field operations, while increasing fuel efficiency

#### IMPACT IF NOT FUNDED

C-130H performance and reliability will remain deficient, while sustainment costs will continue
to increase, which will place at increasing risk a significant portion of the Air Force's tactical
airlift capacity

#### **UNITS IMPACTED**

- 94th Airlift Wing, Dobbins ARB, GA
- 302nd Airlift Wing, Peterson AFB, CO
- 908th Airlift Wing, Maxwell AFB, AL
- 910th Airlift Wing, Youngstown ARS, OH
- 934th Airlift Wing, Minn-St. Paul IAP, MN

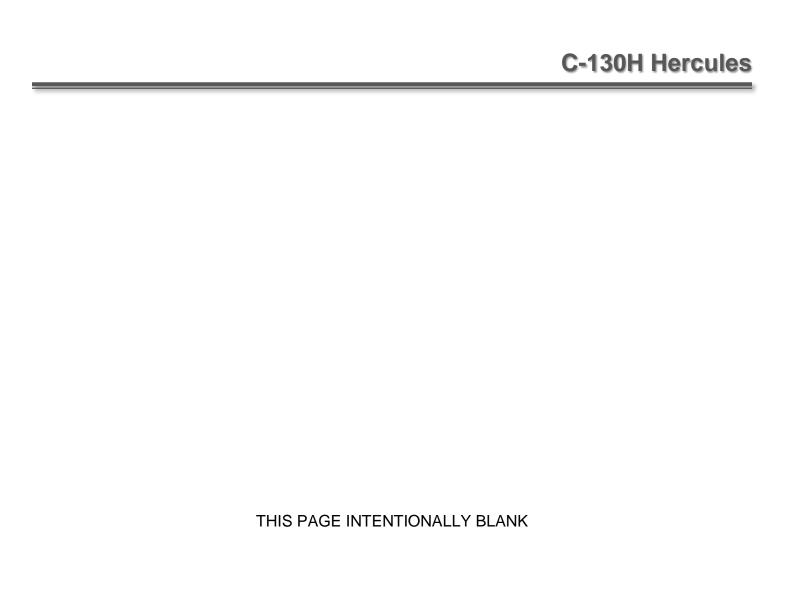
#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Improved Propeller (NP2000)	42	2,000	84.0
T56 3.5 Engine Enhancement Package (EEP)	42	3,500	147.0
Total Cost of Remaining Efforts			\$231.0







## MG-130J

#### C-130J Super Hercules



The C-130J Super Hercules represented a significant upgrade from the legacy C-130 aircraft like the C-130H. Equipped with six-blade Scimitar propellers, the C-130J had more powerful engines and an upgraded flight deck that included digital avionics.

The Air Force Reserve's 53rd Weather Reconnaissance Squadron (53 WRS) "Hurricane Hunters," 403rd Wing, Biloxi AFB, Mississippi, was one of the first units to receive the C-130J. Today, the 53rd provides critically important services to the National Hurricane Center and the National Weather Service.





## Rapid Global Mobility Tactical Airlift / Specialized Missions Aeromedical Evacuation

The C-130J is the US Air Force principal tactical cargo and personnel transport aircraft. The C-130J Hercules is the latest model, featuring a glass cockpit, digital avionics, and a new propulsion system with a six-bladed propeller. The improvements built into the C-130J, which entered production in 1997, have enhanced the performance of the aircraft in terms of its range, cruise ceiling time to climb, speed, and airfield requirements.

The AFR exclusively operates the WC-130J, a J-model variant, which provides weather reconnaissance—also known as "Hurricane Hunting"—in partnership with the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's National Hurricane Center.

The Air Force Reserve maintains and operates both C-130J and WC-130J aircraft, flown by the 403rd Wing at Keesler AFB, MS. Keesler AFB is also home to the nationally recognized 53rd Weather Reconnaissance Squadron (WRS).

#### **Specialized Missions**

**Weather Reconnaissance** – The 53rd WRS, utilizing the WC-130J aircraft, provides surveillance of tropical storms and hurricanes in the Atlantic Ocean, the Caribbean Sea, the Gulf of Mexico, and the central Pacific Ocean for the National Hurricane Center in Miami. The unit also flies winter storm missions off both coasts of the United States.

#### **Modernization Summary**

- C-130J Aircraft integrated Process/Broker Provides an agile processing system to negotiate
  the dynamic tactical environment allowing immediate access to the MIL-STD-1553 data bus
- C-130J Common MAF Mission Computer Provides voice, datalink, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms
- WC-130J Radar Image Transmission Capability Transmits storm radar imagery to the National Hurricane Center in real time

(W)C-130J Programs	Cost (\$M)
Aircraft Integrated Processor/Broker	2.2
Common MAF Mission Computer	2.0
Radar Image Transmission Capability	5.0
Total Cost of Remaining Efforts	\$9.2

#### **Aircraft Integrated Processor/Broker**

Provides an agile processing system to negotiate the dynamic tactical environment allowing immediate access to the MIL-STD-1553 data bus

#### **BACKGROUND**

- Examples of emerging systems processed by an integrated processor/broker include tactical data link, communications, navigation and surveillance/air traffic management, next generation self-protection systems, single pass precision airdrop, electronic flight bag, and new parachute ballistic calculations for airdrop
- Current aircraft modernization process hinders system enhancements until programmed block upgrades occur for 7.0 / 8.1 (FY 2018-2029)
- This rapid plug-and-play capability is more cost effective, meets time-sensitive mission requirements, and presents a system-integrated solution, which is pivotal to the C-130J twoman cockpit

#### **IMPACT IF NOT FUNDED**

 Without an aircraft integrated Processor/Broker, C-130Js lack an integrated solution to handle increased mission demands from the growing number of emerging systems

#### **UNITS IMPACTED**

403rd Airlift Wing, Keesler AFB, MS

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			1.0
Aircraft Broker/ Special Mission Processor Kits	10	120	1.2
Total Cost of Remaining Efforts			\$2.2

## Real-Time Information in the Cockpit (RTIC) (Common MAF Mission Computer)

Provides voice, datalink, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms

#### **BACKGROUND**

- Global mobility operations highlight the need for integrated battlespace awareness. Dynamic
  retasking capability (DRC) system is an Air Mobility Command (AMC) solution to a US Central
  Command Urgent Operational Need (UON). DRC allows select C-130J aircraft to participate on
  multiple data link networks by utilizing current fielded technologies. Unfortunately, only eight
  AFRC C-130J aircraft were modified with the DRC A-kits, and due to limited B-kit availability
  and sustainment issues, AFRC has no B-kits
- Real-Time Information in the Cockpit (RTIC) is an existing ARC solution for global data link communications, providing secure beyond line-of-sight (BLOS) and line-of sight (LOS) capabilities. An RTIC-type solution is acceptable for the C-130J as it offers a permanent modification to the aircraft, has the ability to change data link radios as mission needs arise, and does not involve a C-130J Mission Computer change to implement
- Tactical Airlift Mission Software Suite (TAMSS) is government-owned software used to manage the AEP. TAMSS is an AMC and SPO approved software for the C-130H and provides an open architecture to implement mission needs not tied to the C-130J Block Upgrade cycle. Examples of emerging systems processed by TAMSS include global data link, Single Pass Precision Air Drop (SPPAD), and Airdrop Damage Estimation (ADE)

#### IMPACT IF NOT FUNDED

 In order to ensure units are able to effectively train, operate and deploy with secure global data link capability, all aircraft should be modified with RTIC utilizing the TAMSS software suite.
 Without this capability aircrews lack situational and networked battlespace awareness

#### UNITS IMPACTED

403rd Airlift Wing, Keesler AFB, MS

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: C-130: 54343F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Kits/Installs	8	250	2.0
Total Cost of Remaining Efforts			\$2.0

#### **Radar Image Transmission Capability**

Transmits storm radar imagery to the National Hurricane Center in real time

#### **BACKGROUND**

- National Hurricane Operations Plan requires radar imagery to be captured and transmitted with each hurricane fix enabling forecasters to access storm structure changes in real time
- The capability to make timely decisions on warning changes is critical when storms are 24-48
  hours from landfall. Rapid storm intensification has been documented on numerous falling
  storms and is critical information for the protection of life and property
- The requirement is mitigated by the Aerial Reconnaissance Weather Officer (ARWO) taking snapshots of the radar during each fix using whatever means are available (i.e., cellphone, digital camera), and emailing those images to the National Hurricane Center after landing. The usefulness is limited because the images can be 3-6 hours late

#### **IMPACT IF NOT FUNDED**

- The 53rd WRS will not meet the requirements of the National Hurricane Operations Plan
- Critical storm information may not get to the customer in time to make critical life and property decisions

#### **UNITS IMPACTED**

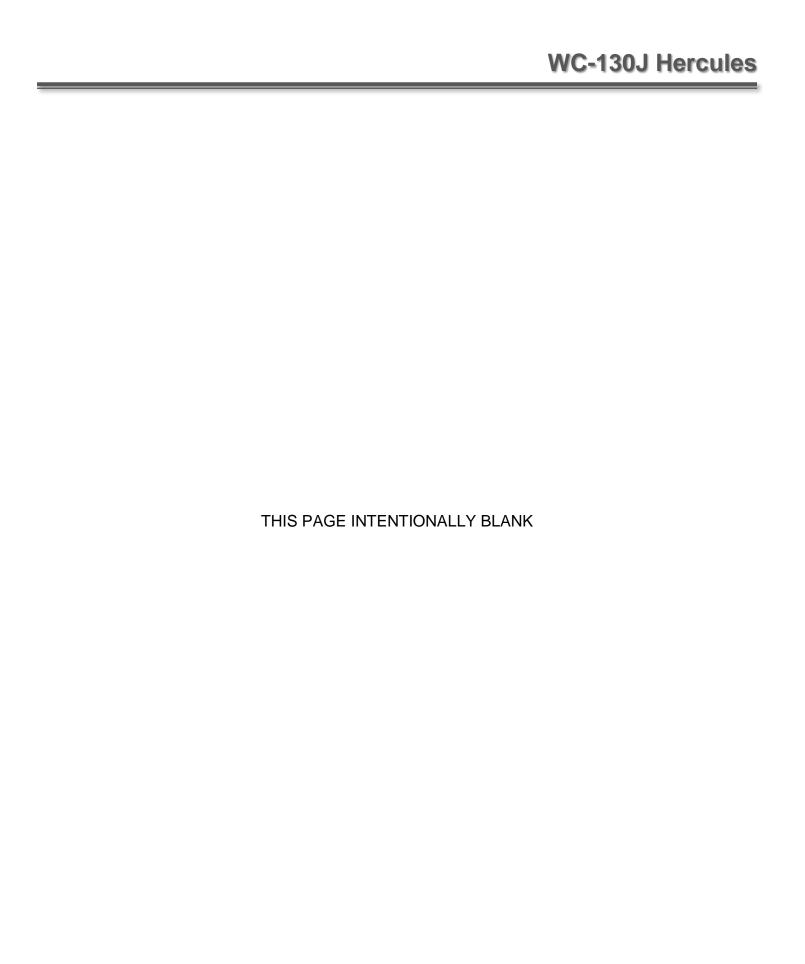
403rd Airlift Wing, Keesler AFB, MS

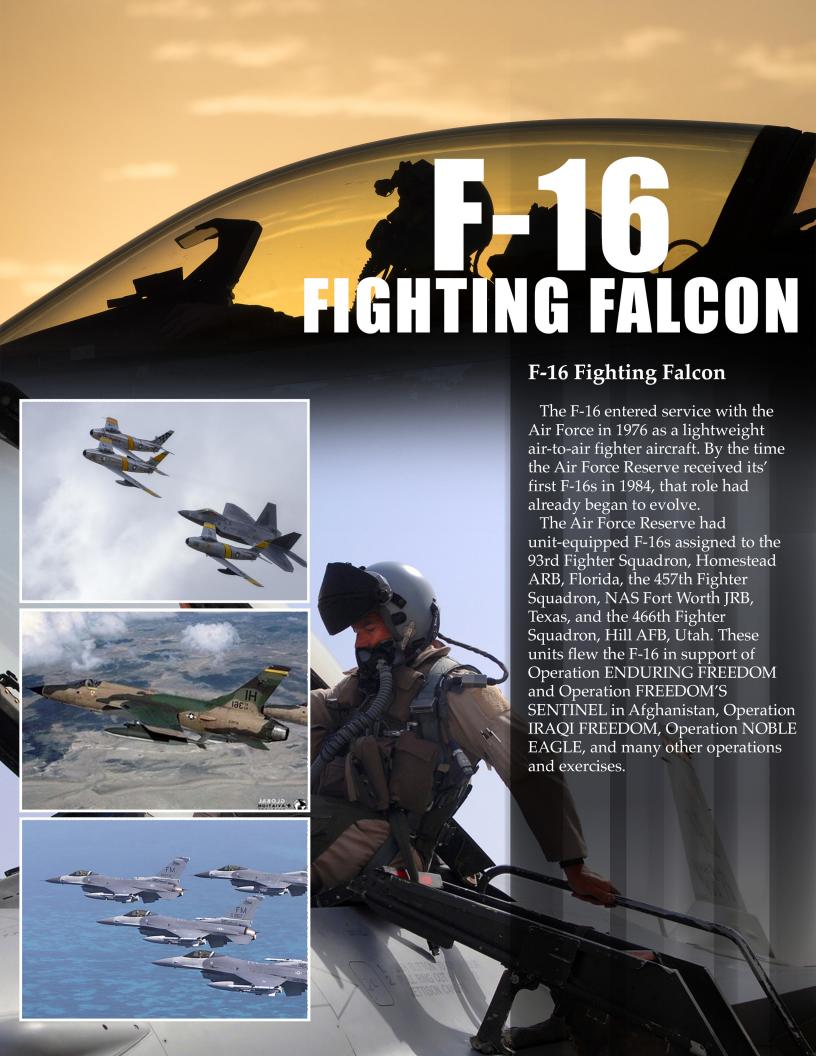
#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: WC-130J: 53124F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Group A,B Kits/software upgrades	10	500	5.0
Total Cost of Remaining Efforts			\$5.0





## Precision Attack / Interdiction Close Air Support / Forward Air Control Air Superiority / Homeland Defense Destruction of Enemy Air Defenses

The F-16 Fighting Falcon is a compact, highly-maneuverable, multi-role fighter aircraft that provides air-to-air and air-to-ground combat power. It is a relatively low cost yet high performance weapon system capable of performing day/night precision strike, close air support, and air-to-air beyond-visual-range interception missions. F-16s can detect targets in all weather conditions and engage low-flying aircraft in ground clutter.

The Air Force Reserve flies Block 30 F-16s at the 301st Fighter Wing, NAS JRB Fort Worth, TX, and the 482nd Fighter Wing, Homestead ARB, FL. The Air Force Reserve has teamed with Air Combat Command to provide over 600 Reservists to man three F-16 associate units: 944th Fighter Wing, Luke AFB, AZ; 419th Fighter Wing, Hill AFB, UT; and a detachment of the 482nd Operations Group at Shaw AFB, SC.

#### **Modernization Summary**

- Missile Warning System
   Integrates an active missile warning system into the F-16 pylon
- Active Electronically Scanned Array (AESA) Radar Upgrade This upgrade replaces the current mechanically scanned radar with an Active Electronically Scanned Array (AESA) Radar
- **Link-16** Provides a secure jam-resistant, high-speed digital data link near-real time, supports the exchange of text messages, imagery data, and provides two channels of digital voice
- LITENING Advance Targeting Pod (ATP) Color Sensor Upgrades Replaces legacy black and white sensors in the LITENING Advance Targeting Pod (ATP) with digital color sensors enabling high definition video

F-16 Programs	Cost (\$M)
Missile Warning System (PIDS+)	50.5
F-16 Radar Upgrade	91.0
Link-16 Capability	29.0
LITENING Advance Targeting Pod (ATP) Color Senor Upgrades	28.0
Total Cost of Remaining Efforts	\$198.5

#### **Missile Warning System**

Integrates an active missile warning system into the F-16

#### **BACKGROUND**

- The Air Force Reserve's F-16s do not have an active missile warning system, placing pilots and mission effectiveness at an increasing risk, given the proliferation of missile threats
- This modification integrates an active missile warning system into the Pylon Integrated Dispenser System Universal (PIDSU) pylon
- No hardware or software changes are required for the aircraft, minimizing cost to upgrade
- The pylons can be moved between aircraft thereby reducing the total number of sets required

#### **IMPACT IF NOT FUNDED**

Aircraft will remain increasingly vulnerable to missile threats and survivability will be degraded

#### **UNITS IMPACTED**

- 301st Fighter Wing, Carswell JRB, TX
- 482nd Fighter Wing, Homestead ARB, FL

#### CONTRACTOR

- TERMA International, Arlington VA; Warner Robins, GA (pylon)
- To Be Determined (sensors/processors)

PROGRAM ELEMENT CODE: F-16: 52716F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			7.0
Group A Kits/Install	53	70	3.7
Group B Kits (two pylons per shipset)	26	1,493	38.8
Support Equipment	2	482	1.0
Total Cost of Remaining Efforts			\$50.5

### Active Electronically Scanned Array (AESA) Radar Upgrade

Replaces mechanically scanned radar with digital Active Electronically Scanned Array (AESA) Radar

#### **BACKGROUND**

- This modification replaces the current mechanically scanned radar with an Active Electronically Scanned Array (AESA) Radar
- Current F-16 Block 30 Radar (APG-68(V)1) is becoming unreliable and repair costs are spiraling upward
- AESA radars have a low probability of intercept and detection, high jamming resistance, increased reliability, and can actively track a much larger number of targets than legacy radars
- AESA optimizes situational awareness and provides superior air-to-air and air-to-surface capability

#### **IMPACT IF NOT FUNDED**

 AFRC will continue to operate a fighter fleet with outdated radars. Our ability to detect targets will be compromised placing mission success and survivability at significant risk

 AFRC will continue to experience higher radar sustainment costs and lower mission capable rates than could be realized with the AESA. We will not have the advantage of AESA's significant radar image resolution improvement nor its improved targeting and tracking fidelity, capacity, and range

#### **UNITS IMPACTED**

301st Fighter Wing, Carswell JRB, TX

• 482nd Fighter Wing, Homestead ARB, FL

#### CONTRACTOR

Northrop Grumman, Baltimore, MD

PROGRAM ELEMENT CODE: F-16: 52716F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			5.0
Group A Kits/Install	27	350	9.5
Group B Kits	27	2,800	75.6
Support Equipment	3	300	.9
Total Cost of Remaining Efforts			\$91.0

## Link-16 Capability with Growth Potential for Fifth-to-Fourth Generation Fighter Interoperability

Provides a secure jam-resistant, high-speed digital data link, near-real time, supports the exchange of text messages, imagery data, and provides two channels of digital voice

#### BACKGROUND

- Reserve F-16 Block 30 aircraft require Link-16 data link capability to be effectively employed in the current operational environment
- Legacy Situational Awareness Data Link (SADL) equipment has proven inadequate due to lack of fielded support infrastructure, frequency band constraints, and Joint Interface Control Cell support
- Selected system must have the potential to provide 5<sup>th</sup>-to-4th generation aircraft data link communications compatibility

#### **IMPACT IF NOT FUNDED**

Aircraft will become increasingly data-link isolated and limits mission effectiveness

#### **UNITS IMPACTED**

- 301st Fighter Wing, NAS JRB Fort Worth, TX
- 482nd Fighter Wing, Homestead ARB, FL

#### **CONTRACTORS**

ViaSat, Carlsbad, CA

PROGRAM ELEMENT CODE: F-16: 52716F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			5.0
Group A Kits/Install	56	140	7.8
Group B Kits	56	285.7	16.0
Support Equipment	4	60	0.2
Total Cost of Remaining Efforts			\$29.0

### LITENING Advance Targeting Pod (ATP) Color Sensor Upgrades

Replaces legacy black and white sensors in the LITENING Advance Targeting Pod (ATP) with digital color sensors enabling high definition video

#### **BACKGROUND**

- LITENING ATPs currently displays cockpit video via a black and white Narrow Field of View (NFOV) and a black and white Wide Field of View (WFOV) sensor. These sensors are reaching the end of their useful life and are due for replacement
- The display of the high resolution color video on the Center Display Unit (CDU) or tablet is expected to bring increased capability and situational awareness to the pilot. This upgrade will provide F-16 pilots improved resolution of air-to-ground (A/G) targets
- The color sensors will add NFOV & WFOV color sensors, a laser spot tracker, an extended laser range finder, recording of digital video and the ability to display feeds on a tablet

#### **IMPACT IF NOT FUNDED**

 If not funded, F-16 aircrews ability to detect, acquire, auto-track and identify targets at long ranges for weapon delivery or nontraditional intelligence, surveillance and reconnaissance missions will decline

#### **UNITS IMPACTED**

- 301st Fighter Wing, NAS JRB Forth Worth, TX
- 482 Fighter Wing, Homestead ARB, FL

#### CONTRACTOR

Northrop Grumman Corp, Rolling Meadows, IL

PROGRAM ELEMENT CODE: F-16: 52716F

# CO259

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Color Sensor Upgrades	28	1.0	28.0
Total Cost of Remaining Efforts			\$28.0



#### Guardian Angel

The 920th Rescue Wing, Patrick AFB, Florida, served as the home to the Air Force Reserve's Guardian Angel (GA) weapons system. Comprised of Combat Rescue Officers, Pararescuemen, and Survival, Evasion, Resistance, and Escape (SERE) Specialists, the Guardian Angels dedicate themselves to the Air Force core function of Personnel Recovery. Utilized throughout the globe, Guardian Angel personnel supported Operation ENDURING FREEDOM, Operation FREEDOM'S SENTINEL, Operation IRAQI FREEDOM and continue to support current operations and exercises.

## GUARDIAN ANGEL

## Personnel Recovery Combat/Civil Search and Rescue Medevac / Disaster Response

Personnel Recovery is comprised of three weapons systems, the HC-130N/P, HH-60G, and Guardian Angel (GA) weapon systems, working in concert to fulfill an Air Force responsibility to our Airmen—that we will never leave a downed Airman behind. Combat search and rescue (CSAR) is the Air Force's preferred mechanism for personnel recovery in uncertain or hostile environments and denied areas. With combat rescue asset recapitalization overdue, modernization and sustainment of the existing fleet is critical.

#### **Personnel Recovery Weapon Systems**

**Guardian Angel** – GA is uniquely designed and dedicated to conduct personnel recovery across the full range of military operations and during all phases of joint, coalition and combined operations. GA may be visualized as the ground element of the USAF Rescue triad, and commonly functions in conjunction with USAF HH-60 helicopters and HC-130 aircraft. This equipment-based weapons system is comprised of Combat Rescue Officers (CRO); Pararescue (PJ); Survival, Evasion, Resistance, and Escape (SERE) Specialists and enabled by uniquely trained combat support personnel These elite warriors are the soul of a non-aircraft, equipment-based, human weapon system. Air Force Reserve GA personnel and equipment are assigned to the 920th Rescue Wing (RQW), Patrick AFB, FL and subordinate 920th RQW GA units located at Davis-Monthan AFB, AZ and Portland IAP, OR.

#### **Modernization Summary**

**Guardian Angel Personnel Recovery Mission Equipment** – Replaces and upgrades existing communication equipment, recovery equipment, and self-defense systems to increase effectiveness and survivability of Guardian Angels

Guardian Angel Programs	Cost (\$M)
Personnel Recovery Mission Equipment	10.2
Total Cost of Remaining Efforts	\$10.2





## Personnel Recovery Combat/Civil Search and Rescue Medevac / Disaster Response

Personnel Recovery is comprised of three weapons systems, the HC-130N/P, HH-60G, and Guardian Angel weapon system, working in concert to fulfill an Air Force responsibility to our Airmen—that we will never leave a downed Airmen behind. Combat search and rescue (CSAR) is the Air Force's preferred mechanism for personnel recovery in uncertain or hostile environments and denied areas. With combat rescue asset recapitalization overdue, modernization and sustainment of the existing fleet is critical.

#### **Personnel Recovery Weapon Systems**

**HH-60G Pave Hawk** – The HH-60G Pave Hawk's core mission is recovery of personnel under hostile conditions, including combat search and rescue. This versatile helicopter conducts day and night operations into hostile environments to recover downed aircrew or other distressed personnel. Because of its versatility, the HH-60G may also perform peacetime operations such as civil search and rescue, emergency aeromedical evacuation (MEDEVAC), disaster relief, and humanitarian assistance. The Air Force Reserve maintains and operates HH-60 aircraft at the 920th Rescue Wing at Patrick AFB, FL, and the 943rd Rescue Group at Davis-Monthan AFB, AZ.

#### **Modernization Summary**

- HH-60 Personnel Recovery Situational Awareness (PRSA) Upgrades situational awareness
  and data link capabilities to provide a more complete picture of the battlefield via both Line of
  Sight (LOS) and Beyond Line of Sight (BLOS) information
  - Link 16 Provides a secure, jam-resistant, high-speed digital data link which allows forces to exchange their tactical picture at near real-time
  - Helmet Mounted Heads-up Display (HHUD) Integrates a helmet-mounted cueing capability that shows aircraft navigational and Air and Ground Order of Battle (AOB/GOB) of friendly and hostile contacts normally displayed on the pilots display units (PDUs)
  - Electro-Optical Infrared (EO/IR) Sensor/ALQ-29A Upgrade Provides the capability to digitally communicate, provide adequate video imagery, and the ability to find, fix, and track points of interest as well as increase situational awareness in the degraded visual environment

HH-60 Programs	Cost (\$M)
HH-60 Personnel Recovery Situational Awareness (PRSA):	
Blue Force Tracker 2	6.4
Link-16	6.0
HHUD	9.8
EO/IR Sensor/Q-29A Upgrade	10.0
Total Cost of Remaining Efforts	\$32.2

#### **Personnel Recovery Situational Awareness (PRSA)**

Provides improved communications suite, ISR video feed capability, and full integration with Blue Force Tracker to significantly enhance situational awareness

#### **BACKGROUND**

- The HH-60G requires a communication suite upgrade to provide an improved secure radio capable of broadcasting and receiving on civil frequencies and capable of supporting the Airborne Network Waveform commonly used by ground personnel
- Smart Multi-Function Color Display installed must be fully integrated with Blue Force Tracker (BFT) to enable aircrews to receive near real-time data and text messaging from the battlefield via beyond-line-of-sight (BLOS) data link capability
- Helmet Mounted Heads-up Display (HHUD) merges sensor and data link symbolism into the aircrews natural field-of-view, improving crew coordination and landing operations. With HHUD, the ability to display sensor pictures and data link information while maintaining a "heads-up" posture greatly enhances safety while flying in the low-level environment
- The HH-60G requires upgraded Electro-Optical/Infrared (EO/IR or Q-29A) sensor that will
  make it more capable in a Degraded Visual Environment (DVE). More helicopters have been
  lost to DVE (brownout/whiteout) than due to enemy fire. The advanced sensor should be
  equipped with high fidelity thermal and color imaging, Laser Target Designator, Laser Range
  Finder and Laser Spot Tracker

#### **IMPACT IF NOT FUNDED**

 The lack of direct communication capability with on-scene ground forces and/or firstresponders increases response time to conduct personnel recovery, combat search and rescue, and other response missions; placing ground forces, downed Airmen, isolated personnel, and casualty evacuation candidates at increased risk of capture or loss of life

#### **UNITS IMPACTED**

- 920th Rescue Wing, Patrick AFB, FL
- 943rd Rescue Group, Davis-Monthan AFB, AZ

#### CONTRACTORS

Various

PROGRAM ELEMENT CODE: HH-60: 53122F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Blue Force Tracker 2 Install/SW Sust ICS	15	427	6.4
Link 16 Hardware/SW Sustainment/Install	15	402	6.0
HHUD A-Kits/HMC C-Kits	15	650	9.8
EO/IR Sensor/Q-29A Upgrade			10.0
Total Cost of Remaining Efforts			\$32.2



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## KC-135



#### KC-135 Stratotanker

The KC-135 joined the Air Force inventory in 1956, serving as the United States' primary aerial refueling asset during the Cold War. The Air Force Reserve received its first KC-135's in October 1976, when the Air Force transferred sixteen aircraft to the 452nd Tactical Airlift Wing, March AFB, California.

Air Force Reserve crews located throughout the world provided Strategic Air Command with daily tanker alert support and also participated in the European Tanker Task Force. The Air Force Reserve's first KC-135 associate mission began with the activation of the 931st Air Refueling Group, McConnell AFB, Kansas, in 1991.



## Rapid Global Mobility Air Refueling / Strategic Airlift Aeromedical Evacuation

The KC-135 Stratotanker provides worldwide air refueling, strategic airlift, and aeromedical evacuation capacity in support of U.S. national defense requirements. It is a critical enabler of nearly every Air Force Core Function and provides the necessary air refueling capacity to enable Air Force Global Reach and Global Power.

The Air Force Reserve operates KC-135R aircraft at the 434th Air Refueling Wing, Grissom ARB, IN; the 452nd Air Mobility Wing, March ARB, CA; the 459th Air Refueling Wing, Andrews AFB, MD; the 507th Air Refueling Wing, Tinker AFB, OK; the 914th Air Refueling Wing, Niagara Falls Air Reserve Station, NY, the 916th Air Refueling Wing, Seymour-Johnson AFB, NC; and the 940th Air Refueling Wing, Beale AFB, CA. The Air Force Reserve associates with the active component on KC-135R at the 931st Air Refueling Wing, McConnell AFB, KS; the 927th Air Refueling Wing, MacDill AFB, FL; and the 730th Air Mobility Training Squadron, Altus AFB, OK.

#### **Modernization Summary**

- Real-Time Information in the Cockpit (RTIC) Upgrades KC-135's voice, data link, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms, including Air Operations Centers and airborne assets
- Large Aircraft Infrared Countermeasures (LAIRCM) Provides integral self-protection system to defend large aircraft against infrared (IR) missile threats

KC-135 Programs	Cost (\$M)
Real-Time Information in the Cockpit (RTIC)	73.0
Large Aircraft Infrared Countermeasures (LAIRCM)	93.0
Total Cost of Remaining Efforts	\$166

## Real-Time Information in the Cockpit (RTIC) (Common MAF Mission Computer)

Upgrades KC-135's voice, data link, and data transfer capabilities to provide aircrews the ability to report and receive battlespace information from command and control platforms

#### **BACKGROUND**

- Effective air operations in today's information-reliant battlespace requires secure voice and data communications between coalition aircraft, command and control (C<sup>2</sup>) platforms, and Joint forces
- Communications upgrades to KC-135 fleet will provide aircrews the ability to report and receive battlespace and mission information to and from C<sup>2</sup> platforms, thus significantly improving the synchronization of supporting and supported forces

#### **IMPACT IF NOT FUNDED**

 Without RTIC enabling SLOS/BLOS communications and Link-16 upgrades to the Air Force Reserve's KC-135 fleet, aircrew and associated C<sup>2</sup> platforms will not adequately interface in current and evolving mission environments, resulting in degraded mission performance, including the inability to adjust mission profiles real time, and increased risk to aircrew and passengers

#### **UNITS IMPACTED**

- 434th Air Refueling Wing, Grissom ARB, IN
- 452th Air Mobility Wing, March ARB, CA
- 459th Air Refueling Wing, Joint Base Andrews, MD
- 507th Air Refueling Wing, Tinker AFB, OK
- 914th Air Refueling Wing, Niagara Falls ARS, NY
- 916th Air Refueling Wing, Seymour Johnson AFB, NC
- 940th Air Refueling Wing, Beale AFB, CA

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: KC-135: 51421F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Integration			1.0
Group A Kits/Installs	72	500	36.0
Group B Kits	72	500	36.0
Total Cost of Remaining Efforts			\$73.0

#### **Large Aircraft Infrared Countermeasures (LAIRCM)**

Provides integral self-protection system to defend large aircraft against infrared (IR) missile threats

#### **BACKGROUND**

- KC-135 employment environments increasingly place the aircraft within potential IR missile threat envelopes. As threats continue to proliferate, the aircraft are placed at ever-increasing risk without effective countermeasures
- Low-altitude refueling, forward positioning, and additional taskings as command and control relays subject KC-135 aircraft to hostile operational environments. Shoulder-fired, Man-Portable Air Defense Systems (MANPADs) are a significant threat to KC-135 aircraft during takeoffs, landings, and low altitude refueling missions
- An advanced IRCM system is required to counter the proliferation of IR missile threats

#### IMPACT IF NOT FUNDED

 Without effective defensive systems, advanced IR missile systems maintain a high probability of kill against KC-135 aircraft. KC-135 operational effectiveness will be limited and survivability degraded

#### **UNITS IMPACTED**

- 434th Air Refueling Wing, Grissom ARB, IN
- 452th Air Mobility Wing, March ARB, CA
- 459th Air Refueling Wing, Joint Base Andrews, MD
- 507th Air Refueling Wing, Tinker AFB, OK
- 914<sup>th</sup> Air Refueling Wing, Niagara Falls ARS, NY
- 916th Air Refueling Wing, Seymour Johnson AFB, NC
- 940th Air Refueling Wing, Beale AFB, CA

#### CONTRACTOR

- Northrop Grumman Electronics Systems, Rolling Meadows, IL
- Lockheed Martin, Orlando, FL
- Elbit Systems of America, Fort Worth, TX

PROGRAM ELEMENT CODE: KC-135 - 51421F



Program Data	#	Unit Cost (\$K)	Cost (\$M)
Group A Kits	60	500	30.0
Group B Kits, Production Installs,			
Support Equip	15	4.2	63.0
Total Cost of Remaining Efforts			\$93.0



## Rapid Global Mobility Operational Support Airlift Distinguished Visitor Airlift

The C-40C provides worldwide air transportation for high-ranking Executive Branch and Legislative Branch officials, including Congressional Delegations (CODELs), in support of National Defense requirements. C-40Cs are also tasked to transport special envoys and foreign dignitaries, as well as fulfill other operational support needs.

The 932nd Airlift Wing based at Scott AFB, IL, operates the Air Force Reserve's C-40 fleet and is dedicated to providing the highest level of service in support of Operational Support Airlift (OSA) travel teams, high-level and critical missions, and special envoys supporting national defense, Congressional oversight, and diplomatic missions during peacetime and in war.

#### **Modernization Summary**

 Crew Rest Seats – Upgrades AFRC's C-40C aircraft with crew rests seats allowing crew to extend duty day by up to four hours

C-40 Programs	Cost (\$M)
Crew Rest Seats	4.0
Total Cost of Remaining Efforts	\$4.0

#### **Crew Rest Seats**

Upgrades AFRC's C-40C aircraft with crew rest seats allowing the crew to extend their duty day by up to four hours

#### **BACKGROUND**

- Users from the highest level of the U.S. government and military routinely travel onboard the C-40 worldwide. Missions are routinely tasked to 24 hour duty days, with an option to extend up to 26 hours
- Air Mobility Command Safety identified this shortfall as a critical safety of flight issue

#### **IMPACT IF NOT FUNDED**

 Prevents crews from safely flying missions beyond flight duty period of 16 hours, severely constraining operational effectiveness

#### **UNITS IMPACTED**

932nd Airlift Wing, Scott AFB, IL

#### **CONTRACTOR**

 Boeing Commercial Aircraft Corporation, Seattle, WA

PROGRAM ELEMENT CODE: C-40: 54324F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Cost	4	1.0	4.0
Total Cost of Remaining Efforts			\$4.0



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### Aircraft Maintenance Logistics

Just as the Air Force Reserve must invest in the modernization of its aircraft to remain an integrated, flexible, and combat-ready force, investment must also be made in the equipment used to support and enable the agility and operational readiness of its units. Agile Combat Support (ACS) is an Air Force core competency that provides the essential capabilities to deploy, establish, operate, maintain and sustain air operations. ACS capabilities are the integrated activities that are imbedded and performed by various combat support functional communities. Despite the criticality of these capabilities, fiscal constraints have driven an increasing gap between the Air Force Reserve's equipment modernization requirements and current funding levels.

Air Force Reserve Command's ACS equipment modernization requirements include, support equipment, Information Technology (IT) network improvements, night vision goggles, Civil Engineering (CE) equipment, security forces and mission support vehicles. ACS integrated support is fundamental to effective air, space, and cyber power.

AFRC operational readiness requirements include mission support equipment, vehicle procurement, and expeditionary forces equipment.

#### **Modernization Summary**

- **Support Equipment** Funds current aircraft and flight line maintenance mission-essential equipment shortfalls
- Vehicles Replaces mission-supporting vehicle fleets including fuel trucks, utility vans, firefighting vehicles, pick-up trucks, graders, cranes, and tow trucks - ensuring readiness to meet mission demand
- Expeditionary Tactical Equipment Updates/replaces required AFRC security forces, explosive ordnance disposal (EOD), CE and Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE) equipment standardizes units with Regular Air Force (RegAF) capabilities
- Chief Information Officer (CIO) Project List Replaces/enhances various assets to support AFRC's IT infrastructure (radio, telephone, network, and combat communication assets). Ensures AFRC units are postured to optimally execute missions and operations that require the use of information systems and contribute to the nations' readiness and defense

ACS Equipment Programs	Cost (\$M)
Support Equipment	27.6
Vehicles	14.1
Expeditionary Tactical Equipment	7.8
Total Cost of Remaining Efforts	\$49.5

#### **Support Equipment (SE)**

Enables all other Air Force core functions by providing the essential capabilities and functions to deploy, establish, operate, and maintain operations of an airbase

#### **BACKGROUND**

- Support equipment (SE) shortfalls range across all functional areas. Funding is needed to replace automatic test systems, propulsion test equipment, mechanized material handling/loading equipment, fuels operational readiness capability equipment and mobility pallets
- Lack of an adequate support equipment replacement program has had a detrimental effect on unit mobility capability, base maintenance and unit training
- Historically, the support equipment account has historically provided easy offsets for aircraft modernization, leading to unavailability of critical equipment, which delays new and current units from becoming fully operational

#### **IMPACT IF NOT FUNDED**

 Risk of injury from old and broken equipment that requires complete deconstruction / rebuild and equipment that no longer has spare or replacement parts available

#### UNITS IMPACTED

All functional areas

#### CONTRACTOR

To Be Determined

PROGRAM ELEMENT CODE: Vehicles & Support Equipment - Reserve: 52834F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Critical Support Equipment	various	various	13.9
KC-135, C-17 Maintenance Stand/ Platforms	6	1	6.0
Test Sets/X-Rays/Borescopes	27	various	3.3
Scissors/Electric Bomb-lifts	5	.3	1.7
Paint, Blast, and Plastic Media Booths	3	.5	1.5
Part Washers/Corrosion Capabilities	2	.5	1.0
Total Cost of Remaining Efforts			\$27.6

#### **Vehicles**

Replaces mission-support vehicle fleets including fuel trucks, utility vans, fire fighting vehicles, pick-up trucks, graders, cranes, and tow trucks - ensuring readiness to mission demand

#### **BACKGROUND**

- Vehicle shortfalls range across all functional areas. Funding is needed to replace aging vehicle fleet and for new missions requirements in AFRC
- Aging AFRC vehicle fleet has been deteriorating for many years. Maintenance costs to keep aging fleet running are going up every year. Vehicle down time is a result of vehicles still in service that have greatly exceeded their life expectancy

#### **IMPACT IF NOT FUNDED**

 Lack of sufficient vehicles has a negative effect on unit capability and training. Inadequate funding extends the use of vehicles beyond its projected life cycle and increases sustainment costs

#### **UNITS IMPACTED**

Various

#### CONTRACTOR

Support Equipment & Vehicle Program Office, Robins AFB, GA

PROGRAM ELEMENT CODE: Vehicles & Support Equipment - Reserve: 52834F

Program Data	#	Unit Cost (\$K)	Cost (\$M)
Fire Service Trucks	20	various	10.2
New Mission Vehicles	33	Various	3.1
High Lift Boom Truck	1	.2	.2
Modular Aerial Spray Trailers	6	.1	.6
Total Cost of Remaining Efforts			\$14.1

#### **Expeditionary Tactical Equipment**

Procures critical AFRC Security Forces (SF), Explosive Ordnance Disposal (EOD), Civil Engineering (CE) and Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE) equipment – standardizes units with Regular Air Force (RegAF) capabilities

#### **BACKGROUND**

- Lack of pre-deployment weapons familiarization significantly increases vulnerability of Security Forces, Explosive Ordnance Disposal (EOD), and RED HORSE personnel
- In order to provide effective warfighter training, expeditionary personnel must possess
  equipment equivalent to those used in real-world deployed environments. Procurement of new
  equipment is necessary to standardize and modernize mission weapon sets

#### **IMPACT IF NOT FUNDED**

 Failure to provide training on current/modern equipment kits degrades reservist ability to effectively integrate and operate in deployed environments

#### **UNITS IMPACTED**

- 622nd Civilian Engineering Group, Dobbins ARB, GA
- 439th Explosive Ordinance Disposal Flight, Westover ARB, MA
- Various Security Force Units

#### CONTRACTOR(S)

- Air Force Civil Engineer Center, Tyndall AFB, FL
- Abox4u (RedGuard), Blast Resistant Modules, Wichita, KS
- Support Equipment System Program Office, Robins AFB, GA

PROGRAM ELEMENT CODE: IT Services Management - AFR: 55550F

Civil Engineer Squadrons Heavy Repair - AFR: 59397F

Vehicle & Spt Equipment - Reserve: 52834F

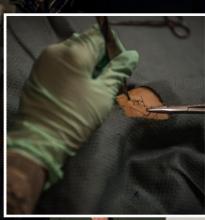
Program Data	#	Unit Cost (\$K)	Cost (\$M)
Expeditionary Skills Civil Engineering			
Training Kits	7	Various	7.3
EOD Armored Bunker	1	.2	.2
Security Forces Night Vision Goggles (NVGs)	30	.1	.3
Total Cost of Remaining Efforts			\$7.8











#### **Aeromedical Evacuation**

The Air Force Aeromedical Evacuation (AE) system enables the movement of patients requiring supervision by Aeromedical Evacuation personnel. During contingencies, the AE system operates as far forward as fixed-wing aircraft are able to conduct air/land operations.

Air Force Reservists began assisting the Air Force's Aeromedical Evacuation (AE) mission in 1948. Heavily relied upon since the Korean War, Air Force Reserve AE support increased dramatically following the attacks of 11 September 2001.

By 2018, Air Force Reserve has 18 AE squadrons. Along with the Air National Guard, the Air Force Reserve AE units accounted for 70 percent of AE forces.

#### **Ground Medical Forces**

The Reserve medical structure has been part of the Reserves since its inception in 1948. They provide medical manpower for ground medical care, casualty reception, critical care, patient staging, and to support the Aerospace Medicine Enterprise in insuring a medically ready force for Combatant Commanders. AFR medics have maintained a steady presence supporting the War on Terror since 1991 and has also increased significantly since the attacks of September 11, 2001.

The Air Force Reserve has 64 ground medical units consisting of Flights, Squadrons, and Groups. Air Force Reserve medical units account for 65% of AF patient staging capability and over 20% of the Air Force's Critical Care Air Transport Team capability.

## Medical Ground Forces Aeromedical Evacuation Strategic Airlift

The Air Force Aeromedical Evacuation (AE) System is a unique and significant part of the nation's mobility resources. Its mission is to provide time sensitive, mission critical en-route care to patients to and between medical treatment facilities. AE crews and critical care transport teams execute patient movement predominately on Mobility Air Forces aircraft – C-17, C/WC-130, KC-135. AE forces operate anywhere air operations occur in support of the full range of military operations, humanitarian assistance, and disaster response.

The Air Force Reserve has 18 AE Squadrons (AES) and 64 Ground Reserve Medical Units (RMUs). There are over 5,000 clinical Reserve medics who will be able to complete a significant portion of their Readiness Skills Training utilizing the patient simulators, increasing the effectiveness and capability that the Air Force Reserve provides to the Combatant Commands. Ground medical forces provide manpower for supporting initial treatment at EMEDS and AF Theater Hospital platforms through the En-Route Care System with over 60% of patient staging and 20% of Critical Care Air Transport Team capability being in the Reserve.

#### **Modernization Summary**

- **iStan Patient Simulator** Provides a versatile platform to practice mission critical medical procedures in a safe and controlled environment
- Aircrew Wireless Intercommunication System (AWIS) Provides clear voice communications between crewmembers to transmit patient and mission critical information

Medical/Aeromedical Programs	Cost (\$M)
iSTAN High-Fidelity Patient Simulators	6.3
Aircrew Wireless Intercommunication System (AWIS)	3.9
Total Cost of Remaining Efforts	\$10.2



#### **Abbreviations and Acronyms**

3-D	Three-dimensional
ACC	
	. Airdrop Damage Estimation
	. Air and Space Expeditionary Force
AFR	
	. Air Force Reserve Command
AG	<del>-</del>
AMC	
	. Avionics Modernization Program
	. Aerial Reconnaissance Weather Officer
AS	
	. Advanced Targeting Pod
BFT	
BLOS	
	. Command and Control
CAF	
CAS	
	. Combat Communications Squadron
	. Combat Planning Council
CSAR	. Combat Search and Rescue
CODEL	. Congressional Delegation
DRC	. Dynamic Retasking Capability
EEP	. Engine Enhancement Package
EO/IR	. Electro-Optical/Infrared
FAA	. Federal Aviation Administration
FAC-A	. Forward Air Control - Airborne
FMV	. Full Motion Video
FTU	. Flight Training Unit
G4	
GA	. Guardian Angel
	. Global Positioning System
	. Helmet-mounted Heads Up Display
	. High Resolution Display System
IAP	
	. Instrument Meteorological Conditions
	. In-Flight Propeller Balancing System
	. Initial Qualification Training
IR	
	. Infrared Countermeasure
	. Illinaieu Countellileasule

#### **Abbreviations and Acronyms**

ICD	Intelligence Curveillence and Decemberage
	Intelligence, Surveillance, and Reconnaissance
	Integrated Track Handle
	Joint Interoperability Test Command
JRB	
K	
	Large Aircraft Infrared Countermeasures
	Large Communications Package
	Low Density, High Demand
LDP	<del>-</del>
LED	
	Light Detection and Ranging
LOS	
LRU	Line Replacement Unit
M	
MAF	. Mobility Air Force
MANPADs	. Man-Portable Air Defense Systems
MASS	. Modular Aerial Spray System
MAFFS	. Modular Airborne Fire Fighting System
MC	. Mission Computer
MILSPEC	
MUOS	. Mobile User Objective System
NAS	. Naval Air Station
NGREA	. National Guard / Reserve Equipment Appropriation
	National Oceanic and Atmospheric Administration
NVG	
NVIS	
	. Program Element Code
	. Pylon Integrated Dispenser System
	. Pylon Integrated Dispenser System Universal
	. Prioritized Integrated Requirements List
	. Pararescue Jumper or Pararescueman
PnP	•
PR	•
	. Personnel Recovery Situational Awareness
PVI	
RC	
RGM	•
	Real-Time Information Cockpit

#### **Abbreviations and Acronyms**

	. Radar Warning Receiver . Situational Awareness Data Link
SAR	. Synthetic Aperture Radar
SATCOM	. Satellite Communications
SCP	. Small Communications Package
SE	. Sensor Enhanced
SERE	. Survival, Evasion, Resistance, and Escape
SLOS	. Secure Line-of-Sight
SOC	. Senior Officer Course
SOF	. Special Operations Forces
SPPAD	Single Pass Precision Air Drop
TAMSS	. Tactical Airlift Mission Software Suite
TX	
UON	. Urgent Operational Need
VMC	. Visual Meteorological Conditions
WRS	. Weather Reconnaissance Squadron
WST	. Weapon System Trainer

