
AFRC
Requirements
U.S. AIR FORCE
AIR FORCE RESERVE COMMAND
AFRC/XPR
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Air Force Reserve Command

AFRC FORCE MODERNIZATION REQUIREMENTS

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Effective modernization of Air Force Reserve Command (AFRC) assets is our key to remaining a relevant and combat ready force. It should be apparent that the Reserve Component is crucial to the defense of our great nation. The events of 11 Sept 01 cemented the Total Force concepts already in place. AFRC is working shoulder-to-shoulder with our Active Duty and Air National Guard brethren in the long battle to defeat terrorism. Even before 9/11, AFRC was an active participant in day-to-day AF operations. We are no longer a force held in reserve solely for possible war or contingency actions — we are at the tip of the spear. It is therefore imperative that we do our best to ensure AFRC remains a relevant and combat ready force for the future.

This Modernization Handbook was created to provide an overview of current AFRC aircraft modernization programs and provide some insight into future modernization plans. Within, you will find detailed descriptions and funding profiles for modification programs for each of our weapons systems. A single page weapon system "roadmap" presents a visual snapshot of all programs, funding status, and timelines. As a single source of modernization requirements information, this Handbook shows where we are and where we're going in an easy-to-understand manner.

Our modernization strategy is sound but is dependent upon lead command funding. Unfortunately lead command funding of AFRC modernization priorities remains below the level needed to maximize our capabilities. In addition, National Guard and Reserve Equipment Authorization (NGREA) funding used to offset modernization shortfalls in the past has been steadily decreasing.

Success in meeting our modernization goals depends on robust interaction with the lead commands and in keeping Congressional budgeting authorities informed of AFRC initiatives. This "go to" guide on AFRC modernization will assist those involved in the acquisitions and requirements processes in advocating, with one voice, the AFRC modernization strategy.

I invite you to join me in accepting the challenge to make AFRC's modernization goals a reality.

Regards,

JAMES E. SHERRARD III, Lt Gen, USAF
Commander

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COMMAND OVERVIEW

The Air Force Reserve Command (AFRC), with headquarters at Robins Air Force Base, Ga., became the ninth major command of the Air Force on Feb. 17, 1997, as a result of Title XII - Reserve Forces Revitalization - in Public Law 104-201, the National Defense Authorization Act of Fiscal Year 1997. Prior to this act, the Air Force Reserve was a field operating agency of the Air Force established on April 14, 1948.

AFRC has 35 flying wings equipped with their own aircraft and seven associate units that share aircraft with an active-duty unit. Four space operations squadrons share satellite control mission with the active force. There also are more than 620 mission support units in the AFRC, equipped and trained to provide a wide range of services, including medical and aeromedical evacuation, aerial port, civil engineer, security force, intelligence, communications, mobility support, logistics, and transportation operations, among others. Fourth Air Force at March Air Reserve Base, Calif.; 10th Air Force at Carswell Air Reserve Station, Texas, and 22nd Air Force at Dobbins Air Reserve Base, Ga., report to Headquarters AFRC. They act as operational headquarters for their subordinate units, providing operational, logistical and safety support, and regional support for geographically separated units.

The AFRC Associate Program provides trained crews and maintenance personnel for active-duty owned aircraft and space operations. This unique program pairs a Reserve unit with an active-duty unit to share a single set of aircraft and rests on the idea that there are more operational requirements than there are manpower to fulfill them. The Associate Reserve program is based on providing manpower to complement the Total Force. The result is a more cost-effective way to meet increasing mission requirements. Associate aircrews fly C-5 Galaxies, C-141 Starlifters, C-17 Globemaster IIIs, C-9 Nightingales, KC-10 Extenders, KC-135 Stratotanker, T-1 Jayhawks, T-37 Tweets, T-38 Talons, F-16 Fighting Falcons, MC-130P Combat Shadows and MC-130 Talon I (Reserve Associate Unit) and E-3 Sentry Airborne Warning and Control System aircraft. Space Operations associate units operate Defense Meteorological Satellite Program (DMSP), Defense Support Program (DSP) and Global Positioning System (GPS) Satellites.

The following table identifies AFRC contribution to the current Total Force structure:

Air Force Reserve Command Provides:

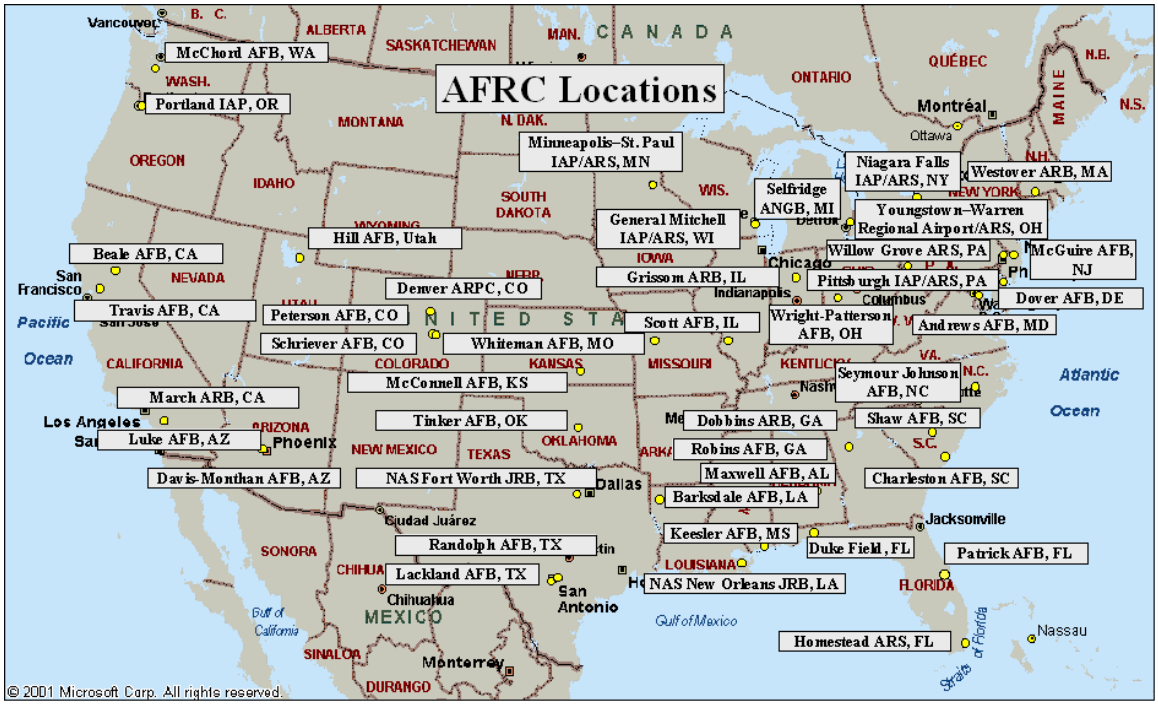
WC-130 Hurricane Hunters	100%
C-130 Aerial Spraying Capability	100%
HC-130 / HH-60 Combat Rescue	29%
C-130 Aerial Firefighters	25%
MC-130 Combat Talon 1 (Reverse Associate unit)	62%
KC-135 Tankers	13%
C-141, C-5	25%
F-16 Fighters	6%
A-10 Fighters	11%
B-52 Bombers	15%
T-38 (AETC IP—crews only)	19%
C-9 Aeromedical (crews only)	33%
C-5/C-17/C-141 (crews only)	45%
KC-10 Tankers (crews only)	50%
Satellite Space Operations	7%
Security Forces	13%
Services	15%
Civil Engineer	16%
Aerial Port	54%
Combat Logistics Support	59%

SUMMARY TABLES

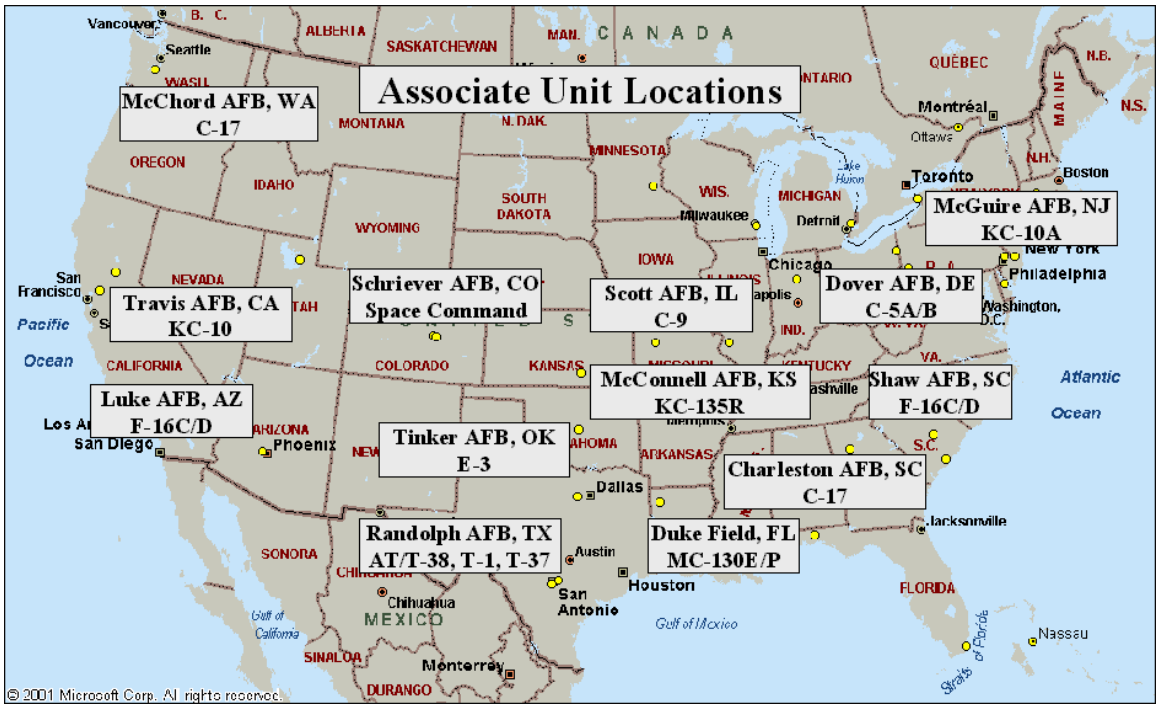
AFRC Units and Locations

Air Force Reserve Command	Robins AFB, GA	
Air Reserve Personnel Center	Denver, CO	
4th Air Force (AMC)	March ARB, Calif.	
349th Air Mobility Wing	Travis AFB, Calif.	C-5A/B, KC-10 (a)
433rd Airlift Wing	Kelly AFB, Tex.	C-5A
434th Air Refueling Wing	Grissom ARB, Ind.	KC-135R
445th Airlift Wing	Wright–Patterson AFB, Ohio	C-141C
446th Airlift Wing	McChord AFB, Wash.	C-17 (a), C-141B
452nd Air Mobility Wing	March ARB, Calif.	C-141C, KC-135R
507th Air Refueling Wing	Tinker AFB, Okla.	KC-135R
916th Air Refueling Wing	Seymour Johnson AFB, S.C.	KC-135R
927th Air Refueling Wing	Selfridge ANGB, Mich.	KC-135E
931st Air Refueling Group	McConnell AFB, Kan.	KC-135R (a)
932nd Airlift Wing	Scott AFB, Ill.	C-9 (a)
940th Air Refueling Wing	Beale AFB, Calif.	KC-135E
22nd Air Force (AMC)	Dobbins ARB, Ga.	
94th Airlift Wing	Dobbins ARB, Ga.	C-130H
302nd Airlift Wing	Peterson AFB, Colo.	C-130H
315th Airlift Wing	Charleston AFB, S.C.	C-17A a
403rd Wing	Keesler AFB, Miss.	C-130E, WC-130H/J
439th Airlift Wing	Westover ARB, Mass.	C-5A
440th Airlift Wing	General Mitchell IAP/ARS, Wis.	C-130H
459th Airlift Wing	Andrews AFB, Md.	C-141B/C
512th Airlift Wing	Dover AFB, Del.	C-5A/B (a)
514th Air Mobility Wing	McGuire AFB, N.J.	C-141B (a), KC-10A (a)
908th Airlift Wing	Maxwell AFB, Ala.	C-130H
910th Airlift Wing	Youngstown–Warren Regional Airport/ARS, Ohio	C-130H
911th Airlift Wing	Pittsburgh IAP/ARS	C-130H
913th Airlift Wing	Willow Grove ARS, Pa.	C-130E
914th Airlift Wing	Niagara Falls IAP/ARS, N.Y.	C-130H
934th Airlift Wing	Minneapolis–St. Paul IAP/ARS, Minn.	C-130E
10th Air Force (ACC)	NAS Fort Worth JRB (Carswell Field), Tex.	
301st Fighter Wing c	NAS Fort Worth JRB (Carswell Field), Tex.	F-16C/D
310th Space Group	Schriever AFB, Colo.	
340th Flying Training Group	Randolph AFB, Tex.	AT/T-38, T-1, T-37 (a)
Det. 1	Shaw AFB, S.C.	F-16C/D (a)
419th Fighter Wing	Hill AFB, Utah	F-16C/D
442nd Fighter Wing	Whiteman AFB, Mo.	OA-10A
482nd Fighter Wing	Homestead ARS, Fla.	F-16C
513th Air Control Group	Tinker AFB, Okla.	E-3 (a)
917th Wing	Barksdale AFB, La.	B-52H, OA-10A
919th Special Ops Wing	Duke Field, Fla.	MC-130E/P (b)
920th Rescue Wing	Patrick AFB, Fla.	HC-130N/P, HH-60G
926th Fighter Wing c	NAS New Orleans JRB	OA-10A
939th Rescue Wing	Portland IAP, Ore.	HC-130N/P, HH-60G
944th Fighter Wing	Luke AFB, Ariz.	F-16C/D (b)

(a) Associate aircraft. (b) AFRC–owned and associate aircraft. (c) Tenant unit on naval base.



Unlike the Air National Guard, AFRC supplements the active duty flying units on a regular basis through its Associate Program. Under this program, Reserve personnel work with the active units and operate with them on a day-to-day basis providing both flying and maintenance support to the active duty mission. The map below shows these associate units and the weapons systems they support.



Weapon Systems Reference Table by State

	Weapons System										
State	F-16	A-10	B-52	C-130	HC-130P/N	MC-130E	WC-130	HH-60G	C-5	C-141	KC-135
AK											
AL				✓							
AR											
AZ	✓							✓			
CA									✓	✓	✓
CO				✓							
CT											
DC											
DE									✓		
FL	✓				✓	✓		✓			
GA				✓							
HI											
IA											
ID											
IL											✓
IN											
KS											✓
KY											
LA		✓	✓								
MA									✓		
MD										✓	
ME											
MI											✓
MN				✓							
MO		✓									
MS				✓			✓				
MT											
NC											✓
ND											
NE											
NH											
NJ										✓	
NM											
NV											
NY				✓							
OH				✓						✓	
OK											✓
OR					✓			✓			
PA				✓							
PR											
RI											
SC											
SD											
TN											
TX	✓								✓		
UT	✓										
VA											
VT											
WA											
WI				✓							
WV											
WY											

Modernization Requirements Summary

F-16 FIGHTING FALCON	*Units Required*	*Unit Cost*	*Program Cost*
ALR-69 Antenna Optimization Program	72	$41,000	$2,940,000
Situation Awareness Data Link (SADL) Upgrade	103	$6,000	$650,000
F-16 Pylon Integrated Dispensing System (PIDS) Universal	72	$41,000	$2,970,000
Advanced Weapon Integration	72	$831,000	$59,800,000
AN/ALQ-131 1553 Interface Upgrade	55	$58,000	$3,200,000
F-16 SEM/EDX Engine Tester	2	$300,000	$600,000
F-16 Air to Air Interrogator (AAI)*	72	$270,000	$19,460,000
F-16 Block 30 Color Multi Function Display System (CMFDS)	72	$161,000	$11,600,000
F-16 Litening II Pod Modernization	36	$400,000	$14,400,000
F-16 Litening II AT Pod Procurement	8	$1,178,000	$9,420,000
F-16 Sniper XR Pod Procurement*	40	$1,728,000	$69,100,000
ALR-69 Precision Location and Identification (PLAID) Upgrade	72	TBD	TBD
F-16 Helmet Mounted Display and Cueing	80	$258,000	$20,600,000
F-16 Radar Upgrade	72	$1,011,000	$72,800,000
F-16 Common Airborne Solid State Video Recorder	72	$119,000	$8,600,000
Commercial Central Interface Unit (CCIU) Upgrade	80	$40,000	$3,200,000
F-16 Avionics Multiplex (MUX) Upgrade	72	$35,000	$2,500,000
* - Affects all Active Duty, AFRC and ANG aircraft. Total Cost is AFRC only.		**TOTAL**	**$212,220,000**

HH-60G PAVE HAWK SEARCH AND RESCUE	*Units Required*	*Unit Cost*	*Program Cost*
CDU Upgrade	23	$25,000	$580,800
Upgraded Communication, Navigation/Integrated Electronic Warfare (Block	23	$1,065,000	$24,500,000
Flight Engineer/Gunner Seat	23	$52,000	$1,200,000
Service Life Extension Program (SLEP)	23	$170,000	$3,900,000
Lightweight Airborne Recovery System (LARS)	1	$130,000	$130,000
Situational Awareness Data Link (SADL)	15	$60,000	$900,000
Extended Range Fuel System (ERFS)	15	$140,000	$2,100,000
		TOTAL	**$33,310,800**

A-10/OA-10 THUNDERBOLT II	*Units Required*	*Unit Cost*	*Program Cost*
A/OA-10 Precision Engagement*	52	$1,100,000	$57,200,000
TF-34 AGB Life Improvement*	52	$4,000	$188,000
Integrated Flight and Fire Control Computer (IFFCC)*	52	$99,000	$5,150,000
Embedded Global Positioning and Inertial Navigation System (EGI)	52	$10,000	$500,000
A/OA-10 PRC 112 Survival Radio Training Package	52	$6,000	$330,000
A/OA-10 Avionics to EW Bus Connection	52	$12,000	$600,000
AN/ARS-6 Light Weight Aerial Recovery System (LARS)	36	$42,000	$1,500,000
A/OA-10 Radar Altimeter	52	$15,000	$800,000
A/OA-10 External Fuel Tank – Fire Suppressant Foam Kits	33	$5,000	$180,000
A-10 Targeting Pod Integration	52	$27,000	$1,400,000
A/OA-10 Engine Replacement	52	TBD	TBD
* - Affects all Active Duty, AFRC and ANG aircraft. Total Cost is AFRC only.		**TOTAL**	**$67,848,000**

B-52 STRATOFORTRESS	*Units Required*	*Unit Cost*	*Program Cost*
Avionics Midlife Improvement*	9	$3,100,000	$27,900,000
B-52 Situational Awareness Defense Improvement*	9	$3,100,000	$27,900,000
Electronic Counter Measures Improvement (ECMI)*	9	$1,870,000	$16,830,000
Family of Advanced BLOS Terminals (FAB-T)*	9	$4,000,000	$36,000,000
CALCM Inflight BLOS Rapid Retasking*	9	$3,033,000	$27,300,000
Global Air Traffic Management (GATM) Phase 1*	9	$1,750,000	$15,750,000
Joint Mission Planning System (JMPS)*	9	$48,000	$428,000
Fuel Enrichment Valve Modification*	9	$38,000	$340,000
Conventional Enhancement Modification (CEM)*	9	$622,000	$5,600,000
Integrated Conventional Stores Management System (ICSMS)*	9	$3,544,000	$31,900,000
Advanced Weapon Integration Program (AWIP)*	9	$9,356,000	$84,200,000
ARC-210*	9	$444,000	$4,000,000
KY-100 Secure Voice*	9	$51,000	$459,000
GPS TACAN Replacement System (TRS)*	9	$636,000	$5,720,000
MIL-STD 1760 in the Bomb Bay*	9	$9,356,000	$84,200,000
Link-16*	9	$7,750,000	$69,750,000
MPS Grade*	9	$51,000	$459,000
WPT Modification*	9	$587,000	$5,280,000
B-52H TF33-P-3/PW-103 Engine Oil System Package*	9	$77,000	$693,000
B-52H TF33-P-3/PW-103 Engine Accessories Upgrade*	9	$62,000	$558,000
B-52H TF33-P-3/PW-103 Engine Performance/Operability Package*	9	$3,800,000	$34,200,000
Low Cost Modifications*	9	$59,000	$531,000
Low Mid Band Jammer (LMBJ)*	9	$1,344,000	$12,100,000
Crash Survivable Flight Data Recorder (CSFDR)*	9	$589,000	$5,304,000
Standard Flight Data Recorder (SFDR)*	9	TBD	TBD
Electro-Optical Viewing System (EVS 3 in 1)*	9	$378,000	$3,400,000
Chaff and Flare Improvement	9	TBD	TBD
GPS Replacement	9	TBD	TBD
Fuel Temperature Monitoring System	9	TBD	TBD
Airborne Video Tape Recorder Replacement (AVTR)	9	TBD	TBD
NVG Ejection Seat Modification	9	TBD	TBD
Night Vision Goggles (NVG) Lighting	9	TBD	TBD
* - Affects all Active Duty, AFRC and ANG aircraft. Total Cost is AFRC only.		**TOTAL**	**$500,802,000**

C-130 HERCULES	Units Required	Unit Cost	Program Cost
Autopilot and GCAS*	133	$517,000	$68,700,000
Engine Conversion*	13	$292,000	$3,800,000
ALR-69 Radar Warning Receiver*	112	$543,000	$60,800,000
Enhanced Traffic Alert and Collision Avoidance System*	47	$153,000	$7,200,000
C-130J Procurement	10	$72,000,000	$720,000,000
C-130 AMP Modernization*	94	$1,300,000	$122,200,000
C-130 Armor	15	$8,000	$116,000
C-130 Carry On SADL	67	$55,000	$3,700,000
APN-241 Low Power Color Radar	94	TBD	TBD
Lighting Harness	94	TBD	TBD
*- Affects all Active Duty, ANG, and AFRC aircraft. Total cost is AFRC only		**TOTAL**	**$986,516,000**

MC-130E COMBAT TALON	Units Required	Unit Cost	Program Cost
ALE-47 Chaff and Flare Dispenser*	14	$350,000	$4,900,000
GTC Replacement*	14	$950,000	$13,300,000
Precision Location and Identification (PLAID)*	14	$1,800,000	$25,200,000
Low Probability of Interception (LPI) Beacon*	14	$27,000	$378,000
Towed Decoy*	14	$1,800,000	$25,200,000
Common FLIR System*	14	$2,700,000	$37,800,000
Outer Wing Replacement*	14	$5,943,000	$83,200,000
Directed Infrared Countermeasures System (DIRCM)*	14	$2,000,000	$28,000,000
Variable Speed Air Refueling System*	14	$4,214,000	$59,000,000
Avionics Modernization Program (AMP)*	14	$1,321,000	$18,500,000
Common Avionic Architecture for Penetration (CAAP)	14	$821,000	$11,500,000
APQ-122 Radar SLEP	14	$307,000	$4,300,000
Moving Map Display	14	$50,000	$700,000
* - Affects all AFSOC C-130s. Total Cost is AFRC only.		**TOTAL**	**$311,978,000**

HC-130P/N SEARCH AND RESCUE	Units Required	Unit Cost	Program Cost
Night Vision Imaging System	10	$450,000	$4,500,000
C-130 Armor	10	$56,000	$560,000
HC-130 Radar Replacement	10	$563,000	$5,630,000
		TOTAL	**$10,690,000**

WC-130 HURRICANE HUNTERS	Units Required	Unit Cost	Program Cost
WC-130J-Model Replacement	10	$72,000,000	$720,000,000
SATCOM Migration	10	$270,000	$2,700,000
CNI Page Enhancement	10	$780,000	$7,800,000
CMDU Situational Awareness Improvement for the Nav, ARWO and DSO	10	$780,000	$7,800,000
Digital Dewpoint Hygrometer	13	$32,000	$410,000
		TOTAL	**$738,710,000**

C-5 GALAXY	*Units Required*	*Unit Cost*	*Program Cost*
TF39 Engine High Pressure Turbine Replacement*	32	$1,679,000	$53,736,000
Avionics Modernization Program (AMP)*	32	$5,354,000	$171,321,000
C-5 Airlift Defensive Systems (ADS)	32	$666,000	$21,300,000
TF39 to CF6-80 Engine Replacement*	32	$11,085,000	$354,717,000
*- Affects all Active Duty, ANG, and AFRC aircraft. Total cost is AFRC only		**TOTAL**	**$601,074,000**

KC-135 STRATOTANKER	*Units Required*	*Unit Cost*	*Program Cost*
F108 (CFM-56) Re-Engine	16	$2,700,000	$43,200,000
Flight Data and Cockpit Voice Recorder*	52	$256,000	$13,300,000
PACER CRAG (Compass, Radar, and GPS)*	52	$1,367,000	$71,100,000
Multi-Point Refueling	2	$3,100,000	$6,200,000
Interphone Replacement*	52	$79,000	$4,100,000
Precision Altitude Measuring (Reduced Vertical Separation Minima – GATM)*	52	$300,000	$15,611,000
GATM Phase II*	52	$225,000	$11,708,000
Electromagnetic Pulse*	52	$28,000	$1,448,000
KC-135 Carry On SADL	52	$55,000	$2,860,000
Terrain Awareness and Warning System (TAWS)*	52	$202,000	$10,507,000
KC-135 Auxiliary Power Unit Boost Pump*	52	$6,000	$311,000
*- Affects all Active Duty, ANG, and AFRC aircraft. Total cost is AFRC only		**TOTAL**	**$180,345,000**

SUPPORT SYSTEMS	*Units Required*	*Unit Cost*	*Program Cost*
C-130 Spray Paint Booth	1	$64,000	$64,000
Tactical Radios	82	$10,000	$850,000
Vehicles for Med UTCs	44	$59,000	$2,600,000
Snow Removal Vehicles	7	$171,000	$1,200,000
Land Mobile Radios	10	$690,000	$6,900,000
Hydrant Fueling Trucks	9	$156,000	$1,400,000
Truck Tractors	10	$7,000	$68,000
Crew Cab Trucks (4x4)	5	$18,000	$91,000
Flightline Video Surveillance	6	$56,000	$336,000
Anti-terrorism/Force Protection	11	$709,000	$7,800,000
		TOTAL	**$21,309,000**

F-16 FIGHTING FALCON

Mission

The F-16 Fighting Falcon is a compact, multi-role fighter aircraft. It is highly maneuverable and has proven itself in air-to-air combat and air-to-surface attack. It provides a relatively low-cost, high-performance weapon system for the United States and allied nations. It is a highly maneuverable fighter designed to provide multi-role capability for today's complex battlefield environment. AFRC has 70 F-16C/D aircraft consisting of Block 25, 30, and 32 airframes assigned to Naval Air Station, Joint Reserve Base, Ft Worth, Texas, Hill AFB, Utah, Homestead Air Reserve Station, Florida, and Luke AFB, Arizona. AFRC aircraft represent approximately 10 percent of the overall AF F-16 inventory.

Features

The F-16's maneuverability and combat radius (unrefueled distance it can fly to enter air combat, stay, fight and return) exceed that of all potential threat fighter aircraft. It can locate air to air targets in all weather conditions and detect low flying aircraft in radar ground clutter. The F-16 can fly more than 500 miles (860 kilometers), deliver its weapons with superior accuracy, defend itself against enemy aircraft, and return to its starting point. An all-weather capability allows it to accurately deliver ordnance during non-visual bombing conditions. Air refueling provides for virtually unlimited combat radius.

Advanced aerospace technology and proven reliable systems from other aircraft such as the F-15 and F-111 were used in the original design of the F-16. These were combined to simplify the airplane and reduce its size, purchase price, maintenance costs and weight. The light weight of the fuselage is achieved without reducing its strength. TheF-16 was built to withstand up to nine G's -- nine times the force of gravity – at combat loads and fuels which exceeds the capability of other current fighter aircraft.

The cockpit and its bubble canopy give the pilot unobstructed forward and upward vision, and greatly improved vision over the side and to the rear. The seat-back angle was expanded from the usual 13 degrees to 30 degrees, increasing G-force tolerance. The pilot has excellent control of the F-16 through its "fly-by-wire" system. Electrical wires relay commands, replacing the usual cables and linkage controls. A side stick controller is used instead of the conventional center-mounted stick to provide easy and accurate control during hi G-force combat maneuvers. Hand pressure on the side stick controller sends electrical signals to a flight control computer, which then sends commands to actuators of aircraft flight control surfaces such as ailerons and rudder.

Avionics systems include a highly accurate inertial navigation system in which a computer provides steering information to the pilot, computed weapons delivery for accurate day and night weapons delivery, air to air and air to ground radar, nine weapons stations for air to air and air to surface weapons loading, an internally mounted 20mm cannon, and the ability to load external fuel tanks for increased range. The plane has UHF and VHF radios plus TACAN, Area Navigation and an Instrument Landing Systems. It also has a threat warning system, a self-protection chaff and flare dispensing system and can carry modular countermeasure pods to be used against airborne or surface threats. The fuselage has space for additional avionics systems.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

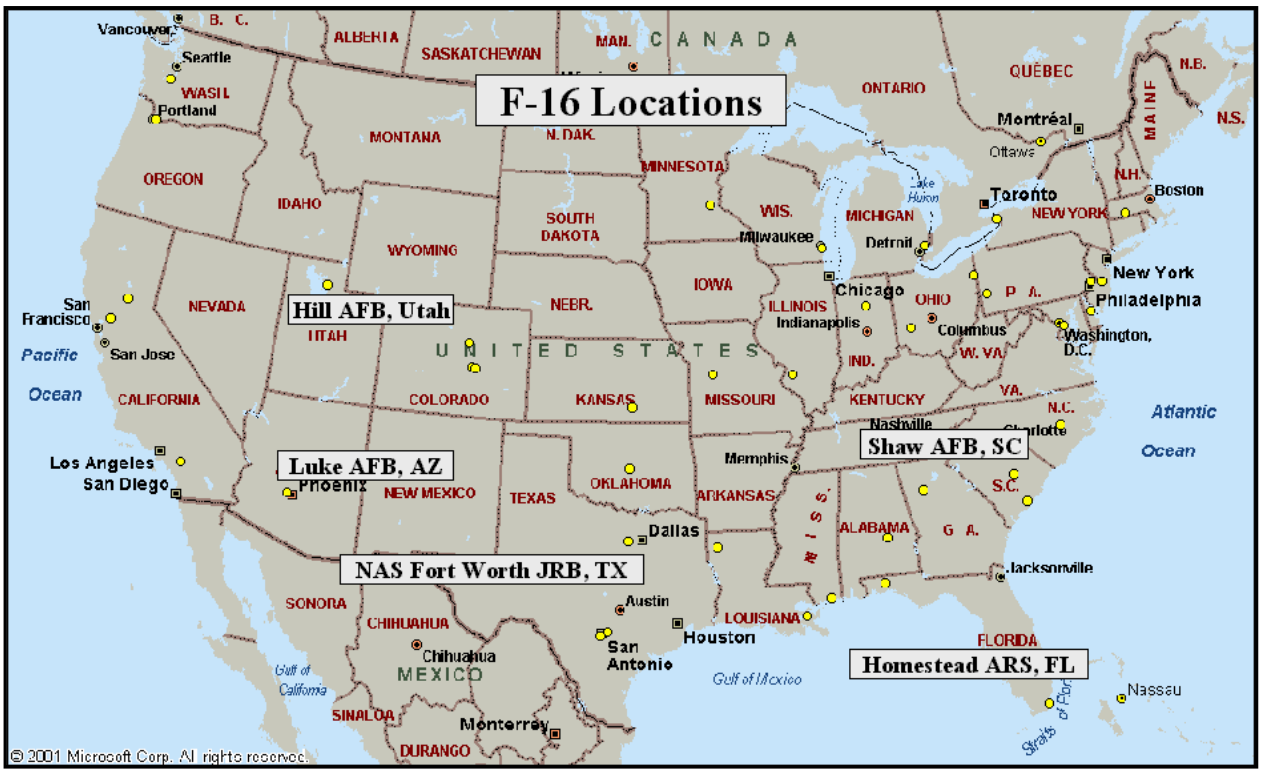
Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X	X	X	X	X

Modernization Overview

Air Combat Command and AFRC are upgrading the F-16 Block 25/30/32 in all core combat areas by installing Global Positioning System (GPS) navigation system, Night Vision Imaging System (NVIS) and NVIS compatible aircraft lighting, Situational Awareness Data Link (SADL), Target Pod integration, GPS steered "smart weapons", an integrated Electronics Suite, Pylon Integrated Dispense System (PIDS), Digital Terrain System (DTS), and the ALE-50 (towed decoy system). The acquisition of the LITENING II targeting pod marked the greatest jump in combat capability for AFRC F-16s in years. At the conclusion of the Persian Gulf War, it became apparent that the ability to employ precision-guided munitions, specifically laser-guided bombs, would be a requirement for involvement in future conflicts. LITENING II affords the capability to employ precisely targeted Laser Guided Bombs (LGBs) effectively in both day and night operations, any time at any place. This capability allows AFRC F-16s to fulfill any AEF tasking requiring a self-designating, targeting-pod platform, providing needed relief for heavily tasked active-duty units. These improvements have put AFRC F-16s at the leading edge of combat capability. The combination of SADL, Target Pods, NVIS, GPS and Integrated EC are unavailable in any other combat aircraft and make the Block 25/30/32 F-16 the most versatile combat asset available to a theater commander.

Tremendous work has been done keeping the Block 25/30/32 F-16 employable in today's complex and demanding combat environment. This success has been the result of far-sighted planning that has capitalized on emerging commercial and military technology to provide specific capabilities that were projected to be critical. That planning and vision must continue if the F-16 is to remain useable as the largest single community of aircraft in America's fighter force. Older model Block 25/30/32 F-16 aircraft require structural improvements to guarantee that they will last as long as they are needed. They also require data processor and wiring system upgrades in order to support employment of more sophisticated precision attack weapons. They must have improved pilot displays to integrate and present the large volumes of data now provided to the cockpit. Additional capabilities are needed to eliminate fratricide and allow weapons employment at increased range, day or night and in all weather conditions. They must also be equipped with significantly improved threat detection, threat identification, and threat engagement systems in order to meet the challenges of combat survival and employment for the next 20 years.

Locations



Aircraft Units and Supporting Organizations

F-16 Fighting Falcon		
Operational Units		
482nd Fighter Wing	Homestead ARS, FL	
419th Fighter Wing	Hill AFB, UT	
301st Fighter Wing	NAS Fort Worth JRB (Carswell Field), TX	
944th Fighter Wing	Luke AFB, AZ	
Air Force Support Organizations		
Aeronautical Systems Center	Program Office	Wright-Patterson AFB, OH
Ogden Air Logistics Center	Depot Repair and Supply	Hill AFB, UT
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Fort Worth, TX
General Electric	Engines	Cincinnati, OH
Pratt & Whitney	Engines	East Hartford, CT
Northrop-Grumman	Radar and Avionics	Baltimore, MD

Funding

F-16											
Program Element	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	TOTAL
ALR-69 Antenna Optimization Program											
52716F	$ 2.610	$ 0.740	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3.350
Situation Awareness Data Link (SADL) Upgrade											
52716F	$ -	$ -	$ 0.618	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.618
F-16 Pylon Integrated Dispensing System (PIDS) Universal											
52716F	$ -	$ -	$ 3.000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3.000
Advanced Weapon Integration											
52716F	$ 33.092	$ 2.500	$ 2.425	$ 3.984	$ 4.000	$ 3.942	$ 5.290	$ 4.062	$ 0.578	$ -	$ 59.873
AN/ALQ-131 1553 Interface Upgrade											
52716F	$ -	$ -	$ -	$ 3.200	$ -	$ -	$ -	$ -	$ -	$ -	$ 3.200
SEM/EDX Engine Tester											
52716F	$ -	$ -	$ 0.600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.600
F-16 Block 30 Color Multi Function Display System (CMFDS)											
52716F	$ -	$ 1.000	$ -	$ -	$ 12.400	$ -	$ -	$ -	$ -	$ -	$ 13.400
Litening II Pod Modernization											
52716F	$ -	$ -	$ -	$ 14.500	$ -	$ -	$ -	$ -	$ -	$ -	$ 14.500
Litening II AT Pod Procurement											
52716F	$ -	$ -	$ -	$ 9.420	$ -	$ -	$ -	$ -	$ -	$ -	$ 9.420
F-16 Sniper XR Pod Procurement											
52716F	$ -	$ -	$ -	$ -	$ 69.100	$ -	$ -	$ -	$ -	$ -	$ 69.100
ALR-69 Precision Location and Identification (PLAID) Upgrade											
52716F	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
F-16 Helmet Mounted Display and Cueing											
52716F	$ -	$ -	$ -	$ -	$ 10.100	$ 9.500	$ 4.900	$ 0.600	$ 0.600	$ 0.600	$ 26.300
F-16 Radar Upgrade											
	$ -	$ -	$ -	$ -	$ -	$ 19.700	$ 189.300	$ 324.200	$ 23.200	$ -	$ 556.400
F-16 Airborne Video Tape Recorder Replacement											
	$ -	$ -	$ -	$ 4.000	$ 4.600	$ -	$ -	$ -	$ -	$ -	$ 8.600
F-16 Commercial Central Interface Unit Upgrade											
	$ -	$ -	$ -	$ -	$ 3.200	$ -	$ -	$ -	$ -	$ -	$ 3.200
Avionics Multiplex (MUX) Upgrade											
	$ -	$ -	$ -	$ 2.500	$ -	$ -	$ -	$ -	$ -	$ -	$ 2.500

Schedule

F-16										
	Unfunded		Partially Funded:				Fully Funded:			
Program	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09
ALR-69 Antenna Optimization Program										
Situation Awareness Data Link (SADL) Upgrade										
F-16 Pylon Integrated Dispensing System (PIDS) Universal										
Advanced Weapon Integration										
AN/ALQ-131 1553 Interface Upgrade										
SEM/EDX Engine Tester										
F-16 Air to Air Interrogator (AAI) - Block 30										
F-16 Block 30 Color Multi Function Display System (CMFDS)										
Litening II Pod Modernization										
Litening II AT Pod Procurement										
F-16 Sniper XR Pod Procurement										
ALR-69 Precision Location and Identification (PLAID) Upgrade										
F-16 Helmet Mounted Display and Cueing										
F-16 Radar Upgrade										
F-16 Airborne Video Tape Recorder Replacement										
F-16 Commercial Central Interface Unit Upgrade										
Avionics Multiplex (MUX) Upgrade										

PLANNED MODIFICATIONS

ALR-69 Antenna Optimization Program

Background and Description

Another limitation is the need for an accurate radar-warning receiver (ALR-69) for high threat survivability. The current receiver does not provide accurate warning to the pilot of impending danger from either existing or projected threats. The ALR-69 Antenna Optimization Program relocates aircraft mounted antennas and eliminates some cabling that decreases RF signal strength. This results in an overall system improvement that eliminates the documented deficiency.

Requirement

Current antenna placement decreases pilot warning and reaction time to both current and projected threats. This has been documented as a system deficiency requiring aircraft modification to correct.

Funding

This program is NGREA funded. Program cost for AFRC aircraft is expected to be $2.94 M.

Situation Awareness Data Link (SADL) Upgrade

Background and Description

SADL is a low cost data link that uses the Enhanced Position Location Reporting System (EPLRS) radios to prevent fratricide and enhance situational awareness, while providing accurate combat identification capability. This system is secure, jam resistant and has a low probability of intercept. It provides fighter-to-fighter, fighter-to-ground, and ground-to-fighter connectivity.

SADL allows the Block 25/30/32 F-16 to participate with USAF tactical airborne data link networks and directly in the Army's Digitized Battlefield. Both networks give participants more complete knowledge of the disposition of friendly forces engaged in combat. The Army has continued to improve on the design and function of SADL related hardware, and has incorporated changes in the design that will eventually make existing SADL hardware incompatible with Army operations. USAF has continued to develop standards for airborne network technology. A SADL upgrade is required to incorporate current data link technology and preserve USAF SADL participation in USAF airborne networks and interoperability with the Army during joint operations.

Requirement

F-16 Block 25/30/32 aircraft incorporated the Army designed EPLARS hardware as the core component for SADL. Continuing development of EPLARS for the Army has driven changes that will make existing F-16 SADL hardware incompatible with Army operations. A SADL upgrade is required to preserve interoperability with the Army and to provide staged improvement of SADL airborne network technology. This upgrade preserves the interoperability with the Army digital network during joint operations.

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $650 K.

F-16 Pylon Integrated Dispensing System (PIDS) Universal

Background and Description

The ARC must have both increased infrared missile countermeasures and precision weapons on their F-16s. In 1994 and 1995 the ARC purchased 310 F-16 PIDS for increased countermeasures on F-16 C/D Block 25/30s. Now PIDS requires Mil-Std-1760 precision weapons capability. In support of this requirement, the F-16 program office is beginning a development program with the F-16 European Participating Nations (Belgium, Norway, Netherlands and Denmark), called the PIDS Universal, to integrate Mil-Std-1760 capability into PIDS. The PIDS Universal configuration will also include some growth provisions for adding a missile warning system in the future. ACC recognizes the need for this upgrade but has not identified the resources to carry fund this effort.

Requirement

Mil-Std 1760 is the current standard for a common electrical and digital interface between weapons and the aircraft. As newer or improved weapons are developed and deployed, it is imperative that the F-16 be capable of employing these weapons.

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $2.97 M.

Advanced Weapon Integration

Background and Description

This modification is for both the hardware and pylon effort required to employ smart weapons such as JDAM, JSOW and WCMD on the Block 25/30/32/40/42 aircraft. The weapons pylons will be modified with the Mil-Std-1760 interface and will carry the same nomenclature as the Block 50 pylons. This modifies the pylons and adds an umbilical that will only be used with smart weapons.

Requirement

This is a fleet wide modification to ensure the F-16 is capable of carrying and releasing the next generation of weapons. Development of the modification is complete. Aircraft breakdown: Active, 504; Reserve, 70; ANG 442

Funding

This program is ACC funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $59.8 M.

AN/ALQ-131 1553 Interface Upgrade

Background and Description

The 1553 data bus modification allows the ALQ-131 EW pod to "talk" to the ALQ-213 controller and vice versa. This upgrade fully integrates the ALQ-131 with all other EW and avionics subsystems. The program is 3-phase, and only Phase 1 (produce, test, install TCTO kits and support equipment) is planned for. Phases 2 and 3 upgrade the hardware and software respectively. These phases are presently conceptual only; however, they must be accomplished in order to reap full benefits of this program.

Requirement

ALQ-131 capability must be upgraded to reduce risk under current threat situations. This is an AFRC-only program, producing 48 kits with 7 spares. The plan to complete (fund) Phases 2 and 3 is under study.

Funding

This program is NGREA funded. Projected cost is $3.2 M.

F-16 SEM/EDX Engine Tester

Background and Description

The F-16 F-110-100/129 engine #4 bearing Scanning Electron Microscope / Energy Dispersion X-Ray (SEM/DEX) is designed to reduce the risk of catastrophic #4 engine bearing failure and subsequent loss of aircraft.

Requirement

The Requirements Review Board authorized two SEM/EDX testers to be purchased with FY02 funds.

Funding

This program is NGREA funded. Projected cost for two testers is $600 K.

FUTURE CAPABILITIES AND MODIFICATIONS

F-16 Air to Air Interrogator (AAI)

Background and Description

Positive target identification is required prior to employment of air to air weapons. Discrimination of friendly forces and prevention of fratricide is accomplished by interrogation of on-board Identification Friend or Foe (IFF) systems. The APX-113 Air to Air Interrogator (AAI) allows F-16 aircraft to interrogate IFF and positively identify friendly airborne forces during combat. APX-113 has been integrated on F-16 Block 40 and 50 aircraft during CCIP modification, and is available for installation on the Block 25/30/32 with minimal non-recurring engineering required.

Requirement

Modern air-to-air weapons and tactics require engagement of enemy forces at ranges well beyond visual contact. Positive electronic identification is required by theater ROE in order to employ weapons at these ranges. Force structure and employment concepts demand that enemy airborne forces be engaged and defeated at optimum range. Weapons have been designed to implement these concepts. Block 25/30/32 F-16 aircraft carry and employ these weapons, but positive electronic target identification has not been implemented on the Block 25/30/32 F-16.

Positive identification of friendly airborne forces operating beyond visual contact provides increased pilot situation awareness, efficient execution of combat tactics that rely on accurate battlespace information, optimum employment of modern air-to-air weapons, and prevention of fratricide during combat.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is 19.46 M.

F-16 Block 30 Color Multi Function Display System (CMFDS)

Background and Description

One of the main limitations of AFRC F-16 aircraft is the need for new display processors and cockpit displays to fully maximize the pilot's situational awareness. In addition to being inadequate for presentation of data, the current cockpit display system fails without indication, creating potentially hazardous flight situations. AFRC is actively looking at upgrading the existing system with Commercial-Off-the-Shelf technology.

Requirement

The CMFD system replaces aging multi-function displays with newer state-of-the-art color multi-function displays in 72 AFRC F-16 aircraft. High definition Color multifunction displays enable the display of more data with greater precision thus improving interpretation, advancing situational awareness, and increasing visual acuity for target recognition with electro-optical weapons and targeting systems.

Funding

This program is UNFUNDED. Anticipated modification cost for AFRC aircraft is $11.6M.

F-16 Litening II Pod Modernization

Background and Description

Litening II was purchased to provide AFRC and ANG Block 25/30/32 precision strike capability. Technology advances in the fields of FLIR imaging, CCD definition, laser power modulation, etc. demand that periodic staged hardware upgrades for Litening II be planned and budgeted.

Requirement

Contingency operations and general technology advances mandate upgrades for this pod. The program will procure 36 kits (32 + 4 spares), upgrading our current pods to the advanced, Litening AT standard (see next program below).

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $14.4 M.

F-16 Litening II AT Pod Procurement

Background and Description

LITENING II AT (upgraded LITENING II) precision strike pods provide the best capability available. These new pods have identical capability to the upgraded Litening pods discussed in the previous program above.

Requirement

AFRC needs eight additional pods to meet current operational taskings. This will increase inventory to 40 pods total.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $9.42 M.

F-16 Sniper XR Pod Procurement

Background and Description

Sniper XR is the next generation targeting pod, chosen as the winner in the Advanced Targeting Pod (ATP) source selection.

Requirement

AFRC needs 40 Sniper XR pods to replace 40 Litening AT pods. The Litening pods are designated for AFRC B-52 and A-10 aircraft starting in FY07.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $69.1 M.

ALR-69 Precision Location and Identification (PLAID) Upgrade

Background and Description

The baseline AN/ALR 69 (V) radar warning receiver (RWR) is a common EW system that provides threat warning for the O/A-10A, F-16 A/B/C/D, C-130E/H, MC-130E/H, AC-130E/H, HC-130P/N, and EC-130E weapon systems. These aircraft are employed worldwide in high, medium, and low altitude tactical situations. The RWR must accurately display the radio frequency (RF) threat environment to which these aircraft are exposed in performing various air-to-air, air-to-ground, and reconnaissance missions. The ALR-69 system utilizes early 1970s technology, and was initially installed on US Air Force aircraft in 1978. AFSOC is leading the way in PLAID development. Current plans are to install PLAID upgrades on the Talon I before proceeding to other weapon systems. Efforts are underway to locate a suitable C-130 test platform since the Talon I fleet is unavailable due to real world taskings.

Requirement

Sophistication and complexity of threat weapon systems has grown beyond the current capabilities of the baseline ALR-69. Aircrews do not have reliable threat warning and situational awareness with the baseline system. The upgrade will take advantage of Precision Location and Identification (PLAID) technology developed by Air Force Research Laboratory (AFRL) in the 1990s. The upgrade will provide extended detection ranges, ambiguity reduction, and reduced response times in dense electromagnetic environments. The upgrade requirements are derived from operational requirements provided in CAF ORD 304-80-I/II/III/-B dated 19 Oct 00. The ORD was drafted by AFSOC and signed by ACC, AFRC, and ANG.

Funding

This program is UNFUNDED for the F-16. Total anticipated modification cost will become known following AFSOC funded RT&E.

F-16 Helmet Mounted Display and Cueing

Background and Description

Helmet Mounted Display/Helmet Mounted Cuing Systems (HMCS) allow pilots to target advanced weapons, employ effective threat countermeasures, and stay aware of critical developments in flight. Helmet mounted displays provide critical flight and weapons information on the pilot's helmet visor. Flight parameters keep the pilot oriented so dangerous situations can be avoided during high workload demand portions of the mission. Weapons employment data allows the pilot to use full weapons capabilities not available with Heads Up Display (HUD) and cockpit displays alone.

Requirement

Advances in technology allow expanded weapons engagement envelopes, greater volumes of detailed information available to the pilot and faster reaction in dynamic combat environments. HMCS is included in the F-16 Block 25/30/32 ORD. The system must provide uninterrupted operation at night using NVIS, provide raster video to the helmet visor display, and should incorporate a wide angle field of regard to provide optimum utility in air to air and air to ground operation. JHMCS developed for JSF provides the required capabilities and significantly expands employment of modern weapons:

- AIM-9X is specifically designed to provide employment envelope improvement available with HMCS. Existing AIM-9 employment is expanded beyond the current limitations of the HUD.
- AMRAAM employment with HMCS is expanded well beyond the current limits of the radar gimbal limits.
- JDAM/JSOW/WCMD and future guided munitions can be employed in visual environments intended for the Block 25/30/32 by use of HMCS.
- Conventional and precision weapons employment is improved by allowing faster and more positive target location and identification.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $20.6 M.

F-16 Radar Upgrade

Background and Description

F-16 block 25/30/32 aircraft using the APG-68 Radar are limited by existing radar capabilities. An upgrade is required to provide for increased air to air detection range, Synthetic Aperture Radar (SAR) targeting, Positive Hostile Identification (PHID), and improved Electronics Countermeasures (ECM). Improved radar capabilities are required to detect and negate air to air threats prior to being engaged by threat weapons systems, employ current air to air missiles at optimum launch ranges, detect, locate and identify air to surface targets during employment of Smart Weapons, identify friendly and hostile forces prior to engagement in accordance with established theater Rules of Engagement (ROE), and to provide uninterrupted operation in hostile Electronic Combat (EC) environments. Current APG-68 hardware and software cannot provide these needed capabilities.

Requirement

APG-68 hardware was developed in the 1970's based on existing weapons, tactics and available state of the art technology. Radar and EC hardware and software have evolved dramatically in the past 20 years producing weapons and employment tactics that exceed the capabilities of the existing APG-68 Radar system. Threat systems exist that can completely defeat the APG-68 as an air to air and air to surface employment system. Specific Items are:

- Air-to-air weapons are employed at ranges beyond APG-68 detection and lock range.
- Threat air to air weapon systems can target the F-16 from beyond APG-68 detection range.
- Threat ECM systems are able to focus on the APG-68 and deny use of the radar system for target detection and identification.

- Smart Weapons are planned to be targeted through the weather using SAR, a capability currently unavailable with the APG-68.

There are 4 capabilities required by the F-16 that can only be made available by upgrading the radar; increased radar detection range, SAR, PHID, and improved ECM. These requirements are documented in the Block 25/30/32 F-16 ORD.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $72.8 M.

F-16 Common Airborne Solid State Video Recorder

Background and Description

Commercial analog to digital conversion technology, audio/video compression techniques and solid state mass memory hardware developed for the commercial video recording market can provide an economic replacement for existing tape based audio/video recorders used in combat aircraft. The Block 25/30/32 F-16 ORD specifies an audio/video requirement for two hours of continuous recording from 4 video sources and 1 audio source, with download and playback provided by a software application running on generic PC computer hardware. The system must show a significant net savings to the F-16 community when life cycle costs are projected over the remaining service life of the aircraft. The system must integrate into existing aircraft avionics with minimal impact, and satisfy other aircraft mass memory and data transfer requirements to the maximum extent possible.

Requirement

F-16 Block 25/30/32 aircraft currently use commercial Sony 8mm videotape recorders to record cockpit audio and avionics video displays. The present system was purchased as commercial off the shelf equipment, and has no programmed central logistic support. The commercial manufacturer has stopped producing the qualified system and will discontinue parts production and OEM repair in 2002. The current system is projected to last until 2005 with careful management of available equipment, but there is the need to preserve and expand cockpit audio/video recording, as expressed in the Block 25/30/32 ORD.

This modification is needed in the field and working no later than 2005. ACC is installing tape-based Improved Airborne Videotape Recorders (IAVTR) in the Block 50 F-16. IAVTR is now more expensive than available digital recorders when calculated over the anticipated remaining life of the F-16 aircraft. IAVTR does not provide for 4 video source recording as required by the Block 25/30/32 ORD.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $8.6 M.

Commercial Central Interface Unit (CCIU) Upgrade

Background and Description

The CCIU provides weapons interface, communication and data processing for the Block 25/30/32 F-16. Capabilities of the existing CCIU limit the integration of current generation 'Smart Weapons' and prevent using full employment potential of the aircraft. Future capabilities planned for integration on the F-16 will be limited or impossible under constraints imposed by the CCIU.

Requirement

A CCIU Upgrade is required in order to keep the F-16 current and capable in modern combat environments using planned and future weapons, technologies and software capabilities. Study and Analysis funding provided in FY00 provides the initial investigation and analysis of solutions being proposed by several contractors.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $3.2 M.

F-16 Avionics Multiplex (MUX) Upgrade

Background and Description

F-16 Block 25/31/32 aircraft have two primary avionics MUX bus wiring. Future avionics upgrades will exceed the capacity of the existing two-MUX architecture.

Requirement

A new, fiber optic MUX must be engineered now in order to take advantage of cost savings resulting from installation during upcoming Falcon Star modification. This acquisition also procures non-recurring engineering.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $2.5 M.

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A-10/OA-10 THUNDERBOLT II

Mission

The A/OA-10 Thunderbolt II is the first Air Force aircraft specially designed for close air support of ground forces. They are simple, effective and survivable twin-engine jet aircraft that can be used against all ground targets, including tanks and other armored vehicles.

Features

The A/OA-10 has excellent maneuverability at low air speeds and altitude, and the aircraft are highly accurate weapons-delivery platforms. They can loiter near battle areas for extended periods of time and operate under 1,000-foot ceilings with 1.5-mile visibility. Their wide combat radius and short takeoff and landing capability permit operations in and out of locations near front lines. Using night vision goggles, A-10 and OA-10 pilots can conduct their missions during darkness.

Thunderbolt IIs have Night Vision Imaging Systems (NVIS), goggle compatible single-seat cockpits forward of their wings and a large bubble canopy which provides pilots all-around vision. The pilots are protected by titanium armor that also protects parts of the flight-control system. The redundant primary structural sections allow the aircraft to enjoy better survivability during close air support than did previous aircraft.

The Thunderbolt II can be serviced and operated from bases with limited facilities near battle areas. Many of the aircraft's parts are interchangeable left and right, including the engines, main landing gear and vertical stabilizers.

Avionics equipment includes communications, inertial navigation systems, fire control and weapons delivery systems, target penetration aids and night vision goggles. Their weapons delivery systems include heads-up displays that indicate airspeed, altitude, dive angle, navigation information and weapons aiming references; a low altitude safety and targeting enhancement system (LASTE) which provides constantly computing impact point freefall ordnance delivery; and Pave Penny laser-tracking pods under the fuselage. The aircraft also have armament control

panels, and infrared and electronic countermeasures to handle surface-to-air-missile threats. Installation of the Global Positioning System is currently underway for all aircraft.

The Thunderbolt II's 30mm GAU-8/A Gatling gun can fire 3,900 rounds a minute and can defeat an array of ground targets to include tanks. Some of their other equipment includes an inertial navigation system, electronic countermeasures, target penetration aids, self-protection systems, and AGM-65 Maverick and AIM-9 Sidewinder missiles.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X		X	X	

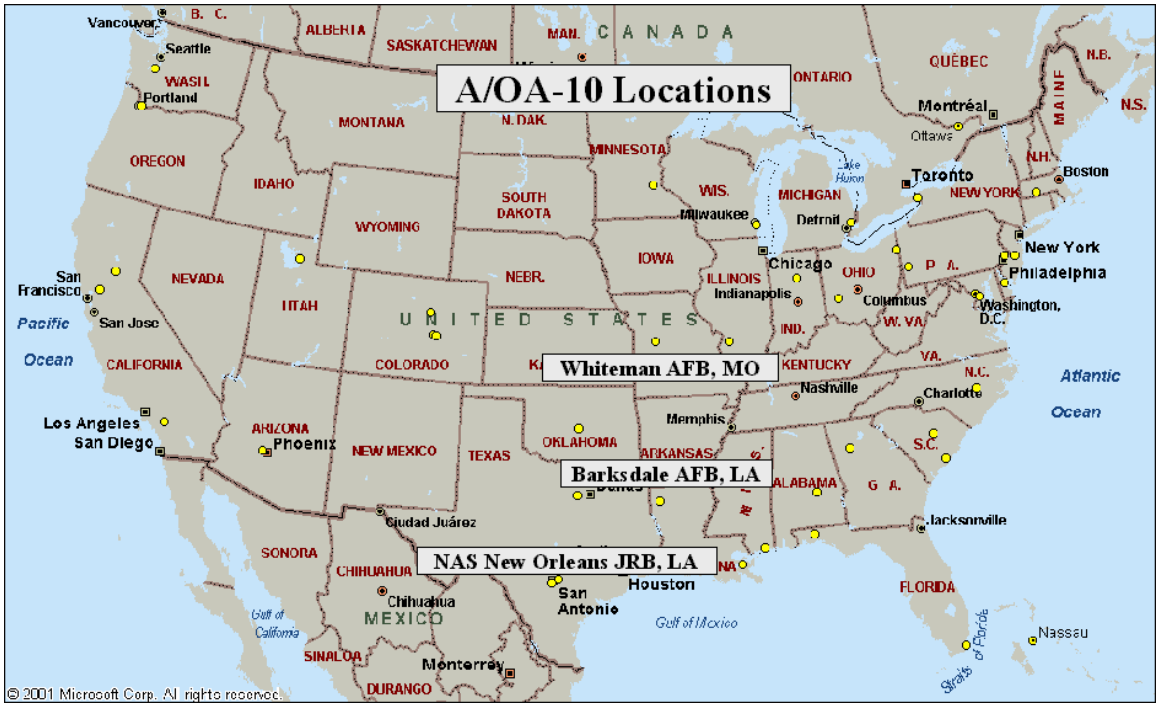
Modernization Overview

AFRC A-10s are poised to make progress in satisfying the core capabilities of the combat quadrangle. Air Combat Command is upgrading the A-10 with new attitude indicators for safety of flight concerns. The most promising development is the revamped precision-engagement program that will incorporate Situational Awareness Data Link (SADL), targeting pods and smart weapons capability by 2006.

There are five major programs over the next five years to ensure the A/OA-10 remains a viable part of the total Air Force. The first is increasing its precision engagement capabilities. The A-10 was designed for the Cold War and is the most effective CAS (Close Air Support) anti-armor platform in the USAF, as demonstrated during the Persian Gulf War. Unfortunately, its systems have not kept pace with modern tactics as was proven during Operation Allied Force. The AGM- 65 (Maverick) is the only precision-guided weapon carried on the A-10. Newer weapons are being added into the Air Force inventory regularly, but the current avionics and computer bus structure limits the deployment of these weapons on the A-10. The Precision Engagement and Suite 3 programs will help correct this area. Next, critical systems on the engines are causing lost sorties and increased maintenance activity. Several design changes to the Accessory Gearbox will extend its useful life and reduce the existing maintenance expense associated with the high removal rate. The other two programs increase the navigation accuracy and the overall capability of the fire control computer, both increasing the weapons system's overall effectiveness.

Looking to the future, there is a requirement for a training package of 30 PRC-112B/C survival radios for 10th Air Force fighter, rescue, and special operations units. While more capable, these radios are more demanding to operate and additional units are needed to ensure the aircrews are fully proficient in their operation. One of the A-10 challenges is resources for upgrade in the area of high threat survivability. Previous efforts focused on an accurate missile warning system and effective, modern flares; however a new preemptive covert flare system may satisfy the requirement. The A-10 can leverage the work done on the F-16 Radar Warning Receiver and C-130 towed decoy development programs to achieve a cost-effective capability. The A/OA-10 has a thrust deficiency in its operational environment. As taskings evolved, commanders have had to reduce fuel loads, limit take-off times to early morning hours and refuse taskings that increase gross weights to unsupportable limits. Forty-five AFRC A/OA-10s need upgraded structures and engines (2 engines per aircraft plus 5 spares for a total of 95 engines).

Locations



Aircraft Units and Supporting Organizations

A/OA-10 Thunderbolt II		
Operational Units		
917th Wing	Barksdale AFB, LA	
926th Fighter Wing	NAS New Orleans JRB, LA	
442nd Fighter Wing	Whiteman AFB, MO	
Air Force Support Organizations		
Ogden Air Logistics Center	Program Office and Depot	Hill AFB, UT
Supporting Contractors		
Fairchild Republic Co.	Prime Contractor	
General Electric	Engines	Cincinnati, OH

Funding

A/OA-10											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
Precision Engagement and Suite 3											
52713F	$ -	$ 12.600	$ 13.831	$ 21.089	$ 51.316	$ 60.566	$ 96.434	$ 97.106	$ 35.122	$ 4.909	$ 392.973
TF-34 AGB Life Improvement											
52713F	$ 0.200	$ 0.811	$ 0.731	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.742
Integrated Flight and Fire Control Computer (IFFCC)											
52713F	$ 9.384	$ 11.703	$ 5.407	$ 8.107	$ 9.702	$ 2.225	$ -	$ -	$ -	$ -	$ 46.528
Embedded Global Positioning and Inertial Navigation System (EGI)											
52713F	$ 51.464	$ 29.854	$ 7.799	$ 5.362	$ -	$ -	$ -	$ -	$ -	$ -	$ 94.479
PRC 112 Survival Radio Training Package											
52713F	$ -	$ -	$ -	$ 0.330	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.330
AN/ARS-6 Light Weight Aerial Recovery System (LARS)											
52713F	$ 1.500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.500
Engine Replacement											
52713F	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
A/OA-10 External Fuel Tank – Fire Suppressant Foam Kits											
52713F	$ -	$ -	$ -	$ 0.180	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.180
A/OA-10 Radar Altimeter											
52713F	$ -	$ -	$ -	$ 0.800	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.800
A-10 Targeting Pod Integration											
52713F	$ -	$ -	$ -	$ 0.700	$ 0.700	$ -	$ -	$ -	$ -	$ -	$ 1.400

Schedule

A/OA-10										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
Precision Engagement and Suite 3										
Integrated Flight and Fire Control Computer (IFFCC)										
TF-34 AGB Life Improvement										
Embedded Global Positioning and Inertial Navigation System (E										
PRC 112 Survival Radio Training Package										
Engine Replacement										
AN/ARS-6 Light Weight Aerial Recovery System (LARS)										
A/OA-10 Avionics to EW Bus Connection										
A/OA-10 External Fuel Tank – Fire Suppressant Foam Kits										
A/OA-10 Radar Altimeter										
A-10 Targeting Pod Integration										

PLANNED MODIFICATIONS

A/OA-10 Precision Engagement

Background and Description

The A-10 was designed for the Cold War and is the most effective CAS (Close Air Support) anti-armor platform in the USAF, as demonstrated during the Persian Gulf War. Unfortunately, its systems have not kept pace with modern tactics as was proven during Operation Allied Force. The A-10 platform must be modernized. The AGM-65 (Maverick) is the only precision-guided weapon carried on the A-10. Currently target acquisition is accomplished in the following ways:

- Using the current TV monitor system which is difficult and time consuming,
- Pilots using binoculars to acquire targets which is not accurate and takes the pilot's attention from flying to looking for targets (safety), and
- Using forward air controllers to locate targets which is only done during CAS missions and communications are not secure.

The Precision Engagement modifications, combined with the Suite 3 Program will correct these shortcomings of the platform and add new capabilities to ensure continued viability throughout its projected service life.

The PE program provides the following upgrades:

- Digital Stores Management Systems (DSMS) – Modernizes the existing weapons SMS with a Central Interface Control Unit (CICU) and the adds two Multifunction Color Displays (MFCDs).
- Situational Awareness Data Link (SADL) – Provides compatibility with ground and air Command and Control to improve overall execution and help reduce fratricide.
- MIL-STD-1760 – Provides a MIL-STD-1760 interface to stations 4, 5, 7, 8 for the employment of precision weapons.
- Precision Weapons Capability – Provides A/OA-10 with precision weapons capability including Joint Direct Attack Munition (JDAM) and Wind Corrected Munitions Dispenser (WCMD) allowing for all weather day and night time precision attack capability.
- Targeting Pod Integration – Provides integration capability for three types of targeting pods to include LITENING II, Enhanced LANTIRN, and a SNIPER pod
- DC Power – Provides the DC power system capacity to meet demands created by the extensive modification of 100% increase in total capacity (PE program specific).
- Hands-on Throttle and Stick (HOTAS) – Integrates an upgraded throttle and control stick to allow maximum heads-up capability and minimal additional cockpit switch movements. This function permits optimum control of targeting, data, and counter-measures management information.

In summary, these upgrades will provide the A-10 new combat capabilities using smart weapons, improved situational awareness, and enhanced target identification and designation. Precision Engagement will also add digital data connectivity to the digital battlefield ensuring joint forces communication, interoperability, digital exchange of sensor data, and anti-fratricide information between command and control platforms

Requirement

The A/OA-10 was originally designed for low-altitude, visual attack missions. Due to an increasingly sophisticated threat at lower altitudes and the evolution of tactics since DESERT STORM, the A/OA-10 is now operating in medium altitude combat environments. Limited stand-off capability associated with dated avionics, and a computed weapons delivery system designed for low altitude operations, reduces aircraft survivability and effectiveness by increasing pilot workload and threat exposure. Limited precision munitions delivery capability decreases combat effectiveness and increases the potential for fratricide and collateral damage. The lack of a digital data link and means to display three-dimensional battle space information, such as the location of friendly ground and air forces, known threats, targets, and common ground reference points, limits pilot situational awareness and increases the risk of fratricide in complex mission scenarios. The Precision Engagement (PE) and accompanying Suite 3 modification programs provide increased combat effectiveness enhancements to the A/OA-10A weapon system. These programs meet the Air Force need to increase the capability of the A/OA-10 aircraft by implementing a flexible and upgradeable precision engagement capability into the aircraft's avionics architecture. These programs provide the

A/OA-10 with new combat capabilities to employ smart weapons plus improved situational awareness, and enhanced target identification and designation capability.

Funding

This program is ACC funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $ 57.2 M.

TF-34 AGB Life Improvement

Background and Description

This modification will incorporate several design changes to the Accessory Gearbox associated with unit removals due to Joint Oil Analysis Program rejects/bearing failures. The incorporation of the design fixes will extend the useful life of the AGB and reduce the existing maintenance expense associated with the high removal rate. These changes will significantly improve flight safety and engine reliability and will increase mean time between failures from 3482 to 23,021 hours.

Requirement

The current gearbox requires frequent removal resulting in increased down time and maintenance expense. This change will reduce in flight failures and lost/shortened sorties. (Modification Number MN-18202B, Program Element 0207131F)

Funding

This program is ACC funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $ 188 K.

Integrated Flight and Fire Control Computer (IFFCC)

Background and Description

This modification develops and installs an Integrated Flight and Fire Control Computer (IFFCC) (formerly titled LASTE Upgrade Computer) and associated aircraft installed Group A Kit. The current computer is at its throughput and memory limits which preclude a future avionics modifications already approved in the A-10 MIP. This modification is the baseline for, and is required before, the following A-10 modifications: Digital Data Link; Digital Terrain System; and 1760 Bus/Smart Weapons.

Requirement

The current computational system is unable to receive modifications to allow it to load or control the current or future generations of weapons or upgraded avionics. (Modification Number MN-3301A, Program Element PE 0207131F)

Funding

This program is ACC funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $5.15 M.

Embedded Global Positioning and Inertial Navigation System (EGI)

Background and Description

The Embedded Global Positioning and Inertial Navigation System (EGI) is a self contained, all-weather navigation system which provides positioning, velocity, and acceleration data for the aircraft. In addition, the EGI will replace the present inertial navigation unit. This will result in an $18M savings per year in maintenance costs upon completion of the installations. The A-10 EGI mod adds Global Positioning System (GPS) capability, a ring laser inertial navigation system and a data transfer cartridge.

Requirement

In addition to the increased navigational accuracy, an EGI-modified A-10 makes full use of the latest aircraft Operational Flight Program, and for the first time allows A-10 pilots to take advantage of the Portable Flight Planning System (PFPS) through the data transfer cartridge. (Modification Number MN-3150EG, Program Element 0207131F)

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $500 K.

A/OA-10 PRC 112 Survival Radio Training Package

Background and Description

Designed to withstand the most extreme missions, the AN/PRC-112 is the tri-service replacement for the AN/PRC-90 series. Providing dual communications functions, the AN/PRC-112 serves as a transponder, supplies ranging and personnel identification information, and performs beacon and air-to-ground voice support. The replacement AN/PRC-112 is one of the only transceivers that provides voice and covert transponder identification -- as well as navigational aid for:

- Precise location of downed air crews
- Tracking combat patrols
- Locating forward controllers
- All-weather approach to assault zones, landing zones or drop zones
- Air-to-ground communications link

The PRC 112B/C (Hook 112-type) survival radio offers potential survivors and rescue forces many advantages over previous technology and has become the standard for ONW and OSW. 10AF units with a commitment to ONW and OSW must train with these radios prior to deployment to ensure full advantage is taken of system capabilities. Current lack of radios limits training required by current instructions and represents a possible compromise of mission performance due to lack of training continuity.

Requirement

This requirement is for a training package of 30 PRC-112B/C survival radios for 10th Air Force fighter, rescue and special operations units. The PRC-112B (sometimes referred to as the Hook 112) has become the standard survival radio in Operations Northern and Southern Watch (ONW and OSW). These radios offer a great increase in capability over PRC-90 and early PRC-112 radios. Among the capability of these radios is an internal Global Positioning System (GPS) receiver and the ability to communicate with rescue forces by secure data burst transmission. While more capable, these radios are more demanding to operate.

To complicate the training problem, the radios are in short supply, which forces units to borrow training assets on a just-in-time basis prior to deployment. 10th Air Force units with an AEF commitment to ONW or OSW need full-time access to the same type 112 radio that is in operation in ONW and OSW to conduct year-round continuation training as required by Air Force life support instructions.

Funding

This program in NGREA funded. Projected cost for AFRC aircraft is $330 K.

A/OA-10 Avionics to EW Bus Connection

Background and Description

This program is for AFRC A/OA-10 aircraft modified with the ALQ-213 Countermeasures Management System to install a connection between the aircraft electronic warfare (EW) bus and the aircraft avionics bus. All AFRC A/OA-10 aircraft have received the ALQ-213 modification. Air National Guard (ANG) A/OA-10 aircraft are currently undergoing this modification. Active Duty A/OA-10 aircraft are scheduled to receive this modification in the next few years. The ALQ-213 provides a significant increase in EW capability for the A/OA-10 by combining Radar Warning Receiver (RWR), Chaff and Flare dispensing, and Electronic Countermeasures Pod (ECM) into one suite controlled by modern processors. The ALQ-213 offers the capability of semi-automatic and automatic dispensing of chaff and flare and ECM programs. However, in the A/OA-10 this feature is not functional due to the lack of a tie between the EW and avionics buses. The threshold for this requirement is a monitor-only connection that allows the ALQ-213 to receive aircraft position, attitude, altitude, and Global Positioning System (GPS) time. The objective would be to provide connections for a future full receive/transmit capability that would require a separate software modification that is beyond the scope of this requirement but would avoid the additional cost of reopening the aircraft when the software is available. The monitor-only bus connection would allow the ALQ-213

to operate in the semi-automatic and automatic modes. The full receive/transmit connection would allow future capabilities such as threat position on the aircraft Tactical Awareness Display (TAD).

This modification is a wiring change that involves adding standard bus couplers under the aircraft floor and in one console. The Air Force Reserve/Air National Guard Test Center (AATC) currently has an AF Form 1067 in coordination for a test modification of this EW/avionics bus connection as part of an ACC approved project order.

Requirement

This modification allows the installed ALQ-213 Countermeasures Management System to communicate over the EW and avionics bus and thereby allowing the system to operate in a semi-automatic mode and provide connectivity for future growth to the ALQ-213 fully automatic modes. This increase in capability reduces pilot workload and provides increased self protection in high threat environments. Requirement CAF Operational Requirements Document, CAF 401-91-I/II/III-D for A/OA-10 Aircraft, 19 October 1999

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $600 K.

AN/ARS-6 Light Weight Aerial Recovery System (LARS)

Background and Description

This modification is part of an ACC CSAR improvement to the HC-130 and A/OA-10 fleet. This capability is used when the A/OA-10 is operating in support of a CSAR mission. LARS equips the aircraft with a personnel locator system (PLS) that is compatible with AN/PRC-112 aircrew member's survival radio. A/OA-10s without LARS do not have the capability/equipment to interrogate a survivor's PRC-112 or PRQ-7 for obtaining a range and bearing to his/her location. Consequently, the pilot must rely primarily on visual acquisition of a survivor and/or location aid devices (mirror, smoke, flare, sea dye marker, etc.) or verbal direction from other aircraft.

Procures and installs 24 sets of group A and 12 Sets of group B. LARS Group A kits will be installed on 72 ANG and 24 AFRC jets. Twelve sets each of Group B components will be procured for both ANG and AFRC. Installs will be accomplished by contract field teams at Bradley and Barksdale AFB respectively in conjunction with CMS (ANG) and EGI (AFRC) installs when possible. At this point, three EGI equipped jets are scheduled to receive LARS as a stand-alone installation.

Requirement

The A/OA-10 Operational Requirements Document (ORD) requires the aircraft to provide close air support to Combat Search and Rescue Operations. LARS permits the A/OA-10 to conduct preliminary standoff location, identification, and authentication of survivors by electronic means. Otherwise, the aircraft will continue to rely on visual methods for locating survivors and risk hostile fire and aircraft attrition in the process. The ACC objective is to ensure that each A/OA-10 squadron has a 4-ship of LARS equipped aircraft for CSAR operations. The LARS system provides critical range and bearing data to PRC-112 equipped survivors for faster location and recovery of downed aircrew members

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $1.5 M.

FUTURE CAPABILITIES AND MODIFICATIONS

A/OA-10 Engine Replacement

Background and Description

The A/OA-10 has documented thrust deficiencies in its current operational environment. Loiter altitudes and attack profiles have migrated from low altitude to medium altitudes and this has caused commanders to reduce fuel loads and loiter times, limit take-offs to early morning times (cooler temperatures) or limit weapons loads. In addition, the older General Electric TF34-GE-100 turbofans have reached their life expectancy and are becoming increasingly

expensive to maintain. The later generation turbofans offer a greatly increased thrust to weight ratio as well as improved fuel economy and maintainability.

Requirement

CAF Operational Requirements Document, CAF 401-91-I/II/III-D for A/OA-10 Aircraft, 19 October 1999

This coordinated USAF/ANG/AFRC modification to the A-10 would ensure that the entire fleet is capable of performing any assigned mission. It is especially important to a tailored AEF where a smaller contingent of A/OA-10 is used and discrepancies among aircraft operational characteristics (e.g., loiter time, weapon configuration and fuel loads) would seriously impact the unit's efficiency.

Funding

This program is UNFUNDED. Costs are not projected at this time.

A/OA-10 External Fuel Tank – Fire Suppressant Foam Kits

Background and Description

The A/OA-10 needs to fly with external fuel tanks to allow for longer loiter time. The tanks today (without foam) are subject to catastrophic explosion if hit by enemy fire. Fire suppressant foam will decrease the explosion risk.

Requirement

The program adds fire suppressant foam to 33 external tanks.

Funding

This program is UNFUNDED. Projected cost is $180 K.

A/OA-10 Radar Altimeter

Background and Description

This program provides for non-recurring engineering required to qualify a form and fit replacement for the APN 224 radar altimeter.

Requirement

The project is pending further refinement of altimeter testing and certification requirements.

Funding

This program is UNFUNDED. Projected cost is $800 K.

A-10 Targeting Pod Integration

Background and Description

This program prepares the A-10 to accept future Litening AT pod installation. All current AFRC Litening pods will transition to the A-10 and B-52 fleet once the next-generation pod (Sniper XR) comes on line.

Requirement

The planned buy is for eight adapter cables and 52 group A wiring kits.

Funding

This program is UNFUNDED. Projected cost is $1.4 M.

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B-52 STRATOFORTRESS

Mission

Air Combat Command's B-52 is a long-range, heavy bomber that can perform a variety of missions. The bomber is capable of flying at high subsonic speeds at altitudes up to 50,000 feet (15,166.6 meters). It can carry nuclear or precision guided conventional ordnance with worldwide precision navigation capability. Nine B-52H aircraft are assigned to AFRC at Barksdale AFB, Louisiana. This Reserve unit is tasked to employ unguided gravity conventional munitions, Conventional Air Launched Cruise Missile, the precision GPS-guided Joint Direct Attack Munitions (JDAM) and the Wind Corrected Munitions Dispenser (WCMD).

Features

In a conventional conflict, the B-52 can perform strategic attack, air interdiction, offensive counter-air and maritime operations. During Desert Storm, B-52s delivered 40 percent of all the weapons dropped by coalition forces. It is highly effective when used for ocean surveillance, and can assist the U.S. Navy in anti-ship and mine-laying operations. Two B-52s, in two hours, can monitor 140,000 square miles (364,000 square kilometers) of ocean surface.

All B-52s are equipped with an electro-optical viewing system that uses platinum silicide forward-looking infrared and high resolution low-light-level television sensors to augment targeting, battle assessment, and flight safety, thus further improving its combat ability and low-level flight capability.

Pilots wear night vision goggles (NVGs) to enhance their vision during night operations. Night vision goggles provide greater safety during night operations by increasing the pilot's ability to visually clear terrain, avoid enemy radar and see other aircraft in a covert/lights-out environment.

Starting in 1989, on-going modifications incorporates the global positioning system, heavy stores adapter beams for carrying 2,000 pound munitions, and a full array of advance weapons currently under development.

Aerial refueling gives the B-52 a range limited only by crew endurance. It has an unrefueled combat range in excess of 8,800 miles (14,080 kilometers).

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment,

enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X			X	X

Modernization Overview

In the next five years, several major programs will be introduced to increase the capabilities of the aircraft. Included here are programs such as a Crash Survivable Flight Data Recorder and a Standard Flight Data Recorder, upgrades to the current Electro-Optical Viewing System, Chaff and Flare Improvements, and improvements to cockpit lighting and crew escape systems to allow use of Night Vision Goggles.

Enhancements to the AFRC B-52 fleet currently under consideration are:

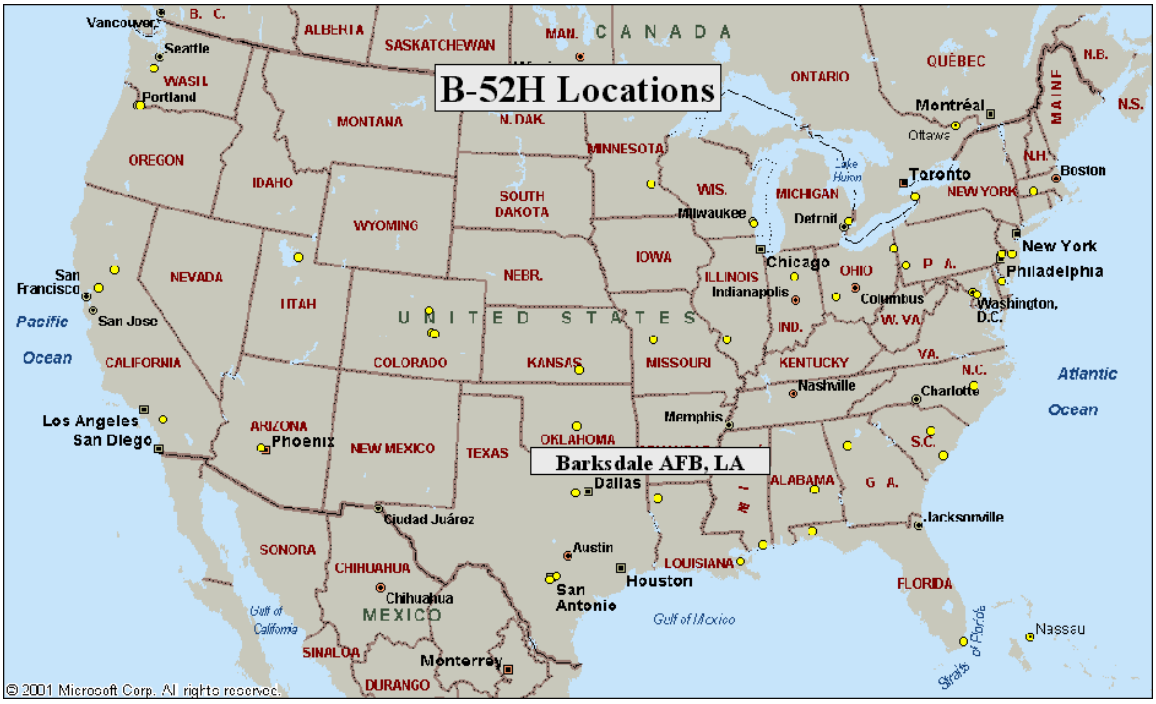
- Visual clearance of the target area in support of other conventional munitions employment
- Self-designation of targets, eliminating the current need for support aircraft to accomplish this role
- Target coordinate updates to JDAM and WCMD, improving accuracy; and
- Bomb Damage Assessment of targets.

In order to continue the viability of the B-52 well into the next decade, several improvements and modifications are necessary. Although the aircraft has been extensively modified since its entry into the fleet, the advent of precision guided munitions and the increased use of the B-52 in conventional and OOTW operation requires additional avionics modernization and changes to the weapons capabilities such as the Avionics Midlife Improvement, Conventional Enhancement Modification (CEM), and the Integrated Conventional Stores Management System (ICSMS). Changes in the threat environment are also driving modifications to the defensive suite including Situational Awareness Defense Improvement and the Electronic Counter Measures Improvement (ECMI).

The B-52 was originally designed to strike targets across the globe from launch in the CONUS. This capability is being repeatedly demonstrated, but the need for real time targeting information and immediate reaction to strike location changes is needed. Multiple modifications are addressing these needs. These integrated advanced communications systems will enhance the B-52 capability to launch and modify target locations while airborne. These include the Family of Advanced BLOS Terminals (FAB-T), CALCM Inflight BLOS Rapid Retasking, and the Joint Mission Planning System (JMPS). Other communications improvements are the Global Air Traffic Management (GATM) Phase 1, an improved ARC-210, the KY-100 Secure Voice, and a GPS-TACAN Replacement System (TRS).

As can be expected with an airframe of the age of the B-52, much must be done to enhance its reliability and replace older, less reliable or failing hardware. These include a Fuel Enrichment Valve Modification, Engine Oil System Package, and an Engine Accessories Upgrade, all to increase the longevity of the airframe.

Locations



Aircraft Units and Supporting Organizations

B-52 Stratofortress		
Operational Units		
917th Wing	Barksdale AFB, LA	
Air Force Support Organizations		
Oklahoma City Air Logistics Center	Program Office and Depot	Tinker AFB, OK
Supporting Contractors		
Boeing Military Airplane Co.	Prime Contractor	Wichita, KS
Pratt & Whitney	Engines	East Hartford, CT

Funding

B-52											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
Avionics Midlife Improvement											
51720F	$ -	$ 37.800	$ 37.987	$ 33.278	$ 46.878	$ 39.506	$ 36.793	$ 3.350	$ 0.850	$ -	$ 236.442
Situational Awareness Defensive Improvement											
51720F	$ -	$ 11.806	$ 28.887	$ 22.652	$ 36.700	$ 46.800	$ 23.900	$ 30.000	$ 29.500	$ 6.300	$ 236.545
Electronic Counter Measures Improvement (ECMI)											
51720F	$ -	$ -	$ -	$ -	$ 13.780	$ 49.950	$ 41.278	$ 14.845	$ 18.630	$ 1.230	$ 139.713
Family of Advanced BLOS Terminals (FAB-T)											
51720F	$ -	$ -	$ -	$ -	$ 17.600	$ 27.500	$ 43.200	$ 74.000	$ 111.500	$ 23.700	$ 297.500
CALCM Inflight BLOS Rapid Retasking (CIBR2)											
51720F	$ -	$ -	$ -	$ -	$ -	$ 30.754	$ 51.084	$ 69.103	$ 62.456	$ 16.775	$ 230.172
Global Air Traffic Management (GATM) Phase 1											
51720F	$ -	$ -	$ -	$ -	$ -	$ 13.220	$ 23.363	$ 26.427	$ 29.844	$ 37.467	$ 130.321
Joint Mission Planning System (JMPS)											
51720F	$ -	$ -	$ -	$ -	$ 3.500	$ -	$ -	$ -	$ -	$ -	$ 3.500
Engine Cold Start Improvements (FEV)											
51720F	$ -	$ -	$ -	$ -	$ 0.672	$ 0.626	$ 0.626	$ 0.635	$ 0.218	$ -	$ 2.777
Conventional Enhancement Modification (CEM)											
51720F	$ -	$ -	$ -	$ -	$ 8.880	$ 13.720	$ 9.310	$ 10.430	$ 4.220	$ -	$ 46.560
Integrated Conventional Stores Management System (ICSMS)											
51720F	$ -	$ -	$ -	$ -	$ -	$ -	$ 47.010	$ 76.730	$ 75.260	$ 64.360	$ 263.360
Advanced Weapon Integration Program (AWIP)											
51720F	$ -	$ -	$ 0.350	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.350
ARC-210											
51720F	$ -	$ 0.725	$ 0.520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.317
KY-100 Secure Voice											
51720F	$ -	$ -	$ 0.520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.520
GPS TACAN Replacement System (TRS)											
51720F	$ 6.946	$ 3.303	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10.249
MIL-STD 1760 in the Bomb Bay											
51720F	$ 1.009	$ 0.907	$ 0.350	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2.266
Link-16											
51720F	$ -	$ -	$ -	$ -	$ -	$ 50.300	$ 65.068	$ 85.261	$ 79.554	$ 47.663	$ 327.846
B-52H TF33-P-3/PW-103 Engine Oil System Package											
51720F	$ -	$ -	$ -	$ -	$ 0.750	$ 0.760	$ 0.800	$ 0.770	$ -	$ -	$ 3.080
B-52H TF33-P-3/PW-103 Engine Accessories Upgrade											
51720F	$ -	$ -	$ -	$ -	$ 0.570	$ 0.580	$ 0.620	$ 0.590	$ -	$ -	$ 2.360
MPS Grade											
51720F	$ -	$ -	$ -	$ -	$ 3.800	$ -	$ -	$ -	$ -	$ -	$ 3.800
WPT Modification											
51720F	$ -	$ -	$ -	$ 7.000	$ 13.000	$ 23.500	$ -	$ -	$ -	$ -	$ 43.500
Low Cost Modifications											
51720F	$ -	$ -	$ 0.175	$ -	$ 1.070	$ 1.100	$ 1.130	$ 1.150	$ -	$ -	$ 4.625
Low Mid Band Jammer (LMBJ)											
51720F	$ -	$ -	$ -	$ -	$ -	$ -	$ 46.292	$ 53.555	$ -	$ -	$ 99.847
Crash Survivable Flight Data Recorder (CSFDR)											
51720F	$ -	$ -	$ -	$ -	$ -	$ 15.823	$ 12.236	$ 12.084	$ 11.598	$ 3.600	$ 55.341
Electro-Optical Viewing System (EVS 3 in 1)											
51720F	$ -	$ -	$ 13.790		$ -	$ -	$ -	$ -	$ -	$ -	$ 13.790
GPS Replacement											
51720F	$ 2.045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2.045
TF33-P-3/PW-103 Engine Performance/Operability Package											
51720F	$ -	$ -	$ -	$ 4.600	$ -	$ -	$ -	$ -	$ -	$ -	$ 4.600

Schedule

B-52										
	Unfunded:		Partially Funded:				Fully Funded:			
Program	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09
Avionics Midlife Improvement										
Situational Awareness Defensive Improvement										
Electronic Counter Measures Improvement (ECMI)										
Family of Advanced BLOS Terminals (FAB-T)										
CALCM Inflight BLOS Rapid Retasking (CIBR2)										
Global Air Traffic Management (GATM) Phase 1										
Joint Mission Planning System (JMPS)										
Engine Cold Start Improvements (FEV)										
Conventional Enhancement Modification (CEM)										
Integrated Conventional Stores Management System (ICSMS)										
Advanced Weapon Integration Program (AWIP)										
ARC-210										
KY-100 Secure Voice										
GPS TACAN Replacement System (TRS)										
MIL-STD 1760 in the Bomb Bay										
Link-16										
B-52H TF33-P-3/PW-103 Engine Oil System Package										
B-52H TF33-P-3/PW-103 Engine Accessories Upgrade										
MPS Grade										
WPT Modification										
Low Cost Modifications										
Low Mid Band Jammer (LMBJ)										
Crash Survivable Flight Data Recorder (CSFDR)										
Standard Flight Data Recorder (SFDR)										
Electro-Optical Viewing System (EVS 3 in 1)										
Chaff and Flare Improvement										
GPS Replacement										
Fuel Temperature Monitoring System										
Airborne Video Tape Recorder Replacement (AVTR)										
NVG Ejection Seat Modification										
Night Vision Goggles (NVG) Lighting										
TF33-P-3/PW-103 Engine Performance/Operability Package										

PLANNED MODIFICATIONS

Avionics Midlife Improvement

Background and Description

The objective of the B-52H AMI modification program is to upgrade the B-52 Offensive Avionics System (OAS) and preserve current B-52 combat capability. AMI upgrades the OAS through the replacement of three major subsystems or Line Replaceable Units (LRUs); the Inertial Navigation System (INS), Avionics Control Unit (ACU), and Data Transfer System (DTS).

The heart of the B-52's precision navigation and current/future weapons capability is the SPN/GEANS INS developed in the 1970s. SPN/GEANS technology is obsolete, original vendors have vanished and on-hand spares will be depleted in FY05. New vendors to produce the SPN/GEANS INS are non-existent.

The ACU is the OAS central processing unit. It accepts, stores, executes, uploads, and downloads Flight Management Software (FMS) and Stores Management Overlays (SMO). The ACU is 1970's technology, utilizes a legacy software language, requires extensive power and has reached its capacity to integrate new/future avionics and weapons.

The DTS stores and transfers FMS and SMO mission information to and from the mission planning system (e.g., Air Force Mission Support System) and the OAS. Increased storage and transfer rates are required for the next generation mission planning system (e.g., Joint Mission Planning System), advanced weapon integration and real-time data link functions.

Requirement

Without a fully funded AMI program, B-52 aircraft availability will decrease beginning in FY05 (94 A/C fleet) and ACC will be unable to meet its B-52 wartime taskings beginning in FY06.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $27.9 M.

Situational Awareness Defensive Improvement (SADI)

Background and Description

SADI replaces the ALR-20 panoramic receiver system – the B-52's primary means of situational awareness (SA). The ALR-20 is becoming increasingly unsupportable due to parts obsolescence and diminishing manufacturing sources (DMS). Early warning, acquisition and threat radar signals are displayed on the receiver to provide B-52 crewmembers the SA necessary to employ evasive tactics and/or electronic attack (EA) options. The system is also required by maintenance personnel to trouble-shoot and repair other B-52 ECM systems.

SADI was originally an estimated $112M AFMC sustainment effort to maintain current capability and prevent eminent ALR-20 system failures due to vanishing vendors and increased failure rates. System Program Office analysis determined the most cost effective and preferred best-value option would be to replace the ALR-20 with a system level replacement (SADI) that also provides much needed improved situational awareness (SA) for crewmembers.

Due to the recognized critical mission need of SADI, OSD directed (via PDM-1) $111M for the program beginning with $12M in FY01. Congress further agreed to jump-start SADI with $8M in FY00. The FY03 APOM fully funded SADI through the FYDP.

Requirement

OSD PDM-1 (Aug 99) downward directed the mission need and initial funding for SADI. Additional support and funding came from Congress in the FY00 budget plus up. The program is late-to-need and an ALR-20 system service life extension program is required until SADI is fielded. Without continued full funding support for the SADI program, B-52's will suffer an unrecoverable loss of combat capability.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $27.9 M.

Electronic Counter Measures Improvement (ECMI)

Background and Description

Air Staff cut and restructured a fully funded ECMI program in 1998 as an offset for the FY00 POM. ECMI is an OSD/SAF special interest program. FY00 BES PDM-2 directed $6M in FY00 to complete EMD. FY01 PB directed a $9M Congressional plus-up for FY01 to begin program production.

The ALQ-172 provides the B-52 with mid-high frequency situational awareness (SA) and electronic attack (EA) capability. It is the aircrew's primary line of defense against enemy threats. The ALQ-172 has significant sustainment and operational limitations that are eroding the combat effectiveness of the B-52. ECMI upgrades the ALQ-172 and addresses the best value sustainment and modernization solution to overcome these mission limitations.

Requirement

The ALQ-172's enemy threat reprogramming capability is unsupportable because of limited processor memory and lack of manufacturing sources for the "chips" required for reprogramming. Critical OFP software and mission data updates required to counter enemy threats are no longer possible.

ECMI will allow for in-flight enemy threat reprogramming in 18 minutes vs. 27 hours for ground reprogramming

The ALQ-172 is the ECM suite's highest manpower, cost, and break-rate driver. Mean time between failures (MTBF) has decreased (bad) approximately 20% per year for the past eight years – current MTBF is 16.8 hours. The ITT Corporation through analysis concluded that ECMI will increase MTBF from 16.8 to 128, a 761 percent increase. In May 01, the results of the ECMI Force Development Exercise released a positive fielding recommendation

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $16.8 M.

Family of Advanced BLOS Terminals (FAB-T)

Background and Description

The Air Force has initiated the (FAB-T) Program to develop a family of EHF wideband terminals that will be installed on many different platforms and communicate over multiple satellite systems. The FAB-T Program will provide the communications media necessary to achieve information superiority through exploitation of the war fighting capabilities of airborne platforms. The FAB-T will provide the airborne terminal solution for both the "protected" and "wideband" MILSATCOM services required by war fighters.

Requirement

B-52 nuclear missions require dual path survivable connectivity with command authorities. The B-52 AN/ASC-19 UHF AFSATCOM terminal provides one path through an AFSATCOM (AFSAT IIR) satellite link. The B-52 VLF/LF AN/ARR-85 Miniature Receive Terminal (MRT) provides the second path. The current protected UHF SATCOM (AFSAT IIR) connectivity is decaying. No replacement for AFSAT IIR UHF connectivity is planned. The DoD space architect has directed that all future protected satellite based communications will be EHF. In order to maintain dual path survivable connectivity, the UHF AN/ASC-19 AFSATCOM Terminal on the B-52 will be replaced with an EHF FAB-T.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $36 M.

CALCM Inflight BLOS Rapid Retasking

Background and Description

The objectives of the CIBR2 program are to provide B-52 mission capability enhancements using Beyond Line of Sight (BLOS) communications, Conventional Air Launched Cruise Missile (CALCM) dynamic retargeting, and improved Situational Awareness.

Due to the range and duration of B-52 missions, Beyond Line Of Sight (BLOS) receive capability of mission files is required for dynamic CALCM retasking. The BLOS data transfer solution will be SATCOM Demand Assigned Multiple Access (DAMA) compliant.

CIBR2 will provide capability for crew initiated machine-to-machine interface of the received weapon files between the onboard data link system and B-52 avionics.

System will provide a color moving map display using B-52 AMI prime navigation model data and USAF standard mission planning software including charts and overlays (e.g. PFPS, CWDS, and JMPS).

Requirement

The genesis of CIBR2 is a Combat Mission Needs Statement (C-MNS) submitted by the 2d Air Expeditionary Group-Noble Anvil during Operation Allied Force. That CMNS identified a need for the ability to receive command and control data, such as data mission file documents with complete CALCM onboard retasking capabilities. The C-MNS also identified a need for improved situational awareness through a moving map display with the ability to receive and display threat updates. CONUS-to-CONUS and rear FOL to target employment operations pointed out the need for beyond-line-of-sight data and voice communications ability. Knowledgeable user representatives met with HQ ACC DRA52, the B-52 SPO, and Boeing and created a requirements document.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $27.3 M.

Global Air Traffic Management (GATM) Phase 1

Background and Description

GATM Phase I will provide FMI and replace 1950s Instrument Landing Systems (ILS) with up to date systems that provide necessary safety and growth potential to carry through the remaining four phases of the GATM project. These phases will use the spiral acquisition methodology. Future phases include the addition of the Digital Air Data System (DADS), Reduced Vertical Separation Minimum (RVSM), Required Navigation Performance (RNP-1), and data link capability. All requirements comply with the Capstone Requirements Document (CRD) Annex II. The B-52 SPO is awaiting the B-52 GATM Requirements Correlation Matrix (RCM) and a B-52 GATM Operational Requirements Document (ORD). Future phases should be broken into separate programs for funding purposes. B-52 aircraft face operational elimination from key areas of Europe without the implementation of FMI. The required implementation date for FMI was Jan 2001. European countries currently independently grant yearly waivers and these waivers are becoming increasing difficult to receive.

Requirement

Significant changes to air traffic control requirements for both oceanic and domestic airspace have already begun and will continue to affect Combat Air Forces (CAF) access to global air routes. GATM requirements are being placed on the Civilian and Military flight community world wide. Without continued full funding support for the B-52 GATM program, B-52 aircraft may experience safety of flight risks due to non-compliance with FM Immunity

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $15.75 M.

Joint Mission Planning System (JMPS)

Background and Description

The AFMSS program (PE 28006F) is an ACAT IAC DoD oversight program and consists of the Unix-based Mission Planning System (MPS), the PC-based Portable Flight Planning Software (PFPS), and the PC-based Joint Mission Planning System (JMPS), the planned next iteration in the Air Force Mission Support System (AFMSS) Program. It is intended to provide a flexible, tailor-able, scalable mission planning system on a Windows NT environment. The purpose of JMPS is to evolve world-class joint mission planning capabilities to support the war-fighter today and fulfill Joint Vision 2010. JMPS will comply with the Defense Information Infrastructure Core Operating Environment (DII COE) requirements. Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) requirements will be fulfilled. Joint Technical Architecture (JTA) will be realized in JMPS.

Requirement

Mission planning is critical to the warfighter. The requirements and necessity for effective and responsive mission planning is readily apparent and well accepted, as is the need to leverage 21st century information technology. Migration to JMPS is top down directed by CSAF. MPS hardware/software will be unsupportable past FY05 without upgrade.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $428 K.

Fuel Enrichment Valve Modification

Background and Description

TF-33 engines installed on B-52 aircraft experience starting difficulties in temperatures below 32°F using JP-8 fuel.

Minot AFB personnel must pre-heat engines during peacetime winter operations to ensure successful engine starts when temperatures drop below 32° Fahrenheit. A supply of JP-4 fuel is maintained at Minot for use during Emergency War Order Contingencies to ensure units are capable of meeting engine start timing requirements. Funding is required to install controls in the aircraft to operate fuel enrichment valves being installed on TF-33 P-3/103 engines as part of an engine reconfiguration. Funding has already been approved for the engine reconfiguration and will receive 13.4M in 3400 funds from FY02 through FY12.

Approved funding for the FEV is as of the FY03 APOM. Requires funding for a FY04 start.

The objective to the FEV modification is to improve cold starting reliability of TF-33 engines installed on B-52 aircraft. Engine starting reliability declined significantly as a result of the Air Force conversion from JP-4 fuel to JP-8 fuel. The FEV modification consists of a cockpit installed switch and wiring required to activate the fuel enrichment valve currently being installed on TF-33 P-3/103 engines as part of an engine reconfiguration. The valves are being reused from C-141 engines removed from retiring aircraft as they are recovered.

Requirement

OPLAN 8044 requires B-52 aircraft to meet specific engine start, taxi, and take-off timing to meet OPLAN objectives. OPLAN 8044 outlines Emergency War Order Contingency activities in support of national defense.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $340 K.

Conventional Enhancement Modification (CEM)

Background and Description

Modification program that integrates GPS, ICSMS, and a GPS based TACAN emulator, common pylon mod that permits ICSMS pylons to carry all gravity bombs and smart weapons and a software mod for the CALCM providing non-nuclear software load and the Weapon Pylon Tester.

Requirement

Expanding B-52 roles, such as close air support and conventional precision strikes, drive new munitions and accuracy requirements. Program consists of hardware enhancements to munitions carrying pylons and software to support those enhancements.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $5.6 M.

Integrated Conventional Stores Management System (ICSMS)

Background and Description

This modification provides an Integrated Conventional Stores Management System (ICSMS) using MIL-STD 1760 specifications. This system is integrated into the Offensive Avionics System (OAS) software and will enable the B-52H to carry, program, and launch new conventional weapons such as JDAM, WCMD, JSOW, and JASSM that are built to Military Standard 1760. Includes required funding to modify aircraft pylons to MIL-STD 1760 specifications.

Requirement

This provides MIL-STD 1760 bus capability to the B-52H and is required for JDAM, WCMD, JSOW, and JASSM.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $31.9 M.

Advanced Weapon Integration Program (AWIP)

Background and Description

Concurrent integration of four Mil Std 1760 weapons as a single program

Phase 1; JDAM, WCMD

Phase 2; JSOW, JASSM

Requirement

Facilitates and integrates under one program MIL-STD 1760 bus capability to the B-52H. Required for JDAM, WCMD, JSOW, and JASSM

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $ 84.2 M.

ARC-210

Background and Description

The ARC-210 Radio is designed to provide multi-mode voice communications in either normal or jam-resistant modes through software reconfiguration. It improves flexibility and interoperability with other services and provides UHF, VHF, VOICE SATCOM, MARITIME and HAVE QUICK capability. The system is capable of establishing two way communication links over the 30-400 MHz frequency range within tactical aircraft environments. Demand Assigned Multiple Access (DAMA) allows the capacity of a fixed number of satellite channels to be "multiplied" thereby expanding available resources to support increasing user requirements. It provides a method for multiple users to share a single satellite communication channel. DAMA channels are partitioned into time slots, each of which can accommodate communications at various data rates.

Requirement

AN/ARC-210 Multi-mode Integrated System has been optimized to accommodate advanced anti-jam waveforms with the application of specialized software. Functions that are accommodated in hardware can be reconfigured through software modifications. It is adaptable to future requirements without hardware modifications. DAMA

multiplexes users on a single channel and by providing a method for assigning channel access "on demand"; DAMA increases the communications capacity on a satellite channel well beyond that of the single use channel assignment method commonly.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $4 M.

KY-100 Secure Voice

Background and Description

Digital replacement of KY-58 for Secure Voice Wide Band encryption used in Line of Sight UHF and NON DAMA SATCOM, the KY-100 Advanced Narrowband Digital Voice Terminal (ANDVT) Provides narrowband encryption which is required for Demand Assigned Multiple Access operations.

Requirement

DAMA capable radios are to be incorporated to meet GATM requirements and provide a replacement for non compliant systems.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $ 459 K.

GPS TACAN Replacement System (TRS)

Background and Description

Top down requirement. The GPS TRS includes the installation of controls and displays at the pilot and copilot stations and installation of a Signal Data Converter (SDC) to interface with the current TACAN system. TRS incorporates the redesign of the GPS Interface Unit (IU) eliminating obsolescence due to obsolete parts. The new IU will provide TACAN emulation, AGM-142 capability, and is an open architecture design to support the current efforts of the Advanced Weapons Integration Program.

Requirement

This complies with Congressional GPS 2000 language and replaces the unsupportable Interface Unit currently in the field. New Interface Unit is of an open architecture design.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $5.72 M.

MIL-STD 1760 in the Bomb Bay

Background and Description

The Integrated Conventional Stores Management System (ICSMS) is the incorporation of Mil-Std-1760 on the B-52H. ICSMS provides an electrical, physical and logical interface that allows the B-52 to carry, launch, and jettison Mil-Std-1760 weapons. Current integration is external carriage only. This upgrade will complete provisions available for integrated internal carriage capability of Mil-Std-1760 weapons (i.e. JDAM, WCMD, JSOW, and JASSM). The effort requires design, fabrication and testing of Group A and avionics (Group B) and new Conventional Rotary Launchers (CRL). Use of a CRL could be a no scars to the aircraft modification by building from twelve to sixty new launchers. A new launcher shaft would be compatible with additional CRL's for the B-2 program. The cabling, LRUs and software for B-2 would be unique.

There is a contractor proposal to satisfy a transformational need by the Rumsfield panel headed by General James McCarthy for more kills per sortie. This upgrade increases the precision strike capability of the B-52 by eight to sixteen additional 1760 weapons depending on weapon size.

Weapon Type	Increase in Weapons	Total Bomb Load

WCMD	16	24
JDAM	8	20
JSOW	8	20
JASSAM	8	20
2000 –3000 lb class weapons	8	20
5000 lb class weapons	8 (goal)	8
Small Diameter Bomb	32	72

- Flexibility to carry 8 JASSM to 16 WCMD internally with clean wing covertly with extended range from 4817 NM to 5479 NM.
- Expands existing provisions in hardware and software into the bomb bay.
- Modifies existing carriage equipment to support reduced cost and schedule (Demo).
- Utilizing the ICSMS standardized interface will significantly reduce aircraft software development costs normally incurred when integrating a new weapon to a platform
- Concept promotes non-homogeneous load outs.

Requirement

Modification would allow additional aircraft to deploy and use Mil Std 1760 weapons. Currently they would be assigned sorties using NON-1760 weapons. This modifies existing carriage equipment to support reduced cost and schedule. Using the ICSMS standardized interface will significantly reduce aircraft software development costs normally incurred when integrating a new weapon to a platform and eliminate unique configuration of pylons.

Unless declared a non-nuclear device START treaties may impact use of this area. Program could be scoped to limit carriage to JASSM and build a minimum number of launchers for AEF use only (12). Dependencies: Requires CALCM's, if carried on the new launcher, to be a 1760 compliant weapon and provides the opportunity to address DMS issues for pylon LRUs.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $84.2 M.

Link-16

Background and Description

B-52 Link-16 integrates a JTIDS digital radio with the B-52's avionics and display subsystem to provide the crew with situational awareness and command data via a theater radio frequency data link. This data link allows the B-52 to use digital technology to interactively participate with C4I and all similarly equipped theater forces in the accomplishment of theater objectives. Targets, mission data, hostile and friendly force data will all be available to the aircrew to assist them in carrying out their tasking.

This modification will install the MIDS LVT for data reception and transmission and interface it with the B-52 avionics for data processing and preparation. Addition of this capability requires the upgrading of the existing Avionics Control Unit (aircraft computers) to provide processing resources for the message handling capability. Additionally, the existing monochrome monitors will be replaced with new color monitors to enable rapid data discernment by the crew. The integration provides a data interface from the OFP to Link 16 and the ability to display in-theater situational awareness. Integration with Defense Systems or other subsystems would be a follow on effort. This function requires an update to the AFMSS to load the Network Design Load on to the aircraft data cartridge.

Requirement

Provides the ability to monitor the air and ground tracks of both friendly and hostile forces. Provides potential threat data to the crew as it becomes available from in theater sources. Vehicle status and mission data can be shared between friendly aircraft and ground/surface forces. Digital and photo mission data can be provided to the aircrew

as the theater scenario changes. Link 16 will be a requirement to participate in an integrated air/air-ground/air-surface campaign.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $69.75 M.

MPS Grade

Background and Description

This modification will upgrade the current MPS V Operating System (OS) and associated Aircraft/Weapons/Electronics (AWEs). The OS manufacturer no longer supports the current OS version. Migration to the Joint Mission Planning System (JMPS) will not begin until FY08.

Requirement

The current MPS V OS is unsupportable and requires modernization until B-52s migrate to JMPS. W/O funding, mission planning time will increase as B-52s transition to advanced weapons.

Funding

This will be an ACC funded fleet modification beginning in FY 04. Projected cost for AFRC aircraft is $ 459 K.

WPT Modification

Background and Description

This program will procure modified Off- Aircraft Pylon Testers (OAPT) with WPT functionality. The WPT is necessary to maintain both nuclear and conventional weapon certification on the B-52. The OAPT is a sub-program of the Conventional Enhancement Modification program.

Requirement

Failure to fund WPT replacement will result in the inability of the B-52 to perform both its nuclear and conventional role as a result of an inability to properly pretest weapons beginning in FY03.

Funding

This program is funded by ACC and includes AFRC aircraft. Projected cost for AFRC aircraft is $5.28 M.

B-52H TF33-P-3/PW-103 Engine Oil System Package

Background and Description

The P-3/PW-103 engine continues to fall short of its reliability goals, abort rate, and maintenance tempo targets. Oil leaks and oil migration are currently in the top 10 leading causes of UERs and maintenance drivers in the P-3/PW-103 fleet.

The Engine Oil System Package provides for a significant improvement in the reliability of the P-3/PW-103 engine by providing new more durable bearing compartment seals (task F-57) and a new oil pump design (task G-70).

Requirement

This is a high priority and high payback modification for the P-3/PW-103 Engine Model. Incorporation of this improvement will provide the following benefits:

- Improved Sortie Rate
- Reduced Maintenance Man-Hours
- Improved Mission Capability
- Savings $1.02M

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $ 693 K.

B-52H TF33-P-3/PW-103 Engine Accessories Upgrade

Background and Description

The P-3/PW-103 engine continues to fall short of its reliability goals, abort rate, and unscheduled engine removal (UER) targets. Fuel flow shifts and anti-ice valve failures delay missions and cost the fleet numerous maintenance man-hours.

The Engine Accessories Upgrade provides for a significant improvement in the reliability of the P-3/PW-103 engine by providing a new actuator (task H-167) and new fuel control bellows arrangements (task 168).

Requirement

This is a high priority and high payback modification for the P-3/PW-103 Engine Model. Incorporation of this improvement will provide the following benefits:

- Improved Mission Capability
- Improved Sortie Rate
- Reduced Maintenance Man-Hours
- Reduced In-Flight Shutdowns
- Saving $5.6M

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $ 558 K.

B-52H TF33-P-3/PW-103 Engine Performance/Operability Package

Background and Description

The P-3/PW-103 engine continues to fall short of its reliability goals, abort rate, cruise effectiveness, and unscheduled engine removal (UER) targets. Cracked inlet cases, damaged compressor stator vanes, and stalls are currently in the top 10 leading causes of UERs in the P-3/PW-103 fleet.

The Engine Performance/Operability Package provides for a significant improvement in the reliability of the P-3/PW-103 engine by providing 80% durability improvement to the inlet case and 20% stall margin improvement, along with other reliability improvements. This modification introduces a new cast inlet case for all P-3/PW-103 engines and spares (reference task A-357). The modification also introduces compressor abradables and improved clearances in the turbine for stall reduction with a modified air seal package for all engines, (reference tasks A-359 and C-135).

Requirement

This is a high priority and high payback modification for the P-3/PW-103 Engine Model. Incorporation of this improvement will reduce stalls and improve fuel burn 2% on the P-3/PW-103 and will provide the following benefits:

- 2% Fuel Savings
- Reduced Maintenance Man-Hours
- Improved Sortie Rate/Mission Capability
- Increased Engine Stall Margin
- Savings $143.8M

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $34.2 M.

Low Cost Modifications

Background and Description

This program funds low cost aircraft modifications, all less than $900K, which are necessary for reliability, maintainability, improved system performance, and reduced logistics costs. This program will also support procurement of Static Wicks, Covert Lighting and Format 5 modifications on B-52 aircraft.

Requirement

Without funding, B-52 aircraft will not be able to modify the fleet with vital low cost modifications. These programs will dramatically improve situational awareness and cockpit communications.

Funding

This program is funded by ACC and includes 9 AFRC aircraft. Projected cost for AFRC aircraft is $531 K.

FUTURE CAPABILITIES AND MODIFICATIONS

Low Mid Band Jammer (LMBJ)

Background and Description

The ALQ-155 Countermeasures Set provides the B-52 with protection from a myriad of Low/Mid Band threat radars. The AN/ALQ-155(V) system is capable of providing various types of RF power output, covering a wide frequency range, by using interchangeable transmitter groups. Each transmitter group has a specific frequency range and power output designated as a band. The ALQ-155 has not kept pace with potential threats. The ALQ-155 system utilizes 1950's and 1960's technology, requires 10 individual transmitting systems comprised of some 25 major LRU'S plus ancillary equipment, 12 antennas, exhibits decreasing MTBF for critical components, and is rapidly becoming unsupportable due to vanishing availability of key subcomponents.

Requirement

The ALQ-155 is becoming unsupportable. The Backward Wave Oscillators (BWO) are the primary drivers for ALQ-155 mortality. This system will be unsupportable because of lack of a source of acquisition or repair for the Backward Wave Oscillators for the system. BWOs are no longer manufactured and all repair capabilities were discontinued in the late 1980s. Several attempts in the past to reestablish a manufacturing or repair capability have failed. All Band 10S BWO inventory will be exhausted in FY08 with Bands 12 and 9S BWOs running out in FY09. This will affect the aircraft's ability to defend itself against a wide variety of potential defensive systems the will negatively affect the combat capability of the aircraft. Combat capability will be impacted beginning in FY08 as supportability of the BWOs continues to worsen

Funding

This program is currently UNFUNDED. Projected cost for AFRC aircraft is $12.1 M

Crash Survivable Flight Data Recorder (CSFDR)

Background and Description

The Crash Survivable Flight Data Recorder supports mishap investigations. The Air Force must be capable of expediently determining the causes of mishaps, anticipating equipment failure and detecting faulty operational procedures that would result in mishaps.

Requirement

Former SECAF signed AF Policy Directive (AFPD) 63-14 (Tab 1), dated 7 Dec 00, which mandates in paragraph 2.3: "Air Force mishap investigative information gathering equipment SHALL BE MISSION ESSENTIAL. Actual combat deployments will be the only exception to this policy. Many investigations are inconclusive due to lack of evidence to support mishap scenarios. This allows insidious conditions to persist and cause future mishaps. Those aircraft with crash survivable data recorders have demonstrated more conclusive investigations than those without recorders. This allows the board to spend less time determining what occurred and more time determining why a mishap occurred.

Funding

This program is currently UNFUNDED. Projected cost for AFRC aircraft is $5.3 M.

Standard Flight Data Recorder (SFDR)

Background and Description

Actual flight loads data are required to determine the structural life of the aircraft. Hardware was developed by ASC for a common family of equipment for use in all USAF aircraft. Currently, prototype Standard Flight Data Recorder (SFDR) systems are installed on two B-52H aircraft. The SFDR obtains an expanded number of parameters necessary to define the actual stress spectra for critical areas and provides improved reliability. These data identify significant changes in aircraft usage and provide the basis to update the Durability and Damage Tolerance Analysis. This analysis predicts the structural life of the airplane.

Production versions of the SFDR need to be installed on at least five B-52H aircraft to provide the necessary data sampling to represent the fleet usage.

Requirement

The SFDR provides expanded recording capability and improved reliability. The SFDR system will collect Loads/Environment Spectra Survey data, in accordance with the Air Force Aircraft Structural Integrity Program (ASIP) required to accurately predict the structural life of the B-52H. The system would provide reliable loads and usage data to support the Individual Aircraft Tracking Program (IATP) required by MIL-STD-1530A. The SFDR would allow more parameters to be collected per sortie than the current system

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

Electro-Optical Viewing System (EVS 3 in 1)

Background and Description

The EVS system provides the B-52 crew a real-time means to observe the environment outside the aircraft in any weather or lighting condition. Low MTBF and poor performance have already led to the replacement of both the Steerable TV (STV) and Forward Looking Infrared (FLIR) sensors with modern technology, highly reliable units. In addition to the system sensors, the current EVS system employs three other LRUs: Symbol Signal Generator (SSG), Servo Control Unit (SCU), and Video Distribution Unit (VDU). These three LRUs currently have a combined MTBF of 65 hours and present a significant impediment to mission success. The Air Force has developed a single LRU, the Signal Data Converter (SDC) that performs all the functions of the three current LRUs. The SDC utilizes modern technology and the estimated MTBF is 4400 hours. The modification consists of removing the three existing system LRUs and replacing them with the single SDC. The EVS 3:1 Program has a $7.6 million funding shortfall. This shortfall is due to correction of design funding and under-scoped requirements. In addition, the FY01 Omnibus took 1.2 million.

Requirement

Reliability of the overall system should increase from a combined MTBF of 65 hours to approximately 4400 hours, saving maintenance dollars and manpower and reduces internal LRU circuit cards from 75 to 10. Modification can be performed by a field team and uses existing aircraft mounts.

Funding

This program is currently UNFUNDED. Projected cost for AFRC aircraft is $3.4 M.

Chaff and Flare Improvement

Background and Description

The current B-52H Flare System consists of the original 1960's technology AN/ALE-20 dispensers with the AN/ALA-17B Flare. The system is unique to the B-52 and has a single location provided for all dispensers and a limited number of operator selected dispensing programs available. Automated dispensing must use one of these preset programs. AN/ALE-20 Chaff dispensers can provide area protection chaff dispensing but are not as optimized or as flexible as newer systems for self protection. Newer flare systems use multiple dispenser units each allowing a mix of various types of expendables (chaff, flares, active and others) under software control. Various

expendable trajectories can be obtained by the selection of dispenser locations and mounting provisions. The processor accepts inputs from Missile Warning Sensors to automate and optimize the expendable dispensing for missile defense. A large number of expendable types have been developed and are available with the economies provided by multiple platform usage. A configuration and effectiveness study would determine effective dispenser locations. The modification would delete currently used AN/ALE-20 system and add new flare dispensers, processor and controller, and a new 360 degree missile warning sensors and computer. The modification also integrates the AN/ALQ-153 Missile Warning Sensor into a total system concept.

Requirement

Significant improvement in survivability compared to the current single aircraft manual chaff and flare system in use today. Ability to deal with current and future threats by providing optimized detection of missiles and dispensing of countermeasures decoys. Improve logistics supportability by using common expendables.

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

GPS Replacement

Background and Description

Complies with CJCSI 6140.01 NAVSTAR GPS Selective Availability Anti-Spoofing Module Requirements, November 15, 1998 and DJSM-656-00 NAVSTAR Global Positioning System Selective Availability Anti-Spoofing Module Requirements, July 31, 2000. It provides a new GPS receiver of an open architecture design to accept the future M-Code requirement.

Phase 2 of GPS integration provides improved Anti-Jam SAASM Capability and installs an open architecture GPS receiver easily upgradeable to M-Code.

Phase 3 of GPS will implement "M-Code"

Requirement

Replace aging non-GATM compliant system.

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

Fuel Temperature Monitoring System

Background and Description

In 1994, the Air Force changed its operating fuel from JP-4 to JP-8. JP-8 has a higher (warmer) fuel freeze point. Without a fuel temperature monitoring system, the B-52 crews must use indicated outside air temperature to estimate fuel temperature. This manual method wastes crew time when they could be dealing with weapon delivery. This measurement is extremely conservative and forces aircrews to restrict altitude and airspeed, leading to degraded mission effectiveness. This modification uses off the shelf parts currently used on the KC-135R to monitor temperature in critical fuel tanks.

Requirement

Eliminate the need for the crew to calculate for potential freezing since the gauge would allow a direct reading resulting in fewer restrictions on flying through cold air masses and enhancing mission effectiveness.

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

Airborne Video Tape Recorder Replacement (AVTR)

Background and Description

This modification program upgrades the B-52 fleet's current AVTR (Airborne Video Tape Recorder) system with Commercial Off-the-Shelf TEAC triple deck systems. This upgrade will increase video recording capabilities from a single 20 minute 3/4 inch tape to 3 two-hour 8mm videotapes reducing the amount of tape the crew currently has to handle and manage during an operational flight. The play back capabilities will also be greatly increased by eliminating the current unique 3/4 inch playback machines with commercial 8mm video playback equipment. The TEAC triple deck system is currently flight qualified and is being used on various flight test programs. Will allow the aircrew to record mission events using the TEAC triple deck 8mm video and allow them to be displayed later after a mission on commercial video playback equipment. It would provide commonality with equipment used in tests making it easier to use a non dedicated aircraft to complete testing activities.

Requirement

This modification eliminates the low MTBF, low fidelity, low capacity, B-52 unique recorder and uses a proven COTS replacement. Greatly increases mission debrief capability for training.

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

NVG Ejection Seat Modification

Background and Description

This would change the ejection system for the pilot and co-pilot to insure that the weight of the NVS will not impact a crewmember if the ejection sequence is initiated.

Requirement

This modification would allow aircrew members to initiate an ejection sequence with out removing NVG.

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

Night Vision Goggles (NVG) Lighting

Background and Description

General Loh signed a Mission Need Statement in April 1994 requiring all ACC aircraft be modified for Night Vision Goggle (NVG) operation. The use of NVG with compatible cockpit lighting enhances aircrew situational awareness during night operations particularly for formation and low level flying. The B-52 cockpit lighting was designed before NVGs were developed and is not compatible with the use of NVGs. Currently the aircrew masks the existing cockpit lights, including such items as the master caution warning light, and use CYALUME light sticks when operating with NVGs. The light sticks are taped in strategic places prior to commencing NVG use. The current method of masking lights and temporarily installing light sticks creates an added workload for the crew and compromises safety by hiding warning lights. This project would put area lighting that is NVG compatible in place for the aircraft commander and pilot, and make certain instruments NVG compatible.

Requirement

Eliminate use of expendable light sticks to fly NVG sorties and increase crew safety during NVG operation. Standardizes crew procedures.

Funding

This program is currently UNFUNDED. Funding is not projected at this time.

MC-130E COMBAT TALON

The MC-130E Combat Talon's primary mission is infiltration and exfiltration of people and equipment in or out of a combat zone. Its secondary mission is aerial helicopter refueling. The MC-130E has a deep penetrating helicopter refueling role during special operations missions.

The MC-130E Combat Talon I and MC-130H Combat Talon II aircraft have similar primary missions. They can also fly very low level missions at night in adverse weather with air crews using night-vision goggles to deeply penetrate hostile territory. The Combat Talon I is an older, analog airplane that requires a crew of 9. It is also equipped with helicopter aerial refueling capability. The newer Talon II features a glass cockpit, fully integrated avionics, and only requires a crew of 7. The Talon II helicopter refueling capability modification is underway.

Nine of the MC-130E's were equipped with surface-to-air Fulton air recovery system, a safe, rapid method of recovering personnel or equipment from either land or water. It involves use of a large, helium-filled balloon used to raise a 450-foot (136.5 meters) nylon lift line. The MC-130E flies towards the lift line at 150 miles per hour (240 kilometers per hour), snags it with scissors-like arms located on the aircraft nose and the person or equipment is lifted off, experiencing less shock than that caused by a parachute opening. Aircrew members then use a hydraulic winch to pull the person or equipment aboard through the open rear cargo door. By 1996 the 8th SOS was the only unit in the world that maintained crew proficiency in the use of the Fulton recovery system, and had been prepared to launch if called upon since the late 1960's. A fatal accident in 1982, the only fatality in 17 years of live pick-ups, damaged the credibility of the personnel pick-up system within the special operations community. That, along with the increased availability of long-range, air-refuelable MH-53J Pave Low and MH-47E Chinook helicopters, and tightening budgets, caused AFSOC to deactivate the capability in September 1996.

Throughout the war in Southeast Asia, Air Commando MC-130E Combat Talons in Vietnam would fly alone and unescorted to drop leaflets to the enemy, insert special teams deep into North Vietnam or conduct resupply missions. The missions were so secret that crews flying the Operation STRAY GOOSE mission were immediately separated from conventional crews when they arrived in Vietnam at their forward operating bases. The Combat Talon was also used in the attempted rescue of Americans held at the Son Tay prisoner-of-war camp.

Combat Talons landed in the Iranian desert in April 1980 in support of Operation EAGLE CLAW, the attempt to rescue American hostages held by Iran. The mission was aborted after a disastrous ground collision between a helicopter and Talon destroyed both aircraft and killed several special operators.

From late December 1989 to early January 1990, 23 AF participated in the re-establishment of democracy in the Republic of Panama during Operation JUST CAUSE. Special operations aircraft included active and Reserve AC-130 Spectre gunships, EC-130 Volant Solo psychological operations aircraft from the ANG, HC-130P/N Combat Shadow tankers, MC-130E Combat Talons, and MH-53J Pave Low and MH-60G Pave Hawk helicopters.

During DESERT STORM, the MC-130E Combat Talon I played a vital role. One third of all airdrops in the first three weeks of the war were performed by MC-130s. Its primary role was psychological operations, as it air-dropped 11 BLU-82/B general purpose bombs and flew multiple missions, air-dropping and dispersing leaflets. Its secondary role was combat search and rescue. Following the Persian Gulf War, MC-130s flew extensively in support of Operation PROVIDE COMFORT.

As part of Commando Vision, which started in 1994, the 919th Special Operations Wing of Air Force Reserve Command (AFRC) at Duke Field, Florida, retired its AC-130A gunships and gained MC-130P Combat Shadows, flown by the newly stood-up 5 SOS, and MC-130E Combat Talons, flown by the 711 SOS. Throughout FY95 they converted from AC-130A Gunships to MC-130E Combat Talons with the last AC-130A Gunship retired 1 October 1995. Their mission changed from close air support, armed reconnaissance, and armed interdiction to Air Refueling and Special Operations Support.

On 05 February 2000 the 8th Special Operations Squadron and 716th Maintenance Squadron transferred 26 miles from Hurlburt Field, Fla., to Duke Field to serve with Air Force Reserve Command's 919th Special Operations Wing. This created the Air Force's only active associate unit. The active duty also transferred six MC-130E Combat Talon I aircraft to the Reserve, adding them to the eight MC-130Es already owned by the 919th and flown by the 711th SOS.

The MC-130E Combat Talon I is proudly being flown today by combined active duty and Reserve crews in the war against terrorism.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X		X	X	X

Modernization Overview

In 2006, AFRC and AFSOC will face a significant decision point on whether on not to retire the Talon I. This largely depends on the determination of the upcoming SOF Tanker Requirement Study. Additionally, the MC-130H Talon II aircraft will be modified to air refuel helicopters. The Air Force CV-22 is being developed to replace the entire MH-53J Pave Low fleet, and the MC-130E Combat Talon l. The CV-22 program has been plagued with problems and delays and has an uncertain future. Ultimately, supply/demand will impact willingness and ability to pay for costly upgrades along with unforeseeable expenses required to sustain an aging weapons system.

Locations

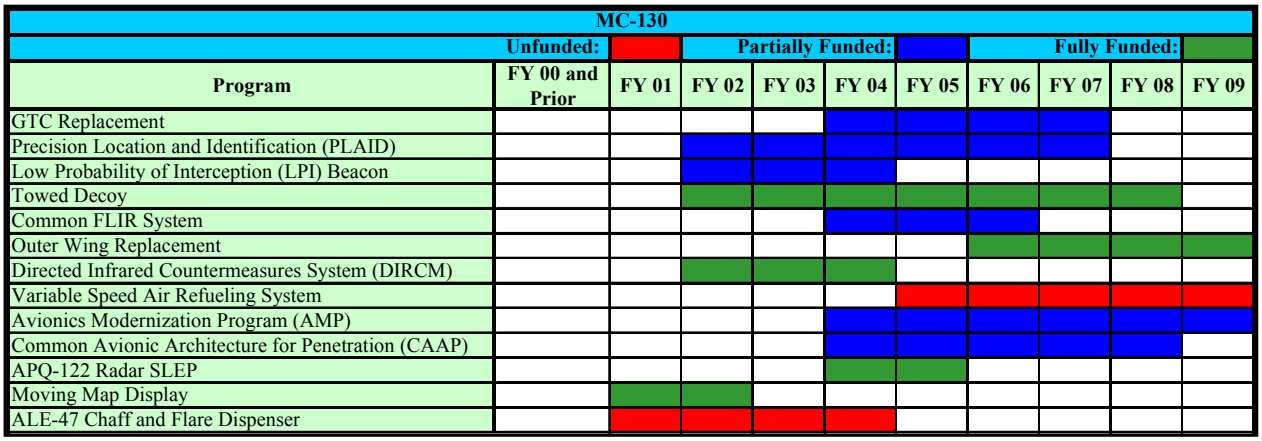
Aircraft Units and Supporting Organizations

MC-130 Combat Talon		
Operational Units		
919th Special Ops Wing	Duke Field, FL	
Air Force Support Organizations		
Aeronautical Systems Center	Program Office	Wright-Patterson AFB, OH
Robins Air Logistics Center	Depot Repair and Supply	Robins AFB, GA
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Marietta, GA
Allison (Rolls Royce)	Engines	Indianapolis, IN
Boeing Military Aircraft Company	Avionics Modernization	St. Louis, MO

Funding

MC-130											
Program Element	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	TOTAL
GTC Replacement											
44011F	$ -	$ -	$ -	$ -	$ 7.125	$ 7.125	$ 7.125	$ 7.125	$ -	$ -	$ 28.500
Precision Location and Identification (PLAID)											
44011F	$ -	$ -	$ 1.800	$ 10.100	$ 10.245	$ 10.867	$ 11.441	$ 11.772	$ -	$ -	$ 56.225
Low Probability of Interception (LPI) Beacon											
44011F	$ -	$ -	$ 3.400	$ 2.230	$ 2.230	$ -	$ -	$ -	$ -	$ -	$ 7.860
Towed Decoy											
44011F	$ -	$ -	$ 9.000	$ 29.500	$ 29.400	$ 68.900	$ 66.500	$ 2.250	$ 0.850	$ -	$ 206.400
Common FLIR System											
44011F	$ -	$ -	$ -	$ -	$ 27.400	$ 27.400	$ 27.400	$ -	$ -	$ -	$ 82.200
Outer Wing Replacement											
44011F	$ -	$ -	$ -	$ -	$ -	$ -	$ 19.430	$ 19.430	$ 19.430	$ 19.430	$ 77.720
Directed Infrared Countermeasures System (DIRCM)											
44011F	$ -	$ -	$ 12.200	$ 12.200	$ 12.200	$ 24.660	$ -	$ -	$ -	$ -	$ 61.260
Variable Speed Air Refueling System											
44011F	$ -	$ -	$ 12.200	$ 12.200	$ 12.200	$ 24.660	$ -	$ -	$ -	$ -	$ 61.260
Common Avionic Architecture for Penetration (CAAP)											
44011F	$ -	$ -	$ -	$ -	$ 12.200	$ 22.430	$ 45.440	$ 45.440	$ 45.440	$ -	$ 170.950
APQ-122 Radar SLEP											
44011F	$ -	$ -	$ -	$ -	$ 2.150	$ 2.150	$ -	$ -	$ -	$ -	$ 4.300
Moving Map Display											
44011F	$ -	$ 0.700	$ 0.800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.500
ALE-47 Chaff and Flare Dispenser											
44011F	$ -	$ 1.300	$ 2.500	$ 4.600	$ 2.100	$ -	$ -	$ -	$ -	$ -	$ 10.500

Schedule



PLANNED MODIFICATIONS

GTC Replacement

Background and Description

This program replaces all Gas Turbine Compressors (GTC) in the AFSOC C-130 fleet with newer Auxiliary Power Units (APU). The $28.5M multi-platform program is fully funded and scheduled for 04-06.

Requirement

To provide a modern, more efficient source of engine start and auxiliary power.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $13.3 M.

Precision Location and Identification (PLAID)

Background and Description

The baseline AN/ALR 69 (V) radar warning receiver (RWR) is a common EW system that provides threat warning for the O/A-10A, F-16 A/B/C/D, C-130E/H, MC-130E/H, AC-130E/H, HC-130P/N, and EC-130E weapon systems. These aircraft are employed worldwide in high, medium, and low altitude tactical situations. The RWR must accurately display the radio frequency (RF) threat environment to which these aircraft are exposed in performing various air-to-air, air-to-ground, and reconnaissance missions. The ALR-69 system utilizes early 1970s technology, and was initially installed on US Air Force aircraft in 1978. AFSOC is leading the way in PLAID development. Current plans are to install PLAID upgrades on the Talon I before proceeding to other weapon systems. Efforts are underway to locate a suitable C-130 test platform since the Talon I fleet is unavailable due to real world taskings.

Requirement

Sophistication and complexity of threat weapon systems has grown beyond the current capabilities of the baseline ALR-69. Aircrews do not have reliable threat warning and situational awareness with the baseline system. The upgrade will take advantage of Precision Location and Identification (PLAID) technology developed by Air Force Research Laboratory (AFRL) in the 1990s. The upgrade will provide extended detection ranges, ambiguity reduction, and reduced response times in dense electromagnetic environments. The upgrade requirements are derived from operational requirements provided in CAF ORD 304-80-I/II/III/-B dated 19 Oct 00. The ORD was drafted by AFSOC and signed by ACC, AFRC, and ANG.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $25.2 M.

Low Probability of Interception (LPI) Beacon

Background and Description

This modification provides aircraft position indication to ground forces and other aircraft while providing a low electromagnetic signature to enemy broad band receivers, reducing the probability of intercept by unfriendly forces.

Requirement

Covert penetrations require accurate positioning of friendly forces, but also need to deny enemy forces the same information. This beacon capability significantly reduces the aircraft potential for unwanted identification.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $378 K.

Towed Decoy

Background and Description

This multi-platform program provides electronic warfare capability from a fiber optic device towed behind the aircraft. The program is fully funded and under development. Efforts are underway to find a suitable C-130 to serve as test platform (SOF C-130s are unavailable due to current world situation).

Requirement

Man launched anti-aircraft missiles are prevalent throughout the world. These small weapons can be defeated through decoy devices. This modification increases the probability of success during such an engagement.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $25.2 M.

Common FLIR System

Background and Description

This $82.3M multi-platform program will upgrade SOF aircraft with a common Forward Looking Infra Red (FLIR) system. Installations are planned for 2004-2006.

Requirement

This modification improves the overall Forward Looking Infra Red capability while providing a common device across the fleet. This increases reliability of the subsystem and reduces overall maintenance and support costs through common parts and LRUs.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is 37.8 M.

Outer Wing Replacement

Background and Description

Since the Talon I fleet will continue to fly past 2006, the outer wings will need replacement due to age and stress. Outer wing replacements will occur at the aircraft's next schedule periodic depot maintenance (PDM) interval.

Requirement

Continued use of the Combat Talon I aircraft requires this modification.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Total anticipated modification cost is $83.2 M.

Directed Infrared Countermeasures System (DIRCM)

Background and Description

DIRCM is a multi-platform project designed to enhance survivability in the IR environment. The system is now being tested on Talon I aircraft, but progress has slowed dues to technical difficulties and lack of aircraft availability. An additional laser capability for DIRCM was recently funded. Installations are scheduled to begin in 03, but will most likely shift to the right.

Requirement

This increases penetration capability and survivability in infrared threat environments.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $28 M.

Variable Speed Air Refueling System

Background and Description

This multi-platform modification installs new helicopter air refueling pods, allowing SOF C-130s to refuel the faster CV-22 as well as standard helicopters. The active duty Talon II is currently testing this mod.

Requirement

Since the Talon I service life will be extended, this aircraft will also receive new refueling pods.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $59 M.

Avionics Modernization Program (AMP)

Background and Description

This program is designed to upgrade and standardize avionics on the Air Force fleet of C-130s. It will improve navigation safety, global access, reliability and sustainability, avionics design, and training while lowering total ownership costs. The first Talon I will depart for modification in Summer 02.

Requirement

This modification is a C-130 fleet wide improvement that increases reliability and lowers both personnel and maintenance costs. The Combat Talon I is now slated to receive this modification.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $18.5 M.

Common Avionic Architecture for Penetration (CAAP)

Background and Description

CAAP is a multi-platform, SOF-only upgrade that will be accomplished in conjunction with AMP. It will improve terrain following/terrain avoidance (TF/TA) flight capabilities while incorporating low probability of interception (LPI)/low probability of detection (LPD) features. It will also provide enhanced situational awareness (ESA). Specifically, it will receive, filter and present intelligence broadcast data; detect emitting and non-emitting hostile radars beyond line of sight (BLOS); correlate and fuse all threat data sources; automatically generate new routes in less than 5 seconds; and alert the aircrew if enemy forces have detected them. CAAP also has an embedded EW training feature. A cable warning and obstacle avoidance feature is desired but not currently funded. This modification will happen in conjunction with AMP.

Requirement

Extending the service life will necessitate the Talon I to maintain commonality to the Combat Talon II and interoperability with other SOF forces.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $11.5 M.

APQ-122 Radar SLEP

Background and Description

This $4.3M funded program will extend the life of the APQ-122 radar. Installs are planned in 2004-2005.

Requirement

The current APQ-122 radar will become unsupportable due to obsolete parts in the near future. It can be extended through planned replacement of critical parts.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $4.3 M.

Moving Map Display

Background and Description

This modification provides connections from a laptop computer to aircraft systems to provide a moving map display. The project should be completed by Jul 02.

Requirement

This modification increases overall situational awareness and effectiveness for the aircrews by providing an easily readable and concise moving map.

Funding

This program is USSOCOM funded and includes 14 AFRC aircraft. Projected cost for AFRC aircraft is $700 K.

FUTURE CAPABILITIES AND MODIFICATIONS

ALE-47 Chaff and Flare Dispenser

Background and Description

This is an AFSOC C-130 fleet upgrade to the current ALE-40 Chaff and Flare Dispensers System to the AN/ALE-47 Countermeasures Dispensing System. The ALE-47 is a programmable threat adaptive, dispensing system designed to enhance aircraft survivability in an IR/RF threat environment.

Requirement

USSCOM theaters are becoming increasingly hostile due to more advanced weaponry. This modification increases survivability in these high threat IR/RF environments.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $4.9 M.

HC-130P/N SEARCH AND RESCUE

Mission

The HC-130P/N is an extended-range, combat search and rescue version of the C-130 Hercules transport. Its mission is to extend the range of combat search and rescue helicopters by providing air refueling.

Secondary mission capabilities include performing tactical airdrops of pararescue specialist teams, small bundles, zodiac watercraft, or four-wheel drive all-terrain vehicles, providing direct assistance to a survivor in advance of the arrival of a recovery vehicle. Other capabilities are extended visual and electronic searches over land or water, tactical airborne radar approaches and unimproved airfield operations. A team of three pararescue specialists, trained in emergency trauma medicine, harsh environment survival and assisted evasion techniques, are part of the basic mission crew complement.

Features

Combat Air Forces HC-130 aircraft are undergoing extensive modifications. When modifications are complete in fiscal 2003, all aircraft will feature improved navigation, communications, radar, NVIS compatible lighting, threat detection and countermeasures systems.

Ongoing modifications for the HC-130 include an integrated global positioning system navigation package, radar and missile warning receivers, chaff and flare dispensers, airborne integrated satellite communications radios and cockpit armor. Selected aircraft are in the process of being equipped with night vision goggle-compatible interior and exterior lighting, a personnel locator system compatible with aircrew survival radios, an improved digital low-power color radar and forward-looking infrared systems.

The HC-130 can fly in the day against a reduced threat; however, crews normally fly night, low-level, air refueling and airdrop operations using night vision goggles (NVG). It can fly low-level NVG tactical flight profiles to avoid detection. To enhance the probability of mission success and survivability near populated areas, crews employ tactics that include incorporating no external lighting or communications, and avoiding radar and weapons detection.

In addition, Air Combat Command is exploring the potential acquisition of the HC-130J model. HC-130 avionics are slated for complete update through Air Mobility Command's Aviation Modernization Program.

The HC-130P/N is the only dedicated fixed-wing combat search and rescue platform in the Air Force inventory. The 71st Rescue Squadron in Air Combat Command, the 102nd RQS, 129th RQS and 210th RQS in the Air National Guard, and the 39th RQS and 303rd RQS in the Air Force Reserve Command operate the aircraft.

First flown in 1964, the aircraft has served many roles and missions. The aircraft was initially modified to conduct search and rescue missions, provide a command and control platform, in-flight-refuel helicopters and carry supplemental fuel for extending range or air refueling.

HC-130s have been in Air Combat Command since 1992. Previously, they were assigned to the Air Rescue Service as part of Military Airlift Command. They have been deployed to Saudi Arabia, Kuwait, Turkey and Italy since 1993 in support of operations Southern and Northern Watch and Allied Force. HC-130s also support continuous alert commitments in Alaska, Japan and Iceland, and provide rescue coverage for space shuttle operations in Florida.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X		X	X	

Modernization Overview

Over the next five years, there will be primarily sustainability modifications to the weapons systems to allow it to maintain compatibility with the remainder of the C-130 fleet. In order to maintain currency with the active duty fleet, AFRC will accelerate the installation of the APN-241 as a replacement for the APN-59. Additionally, AFRC will receive two aircraft modified from the 'E' configuration to the Search and Rescue configuration. All AFRC assets will be upgraded to provide Night Vision Imaging System (NVIS) mission capability for C-130 combat rescue aircraft.

Locations

Aircraft Units and Supporting Organizations

HC-130 P/N Search and Rescue		
Operational Units		
920th Rescue Wing	Patrick AFB, FL	
939th Rescue Wing	Portland IAP, OR	
Air Force Support Organizations		
Aeronautical Systems Center	Program Office	Wright-Patterson AFB, OH
Robins Air Logistics Center	Depot Repair and Supply	Robins AFB, GA
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Marietta, GA
Allison (Rolls Royce)	Engines	Indianapolis, IN
Boeing Military Aircraft Company	Avionics Modernization	St. Louis, MO

Funding

HC-130											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
Night Vision Imaging System											
44102F	$ 3.250	$ 0.750	$ 0.500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4.500
HC-130 Armor											
44102F	$ 0.561	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.561
HC-130 Radar Replacement											
44102F	$ 5.627	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5.627

Schedule

HC-130										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
Night Vision Imaging System										
HC-130 Armor										
HC-130 Radar Replacement										

PLANNED MODIFICATIONS

Night Vision Imaging System

Background and Description

This program provides a less expensive modification kit for Night Vision Imaging System (NVIS) mission capability for C-130 combat rescue aircraft. The kit costs and installation costs vary due to differences in the types of kits and the various aircraft into which they will be installed. Several aircraft already have portions of the kits installed and do not require a full up installation.

Requirement

The mission of the HC-130P/N is to operate as an aerial tanker and search/rescue support aircraft. ACC Mission Need Statement (MNS), Night Vision Compatible Aircraft Lighting (CAF 309-93), states that the USAF plans to equip night-capable counter air, bomber, theater support and Close Air Support/Air Interdiction (CAS/AI) aircraft with night vision goggles (NVG)." Current lack of NVG compatible lighting renders combat search and rescue aircraft incapable of meeting user demands to safely operate at night in the tactical environment.

Funding

This modification is funded by NGREA. Projected cost for AFRC aircraft is $4.5 M.

C-130 Armor

Background and Description

This is light weight "removable" Kevlar/ceramic aircrew armor blankets for the HC-130. This program will provide group A for all HC-130s and a total of two sets of group B per 5 PAA unit. Some group A replacement is required as armor is moved from aircraft to aircraft with minimal group B recurring cost. This will also standardize equipment among active duty, special operations, and Reserve C-130's.

Requirement

HC-130 Aircraft must conduct CSAR operations and associated refueling at low altitudes and slow airspeeds in a small arms/AAA threat environment and it provides minimum protection of aircrew and critical flight systems. Armor is a prerequisite to meet CINCs in theater requirements. Lightweight armor enhances mobility by minimizing aircraft preparation time due to ease of installation.

Funding

This program is funded by NGREA. Projected cost for AFRC aircraft is $560 K.

HC-130 Radar Replacement

Background and Description

This replaces the current APN-59 radar system on AFRC assets with the ACC-standard APN-241. The current radar does not meet mission reliability, maintainability, and supportability requirements and the cost to maintain current system is becoming prohibitive.

Requirement

HQ AMC is working a program to replace the APN-59 radar on the entire C-130 fleet with a new generation, low power, color radar. The HC-130 fleet is not scheduled to get this new radar until at least FY06, but HQ ACC is currently planning to replace the APN-59 with the APN-241 on their fleet of HC-130's stationed at Moody AFB GA.

Funding

Lead command plans do not currently include the AFRC HC 130's. This program is fully funded through NGREA. Projected cost for AFRC aircraft is $5.63 M.

HH-60G PAVE HAWK SEARCH AND RESCUE

Mission

The primary mission of the HH-60G Pave Hawk helicopter is to conduct day or night operations into hostile environments to recover downed aircrew or other isolated personnel during war. Because of its versatility, the HH-60G is also tasked to perform military operations other than war. These tasks include civil search and rescue, emergency aeromedical evacuation (MEDEVAC), disaster relief, international aid, counterdrug activities and NASA space shuttle support.

Features

The Pave Hawk is a highly modified version of the Army Black Hawk helicopter which features an upgraded communications and navigation suite that includes an integrated inertial navigation/global positioning/Doppler navigation systems, satellite communications, secure voice, and Have Quick communications.

All HH-60Gs have an automatic flight control system, night vision goggles lighting and forward looking infrared system that greatly enhances night low-level operations. Additionally, Pave Hawks have color weather radar and an engine/rotor blade anti-ice system that gives the HH-60G an all-weather capability.

Pave Hawk mission equipment includes a retractable in-flight refueling probe, internal auxiliary fuel tanks, two crew-served 7.62mm machineguns and an 8,000-pound (3,600 kilograms) capacity cargo hook. To improve air transportability and shipboard operations, all HH-60G's have folding rotor blades.

Pave Hawk combat enhancements include a radar warning receiver, infrared jammer and a flare/chaff countermeasure dispensing system.

HH-60G rescue equipment includes a hoist capable of lifting a 600 pound load (270 kilograms) load from a hover height of 200 feet (60.7 meters), and a personnel locating system that is compatible with the PRC-112 survival radio and provides range and bearing information to a survivor's location.

A limited number of Pave Hawks are equipped with an over-the-horizon tactical data receiver that is capable of receiving near real-time mission update information.

The Pave Hawk is a twin-engine medium-lift helicopter operated by Air Combat Command, Pacific Air Forces, Air Education and Training Command, Air National Guard and Air Force Reserve Command.

During Operation Desert Storm, Pave Hawks provided combat search and rescue coverage for coalition Air Forces in western Iraq, Saudi Arabia, coastal Kuwait and the Persian Gulf. They also provided emergency evacuation coverage for U.S. Navy sea, air, and land (SEAL) teams penetrating the Kuwaiti coast before the invasion.

During Operation Allied Force, the Pave Hawk provided continuous combat search and rescue coverage for NATO air forces, and successfully recovered two Air Force pilots who were isolated behind enemy lines.

In March 2000, three Pave Hawks deployed to Mozambique, Africa, to support international flood relief operations. The HH-60s flew 240 missions in 17 days and delivered more than 160 tons of humanitarian relief supplies.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X		X		X

Modernization Overview

CSAR Mission Area modernization strategy currently focuses on resolving critical CSAR weapon system capability shortfalls and deficiencies that pertain to the Combat Air Force's Combat Identification, Data Links, Night / All-Weather Capability, Threat Countermeasures, Sustainability, Expeditionary Operations, and Pararescue modernization focus. Since the CAF's CSAR forces have several critical capability shortfalls that impact their ability to effectively accomplish their primary mission tasks today, most CSAR modernization programs/initiatives are concentrated in the near-term (FY00-06). These are programs that:

- Improve CSAR forces' capability to pinpoint location and authenticate identity of downed aircrew members/isolated personnel
- Provide CSAR forces with line-of-sight and over-the-horizon high speed LPI/D data link capabilities for improving battle space/situational awareness
- Improve CSAR C2 capability to rapidly respond to "isolating" incidents and efficiently/effectively task limited CSAR capable assets
- Improve CSAR forces' capability to conduct rescue/recovery operations at night, in other low illumination conditions, and in all but the most severe weather conditions
- Provide CSAR forces with warning and countermeasure capabilities against RF/IR/EO/DE threats
- Enhance availability, reliability, maintainability, and sustainability of CSAR aircraft weapon systems

Locations

Aircraft Units and Supporting Organizations

HH-60 Pave Hawk		
Operational Units		
920th Rescue Wing	Patrick AFB, FL	
939th Rescue Wing	Portland IAP, OR	
305th Rescue Squadron	Davis Monthan AFB, AZ	
Air Force Support Organizations		
Robins Air Logistics Center	Program Office	Robins AFB, GA
Corpus Christi Army Depot	Depot Repair and Supply	Corpus Christi, TX
Supporting Contractors		
Sikorsky Aircraft Company	Prime Contractor	Fort Worth, TX
General Electric	Engines	Cincinnati, OH
Rockwell Collins	Avionics	Cedar Rapids, IA
Engineering Development Lab.	Software Integration	Dayton, OH

Funding

HH-60											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
CDU Upgrade											
44102F	$ -	$ 1.637	$ 0.863	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Upgraded Communication, Navigation/Integrated EW											
44102F	$ 14.900	$ 11.238	$ 14.598	$ 26.840	$ 28.051	$ 32.230	$ 19.387	$ 5.187	$ -	$ -	$ -
Flight Engineer/Gunner Seat											
44102F	$ -	$ 1.200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.200
Service Life Extension Program (SLEP)											
44102F	$ -	$ 3.318	$ 3.630	$ 7.773	$ 3.885	$ -	$ -	$ -	$ -	$ -	$ -
Light Weight Airborne Recovery System (LARS) Installation											
44102F	$ 0.130	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.130

Schedule

HH-60										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
CDU Upgrade										
Upgraded Communication, Navigation/Integrated EW										
Flight Engineer/Gunner Seat										
Service Life Extension Program (SLEP)										
Light Weight Airborne Recovery System (LARS) Installation										

PLANNED MODIFICATIONS

CDU Upgrade

Background and Description

This is a Form/Fit/Function replacement for the existing il86CU on the current HH-60G fleet (minus those already equipped with i486 CDUs). Modification will replace the CDUs on 97 aircraft and two simulators as well as modify the spares to the upgraded configuration. This modification will replace the current CDU processor with a new i486 processor. These modifications will be a field level installation, and no software changes are required.

Requirement

The current CDUs are task-saturated and have no growth capability. This upgrade will improve the reliability of the system

Funding

This modification is funded by ACC and includes AFRC aircraft. Projected cost for AFRC aircraft is $ 580.8 K.

Upgraded Communication, Navigation/Integrated Electronic Warfare (Block 152)

Background and Description

The HH-60G Pave Hawk helicopter block 152 upgrade, formally known as Upgraded Communication, Navigation/Integrated Electronic Warfare, is the most significant upgrade to date for the Pave Hawk. The upgrade is designed to enhance the aircraft's performance in locating and retrieving downed pilots from hostile territory. New features include an enhanced communication and navigation system and an electronic warfare suite that dispenses countermeasures to thwart missile and radar threats. It increases the aircraft's capabilities in the threat environment and, by integrating all of the radios, it reduces workload in the cockpit so the aircrews can concentrate on flying the aircraft. All of the communications and navigation information on the new aircraft is available on a single control display unit.

As another defensive measure, the new Pave Hawks will come equipped with electronic countermeasures that detect enemy radar and missile threats. The aircraft is designed to dispense flare and chaff automatically when these threats are detected. These flare-and-chaff buckets, never operationally certified before on any combat search-and-rescue helicopter, can operate in an automatic, semiautomatic or manual mode.

This modifies the HH-60G with upgraded communications, navigation, and electronic warfare systems. This modification has been restructured to increase quantities of higher priority, low risk components in the near term and/or delete lower priority or problem components. Funds for the Self-Protection System (SPS) portion of the modification have been transferred to a separate modification program begun in FY99. Block A will install SATCOM with or immediately following the SPS upgrades. Block B will install a floppy disk Data Transfer System, Group A wiring for HAVE CSAR, RS0232 ports and a Night Vision Goggle Heads Up Display. Block C will remount the gun externally, add NVG cockpit lighting, and install a frequency selective Radar Warning Receiver. This restructure enables the UCN/IEW modification to be completed on the entire fleet of HH-60Gs.

Requirement

As the electronic threat increases, the workload on the aircrew multiplies. This modification consolidates the multiple defensive systems of the HH-60, as well as combines the communications/navigation systems into a single control unit. These improvements drastically reduce pilot workload and distractions, increasing the overall safety and effectiveness of the mission.

Funding

This modification is funded by ACC and includes AFRC aircraft. Projected cost for AFRC aircraft is $ 24.5 M.

Flight Engineer/Gunner Seat

Background and Description

Current HH-60G Flight Engineer/Gunners seat configurations do not provide adequate back support for the extended periods which are flown on normal rescue profiles. Extended exposure to the crew seats has resulted in undue back problems of unit Flight Engineers. Not only is the seat configuration, but also the cramped conditions and body position caused by the seat placement unsatisfactory. An improved cabin-seating configuration would solve the medical concerns as well as allow primary crewmembers the comfort and flexibility to perform at peak levels. A prototype seat has been developed and is undergoing final testing after implementing changes requested by AFRC. AFRC trial installation should begin in late March 2002.

Requirement

The current HH-60G Flight Engineer and Gunner seats are not ergonomically designed for long missions. This modification will equip fifteen AFRC HH-60G aircraft at Davis-Monthan and Patrick AFBs with an ergonomic and crashworthy seat.

Funding

The program is funded by NGREA. Projected cost for AFRC aircraft is $1.2 M.

Service Life Extension Program (SLEP)

Background and Description

This provides SLEP design for the entire fleet and funding to modify the 10 oldest/highest flight hour HH-60G "Pave Hawk" CSAR aircraft (1981 & 1982 models). This program will increase service life for applicable HH-60G aircraft to 20,000 hours. Affected aircraft will have an additional six to nine years of service life. Program is planned to begin in FY02 and is complete in FY04.

Requirement

The older existing aircraft are reaching the end of their serviceable life. Without replacement aircraft, the overall capability of the combat rescue fleet is reduced and potentially unable to fulfill the planned roles. Failure to implement SLEP may necessitate grounding or specific flight limitations for affected aircraft until SLEP is implemented.

Funding

This is an ACC funded program and includes AFRC aircraft. Projected cost for AFRC aircraft is $3.9 M.

Light Weight Airborne Recovery System (LARS) Installation

Background and Description

Acquires LARS TCTO group A kit and group A installation contract for aircraft 90-26228. Aircraft 90-26228 crashed in 1992 and was sent to Corpus Christi Army Depot for rebuild, aircraft returned to service in 1999 without the LARS TCTO installed. With the procurement of the group A wiring harness and installation contract the aircraft will have capability to have the group B assets installed.

Requirement

All HH-60G aircraft, except 90-26228, are equipped LARS as a piece of mission essential equipment. Without LARS installed the aircraft is not capable of full spectrum training or combat deployment.

Funding

This program is NGREA funded. Project cost $130 K.

FUTURE CAPABILITIES AND MODIFICATIONS

Situational Awareness Data Link (SADL)

Background and Description

Proposed for all 105 HH-60G aircraft, Situation Awareness Data Link (SADL) integrates Air Force aircraft with Army and Marine Corps ground units using the Enhanced Position Location and Reporting System (EPLRS) data-link network. SADL radios are identical to the EPLRS version except for modified software that allows SADL to create independent air-to-air data-link communities. All the SADL communication is accomplished over secure channels, leaving the aircraft voice radios free for flight coordination and priority communication. When SADL-equipped aircraft fly within range of an EPLRS ground community, the SADL air-to-air network can be synchronized with the ground force Net Control Station (NCS), making the aircraft full-fledged members of the digitized battlefield. The aircraft's SADL radios share fighter-to-fighter data with each other while recording friendly ground positions transmitted from the NCS. At the beginning of an air-to-ground attack, pilots use a switch on the control stick to request a view of the five friendly EPLRS positions closest to their intended target on both the head-up and multifunction aircraft displays.

Requirement

The program will procure 15 kits AFRC aircraft.

Funding

This program is UNFUNDED. Projected cost $900,000.

Extended Range Fuel System (ERFS)

Background and Description

Proposed for 15 AFRC HH-60G aircraft, the EFRS is a Robertson 200 gallon (194 usable) crashworthy, self-sealing fuel tank to replace dual 185-gallon (173 gallon usable per tank) non-crashworthy, self-sealing auxiliary fuel cells for contingency and combat operations. Single cell is the same height and width as the dual 185 cells, but 17 inches thinner. Single cell plumbing is compatible with dual 185 configuration.

Requirement

The program purchases 15 fuel tanks for AFRC helicopters.

Funding

This program is UNFUNDED. Projected cost $2.10 M.

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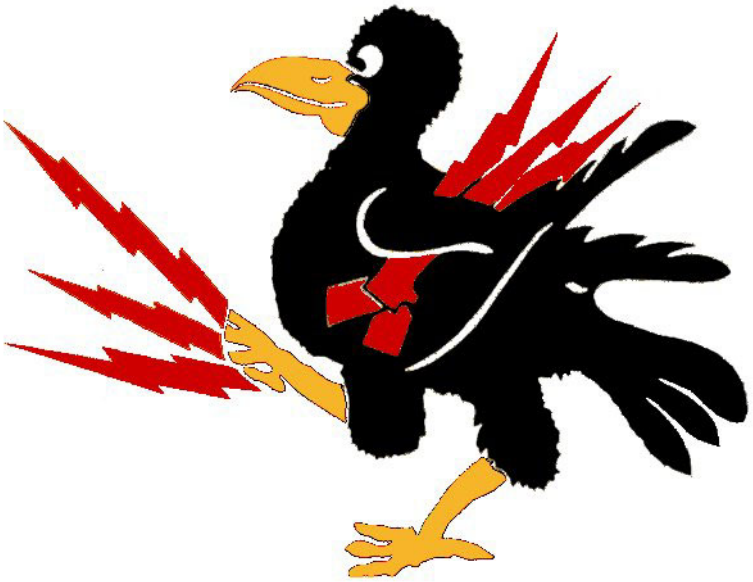
ELECTRONIC WARFARE SYSTEMS



Today, electronic warfare has risen to one of the top priorities in air superiority. From the early days of aluminum strips tossed out of B-17s to confuse German radar in World War II, the purpose of electronic warfare has remained much the same: deny the enemy the information to locate, identify, and attack airborne forces. The elements of electronic deception and denial of accurate information have increased in complexity as computational resources have increased the accuracy and lethality of anti-aircraft weapons. AFRC has embarked on an electronic warfare modernization program that increases the survivability of all its forces. This section summarizes the various Electronic Warfare activities that are being performed in support of AFRC Force Modernization efforts.

Detailed funding and schedule information for these programs can be found in the specific weapons systems sections of this document.

PLANNED MODIFICATIONS

ALR-69 Antenna Optimization Program

Background and Description

Another limitation is the need for an accurate radar-warning receiver (ALR-69) for high threat survivability. The current receiver does not provide accurate warning to the pilot of impending danger from either existing or projected threats. The ALR-69 Antenna Optimization Program relocates aircraft mounted antennas and eliminates some cabling that decreases RF signal strength. This results in an overall system improvement that eliminates the documented deficiency.

Requirement

Current antenna placement decreases pilot warning and reaction time to both current and projected threats. This has been documented as a system deficiency requiring aircraft modification to correct.

Funding

This program is NGREA funded. Program cost for AFRC aircraft is expected to be $2.94 M.

F-16 Pylon Integrated Dispensing System (PIDS) Universal

Background and Description

The ARC must have both increased infrared missile countermeasures and precision weapons on their F-16s. In 1994 and 1995 the ARC purchased 310 F-16 PIDS for increased countermeasures on F-16 C/D Block 25/30s. Now PIDS requires Mil-Std-1760 precision weapons capability. In support of this requirement, the F-16 program office is beginning a development program with the F-16 European Participating Nations (Belgium, Norway, Netherlands and Denmark), called the PIDS Universal, to integrate Mil-Std-1760 capability into PIDS. The PIDS Universal configuration will also include some growth provisions for adding a missile warning system in the future. ACC recognizes the need for this upgrade but has not identified the resources to carry fund this effort.

Requirement

Mil-Std 1760 is the current standard for a common electrical and digital interface between weapons and the aircraft. As newer or improved weapons are developed and deployed, it is imperative that the F-16 be capable of employing these weapons.

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $2.97 M.

AN/ALQ-131 1553 Interface Upgrade

Background and Description

The 1553 data bus modification allows the ALQ-131 EW pod to “talk” to the ALQ-213 controller and vice versa. This upgrade fully integrates the ALQ-131 with all other EW and avionics subsystems. The program is 3-phase, and only Phase 1 (produce, test, install TCTO kits and support equipment) is planned for. Phases 2 and 3 upgrade the hardware and software respectively. These phases are presently conceptual only; however, they must be accomplished in order to reap full benefits of this program.

Requirement

ALQ-131 capability must be upgraded to reduce risk under current threat situations. This is an AFRC-only program, producing 48 kits with 7 spares. The plan to complete (fund) Phases 2 and 3 is under study.

Funding

This program is NGREA funded. Projected cost is $3.2 M.

Precision Location and Identification (PLAID) Upgrade

Background and Description

The baseline AN/ALR 69 (V) radar warning receiver (RWR) is a common EW system that provides threat warning for the O/A-10A, F-16 A/B/C/D, C-130E/H, MC-130E/H, AC-130E/H, HC-130P/N, and EC-130E weapon systems. These aircraft are employed worldwide in high, medium, and low altitude tactical situations. The RWR must accurately display the radio frequency (RF) threat environment to which these aircraft are exposed in performing various air-to-air, air-to-ground, and reconnaissance missions. The ALR-69 system utilizes early 1970s technology, and was initially installed on US Air Force aircraft in 1978. AFSOC is leading the way in PLAID development. Current plans are to install PLAID upgrades on the Talon I before proceeding to other weapon systems. Efforts are underway to locate a suitable C-130 test platform since the Talon I fleet is unavailable due to real world taskings.

Requirement

Sophistication and complexity of threat weapon systems has grown beyond the current capabilities of the baseline ALR-69. Aircrews do not have reliable threat warning and situational awareness with the baseline system. The upgrade will take advantage of Precision Location and Identification (PLAID) technology developed by Air Force Research Laboratory (AFRL) in the 1990s. The upgrade will provide extended detection ranges, ambiguity reduction, and reduced response times in dense electromagnetic environments. The upgrade requirements are derived from operational requirements provided in CAF ORD 304-80-I/II/III/-B dated 19 Oct 00. The ORD was drafted by AFSOC and signed by ACC, AFRC, and ANG.

Funding

This program is USSOCOM funded and includes AFRC MC-130 aircraft only. Projected cost for AFRC aircraft is $25.2 M.

A/OA-10 Suite 3 Modifications

Background and Description

This is the EW portion of Precision Engagement. The A-10 was designed for the Cold War and is the most effective CAS (Close Air Support) anti-armor platform in the USAF, as demonstrated during the Persian Gulf War. Unfortunately, its systems have not kept pace with modern tactics as was proven during Operation Allied Force. The A-10 platform must be modernized. The AGM- 65 (Maverick) is the only precision-guided weapon carried on the A-10. Currently target acquisition is accomplished in the following ways:

- Using the current TV monitor system which is difficult and time consuming,
- Pilots using binoculars to acquire targets which is not accurate and takes the pilot's attention from flying to looking for targets (safety), and
- Using forward air controllers to locate targets which is only done during CAS missions and communications are not secure.

The Precision Engagement modifications, combined with the Suite 3 Program will correct these shortcomings of the platform and add new capabilities to ensure continued viability throughout its projected service life.

Suite 3 is the next iteration of the formal A/OA-10A aircraft Operational Flight Program (OFP) Block Change Cycle (BCC) process. The process provides a time-phased release at three-year intervals of all aircraft OFP updates in a continuous improvement concept. The basis of engineering design changes to the A/OA-10 software is derived from Computer Software Change Requests (CSCRs). The validated candidates are reviewed, approved and prioritized by the Combat Air Forces (CAF) representatives. Suite 3 candidates will be formalized as part of the top-level design implementation and integration to PE and the Suite will be released concurrently with PE. Depending on their respective priority, some candidates will be deferred for incorporation in follow-on Suite programs. PE Suite 3 candidates are listed below:

- Integrate Data link (SADL) Capability
- HUD Display of DSMS Data (CMS Data Reference Removed)
- Addition of CTU-2/A to Weapons List (M129 Reference Removed)
- Have CDU Repeater utilize the CMFD OSBs
- Display Maverick Information on the MFCD

- Heads up Toggling of Current Steerpoint
- Integrate HUD Weapons Menus on MFCDs
- Add an "Auto" Altitude Source
- Integrate 1760/JDAM/WCMD Capabilities
- Add an ARS to all MFCDs
- Integrate Targeting Pod Capabilities
- Integrate DSMS Capabilities
- Integrate Up Front Controller Capabilities
- Integrate HOTAS Capabilities
- Slave AIM-9 to SPI
- OTS Support for Multiple 1553 Busses
- Mux Bus 1553/1760 Troubleshooting Capabilities
- OTS Loading of CICU via Ethernet

In summary, these upgrades will provide the A-10 new combat capabilities using smart weapons, improved situational awareness, and enhanced target identification and designation. Precision Engagement will also add digital data connectivity to the digital battlefield ensuring joint forces communication, interoperability, digital exchange of sensor data, and anti-fratricide information between command and control platforms

Requirement

The A/OA-10 was originally designed for low-altitude, visual attack missions. Due to an increasingly sophisticated threat at lower altitudes and the evolution of tactics since DESERT STORM, the A/OA-10 is now operating in medium altitude combat environments. Limited stand-off capability associated with dated avionics, and a computed weapons delivery system designed for low altitude operations, reduces aircraft survivability and effectiveness by increasing pilot workload and threat exposure. Limited precision munitions delivery capability decreases combat effectiveness and increases the potential for fratricide and collateral damage. The lack of a digital data link and means to display three-dimensional battle space information, such as the location of friendly ground and air forces, known threats, targets, and common ground reference points, limits pilot situational awareness and increases the risk of fratricide in complex mission scenarios. The Precision Engagement (PE) and accompanying Suite 3 modification programs provide increased combat effectiveness enhancements to the A/OA-10A weapon system. These programs meet the Air Force need to increase the capability of the A/OA-10 aircraft by implementing a flexible and upgradeable precision engagement capability into the aircraft's avionics architecture. These programs provide the A/OA-10 with new combat capabilities to employ smart weapons plus improved situational awareness, and enhanced target identification and designation capability.

The Engineering and Manufacturing Development (EMD) phase of the PE and Suite 3 programs will be accomplished by the A/OA-10 Prime Contractor, Lockheed Martin Systems Integration (LMSI), Owego, New York. The EMD period of performance is Jan 01 to Aug 05.

Funding

This is an ACC funded program and includes AFRC aircraft. Projected cost for AFRC aircraft is $57.2 M.

A/OA-10 Avionics to EW Bus Connection

Background and Description

This program is for AFRC A/OA-10 aircraft modified with the ALQ-213 Countermeasures Management System to install a connection between the aircraft electronic warfare (EW) bus and the aircraft avionics bus. All AFRC A/OA-10 aircraft have received the ALQ-213 modification. Air National Guard (ANG) A/OA-10 aircraft are currently undergoing this modification. Active Duty A/OA-10 aircraft are scheduled to receive this modification in the next few years. The ALQ-213 provides a significant increase in EW capability for the A/OA-10 by combining Radar Warning Receiver (RWR), Chaff and Flare dispensing, and Electronic Countermeasures Pod (ECM) into one suite controlled by modern processors. The ALQ-213 offers the capability of semi-automatic and automatic dispensing of chaff and flare and ECM programs. However, in the A/OA-10 this feature is not functional due to the lack of a tie between the EW and avionics buses. The threshold for this requirement is a monitor-only connection that allows the ALQ-213 to receive aircraft position, attitude, altitude, and Global Positioning System (GPS) time. The objective would be to provide connections for a future full receive/transmit capability that would require a

separate software modification that is beyond the scope of this requirement but would avoid the additional cost of reopening the aircraft when the software is available. The monitor-only bus connection would allow the ALQ-213 to operate in the semi-automatic and automatic modes. The full receive/transmit connection would allow future capabilities such as threat position on the aircraft Tactical Awareness Display (TAD).

This modification is a wiring change that involves adding standard bus couplers under the aircraft floor and in one console. The Air Force Reserve/Air National Guard Test Center (AATC) currently has an AF Form 1067 in coordination for a test modification of this EW/avionics bus connection as part of an ACC approved project order.

Requirement

This modification allows the installed ALQ-213 Countermeasures Management System to communicate over the EW and avionics bus and thereby allowing the system to operate in a semi-automatic mode and provide connectivity for future growth to the ALQ-213 fully automatic modes. This increase in capability reduces pilot workload and provides increased self protection in high threat environments. Requirement CAF Operational Requirements Document, CAF 401-91-I/II/III-D for A/OA-10 Aircraft, 19 October 1999

Funding

This program is NGREA funded. Projected cost for AFRC aircraft is $600 K.

B-52 Situational Awareness Defense Improvement

Background and Description

SADI replaces the ALR-20 panoramic receiver system – the B-52's primary means of situational awareness (SA). The ALR-20 is becoming increasingly unsupportable due to parts obsolescence and diminishing manufacturing sources (DMS). Early warning, acquisition and threat radar signals are displayed on the receiver to provide B-52 crewmembers the SA necessary to employ evasive tactics and/or electronic attack (EA) options. The system is also required by maintenance personnel to trouble-shoot and repair other B-52 ECM systems.

SADI was originally an estimated $112M AFMC sustainment effort to maintain current capability and prevent eminent ALR-20 system failures due to vanishing vendors and increased failure rates. System Program Office analysis determined the most cost effective and preferred best-value option would be to replace the ALR-20 with a system level replacement (SADI) that also provides much needed improved situational awareness (SA) for crewmembers.

Due to the recognized critical mission need of SADI, OSD directed (via PDM-1) $111M for the program beginning with $12M in FY01. Congress further agreed to jump-start SADI with $8M in FY00. The FY03 APOM fully funded SADI through the FYDP.

Requirement

OSD PDM-1 (Aug 99) downward directed the mission need and initial funding for SADI. Additional support and funding came from Congress in the FY00 budget plus up. The program is late-to-need and an ALR-20 system service life extension program is required until SADI is fielded. Without continued full funding support for the SADI program, B-52's will suffer an unrecoverable loss of combat capability.

Funding

This program is funded by ACC and includes AFRC aircraft. Projected cost for AFRC aircraft is $27.9 M.

B-52 Electronic Counter Measures Improvement (ECMI)

Background and Description

Air Staff cut and restructured a fully funded ECMI program in 1998 as an offset for the FY00 POM. ECMI is an OSD/SAF special interest program. FY00 BES PDM-2 directed $6M in FY00 to complete EMD. FY01 PB directed a $9M Congressional plus-up for FY01 to begin program production.

The ALQ-172 provides the B-52 with mid-high frequency situational awareness (SA) and electronic attack (EA) capability. It is the aircrew's primary line of defense against enemy threats. The ALQ-172 has significant sustainment and operational limitations that are eroding the combat effectiveness of the B-52. ECMI upgrades the

ALQ-172 and addresses the best value sustainment and modernization solution to overcome these mission limitations.

Requirement

The ALQ-172's enemy threat reprogramming capability is unsupportable because of limited processor memory and lack of manufacturing sources for the "chips" required for reprogramming. Critical OFP software and mission data updates required to counter enemy threats are no longer possible.

ECMI will allow for in-flight enemy threat reprogramming in 18 minutes vs. 27 hours for ground reprogramming

The ALQ-172 is the ECM suite's highest manpower, cost, and break-rate driver. Mean time between failures (MTBF) has decreased (bad) approximately 20% per year for the past eight years – current MTBF is 16.8 hours. The ITT Corporation through analysis concluded that ECMI will increase MTBF from 16.8 to 128, a 761 percent increase. In May 01, the results of the ECMI Force Development Exercise released a positive fielding recommendation

Funding

This program is funded by ACC and includes AFRC aircraft. Projected cost for AFRC aircraft is 16.83 M.

Towed Decoy

Background and Description

This AFSOC multi-platform program provides electronic warfare capability from a fiber optic device towed behind the aircraft. The program is fully funded and under development. Efforts are underway to find a suitable C-130 to serve as test platform (SOF C-130s are unavailable due to current world situation).

Requirement

Man launched anti-aircraft missiles are prevalent throughout the world. These small weapons can be defeated through decoy devices. This modification increases the probability of success during such an engagement.

Funding

This program is USSOCOM funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $25.2 M.

MC-130 Directed Infrared Countermeasures System (DIRCM)

Background and Description

DIRCM is an AFSOC multi-platform project designed to enhance survivability in the IR environment. The system is now being tested on Talon I aircraft, but progress has slowed dues to technical difficulties and lack of aircraft availability. An additional laser capability for DIRCM was recently funded. Installations are scheduled to begin in 03, but will most likely shift to the right.

Requirement

This increases penetration capability and survivability in infrared threat environments.

Funding

This program is USSOCOM funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $28 M.

MC-130 Common Avionic Architecture for Penetration (CAAP)

Background and Description

CAAP is a multi-platform, SOF-only upgrade that will be accomplished in conjunction with AMP. It will improve terrain following/terrain avoidance (TF/TA) flight capabilities while incorporating low probability of interception (LPI)/low probability of detection (LPD) features. It will also provide enhanced situational awareness (ESA). Specifically, it will receive, filter and present intelligence broadcast data; detect emitting and non-emitting hostile radars beyond line of sight (BLOS); correlate and fuse all threat data sources; automatically generate new routes in

less than 5 seconds; and alert the aircrew if enemy forces have detected them. CAAP also has an embedded EW training feature. A cable warning and obstacle avoidance feature is desired but not currently funded. Again, the future of this modification for the Talon I is unresolved.

Requirement

Extending the service life will necessitate the Talon I to maintain commonality to the Combat Talon II and interoperability with other SOF forces.

Funding

This program is USSOCOM funded and includes AFRC aircraft. Projected cost for AFRC aircraft is $11.2 M.

HH-60 Upgraded Communication, Navigation/Integrated Electronic Warfare (Block 152)

Background and Description

The HH-60G Pave Hawk helicopter block 152 upgrade, formally known as Upgraded Communication, Navigation/Integrated Electronic Warfare, is the most significant upgrade to date for the Pave Hawk. The upgrade is designed to enhance the aircraft's performance in locating and retrieving downed pilots from hostile territory. New features include an enhanced communication and navigation system and an electronic warfare suite that dispenses countermeasures to thwart missile and radar threats. It increases the aircraft's capabilities in the threat environment and, by integrating all of the radios, it reduces workload in the cockpit so the aircrews can concentrate on flying the aircraft. All of the communications and navigation information on the new aircraft is available on a single control display unit.

As another defensive measure, the new Pave Hawks will come equipped with electronic countermeasures that detect enemy radar and missile threats. The aircraft is designed to dispense flare and chaff automatically when these threats are detected. These flare-and-chaff buckets, never operationally certified before on any combat search-and-rescue helicopter, can operate in an automatic, semiautomatic or manual mode.

This modifies the HH-60G with upgraded communications, navigation, and electronic warfare systems. This modification has been restructured to increase quantities of higher priority, low risk components in the near term and/or delete lower priority or problem components. Funds for the Self-Protection System (SPS) portion of the modification have been transferred to a separate modification program begun in FY99. Block A will install SATCOM with or immediately following the SPS upgrades. Block B will install a floppy disk Data Transfer System, Group A wiring for HAVE CSAR, RS0232 ports and a Night Vision Goggle Heads Up Display. Block C will remount the gun externally, add NVG cockpit lighting, and install a frequency selective Radar Warning Receiver. This restructure enables the UCN/IEW modification to be completed on the entire fleet of HH-60Gs.

Requirement

As the electronic threat increases, the workload on the aircrew multiplies. This modification consolidates the multiple defensive systems of the HH-60, as well as combines the communications/navigation systems into a single control unit. These improvements drastically reduce pilot workload and distractions, increasing the overall safety and effectiveness of the mission.

Funding

This modification is funded by ACC and includes AFRC aircraft. Projected cost for AFRC aircraft is $24.5 M.

C-130 ALR-69 Radar Warning Receiver

Background and Description

Aircrews flying missions in support of Operation Joint Forge and the Bosnia AOR and other areas, are being subjected to an increasing level of electronic threats, which need to be countered so not to impact our worldwide airlift mission. This program installs a Radar Warning Receiver (RWR) on 366 C-130 aircraft. It provides airborne warning of radar directed AAA, air-inceptors, and surface-to-air threats. This also completes the C-130 fleet for all aircraft already equipped with the Airlift Defense System (ADS).

Requirement

This modification provides an increased level of threat detection to the C-130 fleet. It increases aircrew survivability and mission effectiveness in high threat environments. (ALR-69, MN-8220)

Funding

Funded by AMC; includes 112 AFRC aircraft. Projected cost for AFRC aircraft is $60.8 M.

FUTURE CAPABILITIES AND MODIFICATIONS

MC-130 ALE-47 Chaff and Flare Dispenser

Background and Description

This is an upgrade to the current AFSOC ALE-40 Chaff and Flare Dispensers System to the AN/ALE-47 Countermeasures Dispensing System. The ALE-47 is a programmable threat adaptive, dispensing system designed to enhance aircraft survivability in an IR/RF threat environment.

Requirement

USSCOM theaters are becoming increasingly hostile due to more advanced weaponry. This modification increases survivability in these high threat IR/RF environments.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $4.9 M.

B-52 Low Mid Band Jammer (LMBJ)

Background and Description

The ALQ-155 Countermeasures Set provides the B-52 with protection from a myriad of Low/Mid Band threat radars. The AN/ALQ-155(V) system is capable of providing various types of RF power output, covering a wide frequency range, by using interchangeable transmitter groups. Each transmitter group has a specific frequency range and power output designated as a band. The ALQ-155 has not kept pace with potential threats. The ALQ-155 system utilizes 1950's and 1960's technology, requires 10 individual transmitting systems comprised of some 25 major LRU'S plus ancillary equipment, 12 antennas, exhibits decreasing MTBF for critical components, and is rapidly becoming unsupportable due to vanishing availability of key subcomponents.

Requirement

The ALQ-155 is becoming unsupportable. The Backward Wave Oscillators (BWO) are the primary drivers for ALQ-155 mortality. This system will be unsupportable because of lack of a source of acquisition or repair for the Backward Wave Oscillators for the system. BWOs are no longer manufactured and all repair capabilities were discontinued in the late 1980s. Several attempts in the past to reestablish a manufacturing or repair capability have failed. All Band 10S BWO inventory will be exhausted in FY08 with Bands 12 and 9S BWOs running out in FY09. This will affect the aircraft's ability to defend itself against a wide variety of potential defensive systems the will negatively affect the combat capability of the aircraft. Combat capability will be impacted beginning in FY08 as supportability of the BWOs continues to worsen

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $12.1 M.

B-52 Chaff and Flare Improvement

Background and Description

The current B-52H Flare System consists of the original 1960's technology AN/ALE-20 dispensers with the AN/ALA-17B Flare. The system is unique to the B-52 and has a single location provided for all dispensers and a limited number of operator selected dispensing programs available. Automated dispensing must use one of these

preset programs. AN/ALE-20 Chaff dispensers can provide area protection chaff dispensing but are not as optimized or as flexible as newer systems for self protection. Newer flare systems use multiple dispenser units each allowing a mix of various types of expendables (chaff, flares, active and others) under software control. Various expendable trajectories can be obtained by the selection of dispenser locations and mounting provisions. The processor accepts inputs from Missile Warning Sensors to automate and optimize the expendable dispensing for missile defense. A large number of expendable types have been developed and are available with the economies provided by multiple platform usage. A configuration and effectiveness study would determine effective dispenser locations. The modification would delete currently used AN/ALE-20 system and add new flare dispensers, processor and controller, and a new 360 degree missile warning sensors and computer. The modification also integrates the AN/ALQ-153 Missile Warning Sensor into a total system concept.

Requirement

Significant improvement in survivability compared to the current single aircraft manual chaff and flare system in use today. Ability to deal with current and future threats by providing optimized detection of missiles and dispensing of countermeasures decoys. Improve logistics supportability by using common expendables.

Funding

This program is UNFUNDED. Funds are not projected at this time.

C-5 Airlift Defensive Systems (ADS)

Background and Description

The C-5 ADS is intended to provide protection against infrared (IR) guided surface-to-air missile threats in low-to-medium threat environments. The system is designed to detect the IR threat, alert the crew, and automatically expend defensive flares. ADS equipment includes the AAR-47 Missile Warning System (MWS), and ALE-47 Countermeasures Dispense Set (CMDS), and expendable flares. This system is essential for the C-5 to successfully operate in today's mission areas. The global increase of inexpensive portable IR threat systems makes this project an urgent one.

Requirement

This project procures 32 kits for AFRC C-5 aircraft.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $21.3 M.

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WC-130 HURRICANE HUNTERS

Mission

The Weather Reconnaissance Mission is a Congressionally directed mission assigned to the Air Force Reserve Command (AFRC). The 53 WRS "Hurricane Hunters" assigned to Keesler AFB, MS operates up to five aircraft sorties per day to gather meteorological data in accordance with the National Hurricane Operations Plan (NHOP). In additional, the 53 WRS gathers meteorological data as tasked in accordance with the National Winter Storms Operation Plan (NWSOP); conducts all meteorological aircrew initial qualification schooling, and continuation/upgrade training. The mission is currently performed in the WC-130H. The hurricane reconnaissance area includes the Atlantic Ocean, Caribbean Sea, Gulf of Mexico and eastern Pacific Ocean areas.

Description

The WC-130H Hercules is a modified version of the C-130 transport configured with computerized weather instrumentation for penetration of severe storms to obtain data on storm movements, dimensions and intensity. The WC-130B became operational in 1959, the E model in 1962, followed by the H model in 1964. Only the H model is currently in operation. The WC-130 is required to provide real-time temperature, humidity, barometric pressure, radar-measured altitude, wind speed and direction. Data is used to calculate a complete weather observation every 30 seconds. These aircraft also deploy GPS dropsondes, instruments ejected out the aircraft and deployed by parachute through the storm to the sea. During descent, they gather real-time weather data and relay it back to the aircraft. This information is transmitted by satellite directly to the National Hurricane Center for input into the national weather data networks. Forecasters use the data to better predict the path of a storm or hurricane.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force

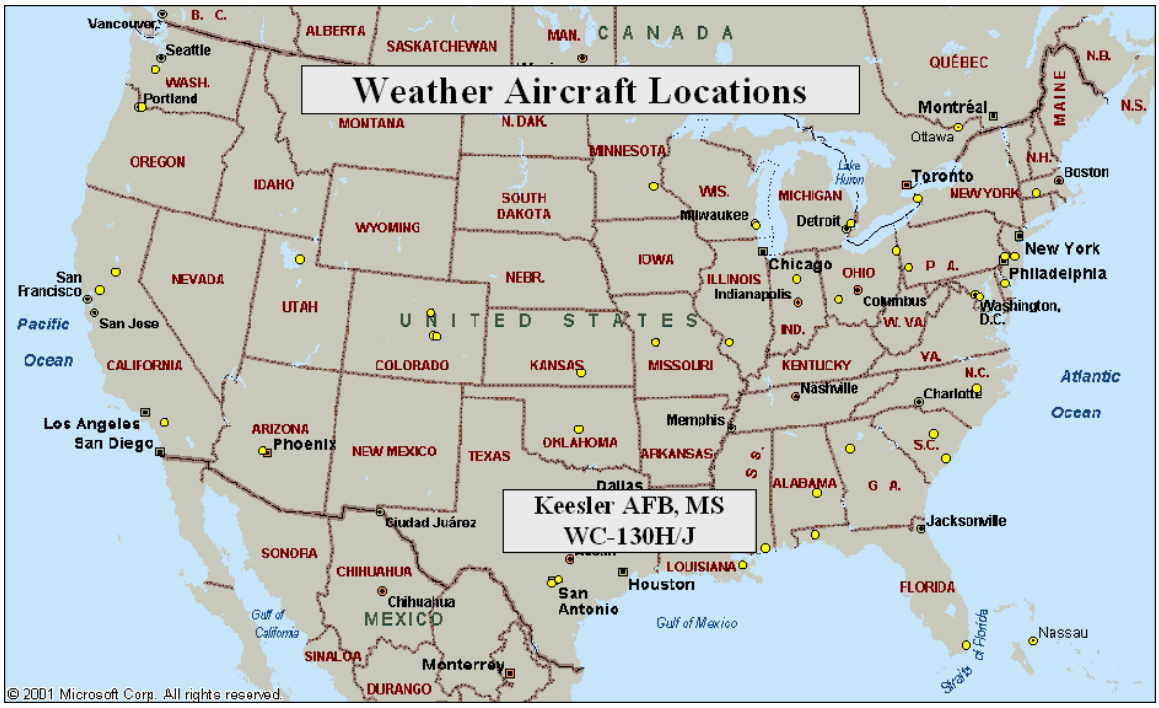
structure. The WC-130J supports homeline taskings but can be combat ready within 48 hours to support combat forces anywhere in the world.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X				X

Modernization Overview

The current fleet is being replaced with new WC-130J models. This replacement allows for longer range and ensures weather reconnaissance capability well into the next decade. Once conversion is complete, the 53rd Weather Reconnaissance Squadron will consist of 10 WC-130J's. Presently, there are six WC-130J models at Keesler AFB, MS undergoing Qualification Test and Evaluation (QT&E). The remaining four aircraft currently at Lockheed Marietta are scheduled to deliver to Keesler AFB, during the third and fourth quarters of FY 02. Deliveries are based on the resolution of deficiencies identified in test and will impact the start of operational testing and the achievement of interim operational capability (IOC). Major deficiencies include: propellers (durability/supportability) and radar tilt and start up attenuation errors. AFRC/XPR and ASC/GRB are working with the manufacturer to resolve the QT&E documented deficiencies.

Locations



Aircraft Units and Supporting Organizations

C-130 Hercules		
Operational Units		
403rd Wing (Hurricane Hunters)	Keesler AFB, MS	
Air Force Support Organizations		
Aeronautical Systems Center	Program Office	Wright-Patterson AFB, OH
Robins Air Logistics Center	Depot Repair and Supply	Robins AFB, GA
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Marietta, GA
Allison (Rolls Royce)	Engines	Indianapolis, IN
Boeing Military Aircraft Company	Avionics Modernization	St. Louis, MO

Funding

WC-130											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
J Model Conversion											
63852F	$ 0.500	$ -	$ 70.770	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 71.270
SATCOM Migration											
63852F	$ -	$ -	$ 2.700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2.700
CNI Page Enhancement											
63852F	$ -	$ -	$ -	$ 1.950	$ 1.950	$ -	$ -	$ -	$ -	$ -	$ 3.900
CMDU Situational Awareness Improvement											
63852F	$ -	$ -	$ -	$ 1.950	$ 1.950	$ -	$ -	$ -	$ -	$ -	$ 3.900
Digital Dewpoint Hygrometer											
63852F	$ -	$ -	$ -	$ 0.410	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.410

Schedule

WC-130										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
J Model Conversion										
SATCOM Migration										
CNI Page Enhancement										
CMDU Situational Awareness Improvement										
Digital Dewpoint Hygrometer										

PLANNED MODIFICATIONS

WC-130J-Model Replacement

Background and Description

The WC-130J will replace the squadron's fleet of ten WC-130H-model aircraft. This modernization is a Congressionally directed and funded program. The WC-130J has a modernized flight station with Liquid Crystal Display (LCD) instrumentation readouts for aircraft flight control, operation systems, and navigation. In addition to the two head-up LCD displays, the 'J" has four, multi-functional, head down LCD displays. The displays are Night Vision Imaging System compatible, enabling the crew to operate the transport into and out of areas of total darkness with special night vision devices. The C-130J's Allison AE2100D3 engines generate 29 percent more thrust and increase fuel efficiency by 15 percent over the older models, while bringing the aircraft to a cruising altitude of 28,000 feet in 14 minutes. The weather unique equipment includes palletized Aerial Reconnaissance Weather Officer Station (ARWO) hardware and software, Dropsonde Station, Dewpoint Hygometer, and ARC 210 SATCOM and Ground Base Stations. The crew complement for the WC-130J is two pilots, navigator, ARWO, and DSO. The WC-130J Hercules is a special weather reconnaissance version of the new Lockheed Martin C-130J cargo plane. Although its mission is to fly into the eye of hurricanes to retrieve critical information about tropical storms and support winter storm missions, the WC-130J can be combat ready in less than 48 hours. The Air Force Reserve Command's 53rd Weather Reconnaissance Squadron at Keesler Air Force Base, MS, a component of the 403rd Wing, is the only unit in the Department of Defense that flies this mission.

The 53 WRS took delivery of its first four WC-130J aircraft October-December 1999. Two additional aircraft were delivered to Keesler AFB during November and December, 2001. The four remaining aircraft are proposed to deliver during the third and fourth quarter of this fiscal year 2002 based on resolution of propeller and radar deficiencies. The WC-130J program is managed by the C-130J Development System Office.

Requirement

The existing airframes are nearing the end of their service life. Congressional action recognized the vital role that the WC-130 and the 53rd Weather Reconnaissance Squadron play in the protection of the United States against weather disasters. In support of this activity, AFRC and the Air Force were directed to convert the squadron to the C-130J as soon as practicable.

Funding:

This is a Congressionally funded program.

SATCOM Migration

Background and Description

This adds the same capability of the ARC-210 SATCOM Ground Base Stations to the WC-130 unique ARWO station. This adds both hardware and software to the station.

Requirement

The ARWO station is a unique crew station and is contained on a pallet for ease of converting the WC-130 to other than weather roles. This crew position requires access to all navigational and weather items, but requires separate modifications due to its palletized configuration.

Funding:

This is a Congressionally funded program using 3010 funds ($2.7 M)

CNI Page Enhancement

Background and Description

This is a software modification to the C-130J navigational and display systems that will allow all navigational data to be displayed on a single page.

Requirement

The weather data gathering functions and precise navigational requirements of the WC-130 require rapid access to accurate navigational data. This modification allows the crew members to rapidly access the necessary information.

Funding:

This is a Congressionally funded program using 3010 funds. Awaiting final pricing from Prime Contractor. Funding for this modification and CMDU are budgeted at $7.8 M

CMDU Situational Awareness Improvement for the Nav, ARWO and DSO

Background and Description

This modification relocates the currently installed Multifunction Display Unit (#6) to the Augmented Crew Station. It additionally adds video switching and Flat Screen displays to the ARWO and DSO stations.

Requirement

The WC-130 performs its missions with an augmented crew to accomplish its unique mission. The C-130J advances combined many of the navigational and situational awareness functions and removed the navigator from the normal crew complement. The Augmented Crew Station requires some of the data now accessible to only the pilots (and by repeater to the ARWO).

Funding:

This is a Congressionally funded program using 3010 funds. Awaiting final pricing from the Prime Contractor. Funding for this modification and CNI are budgeted at $7.8 M

Digital Dewpoint Hygrometer

Background and Description

This is a replacement device for the existing analog hygrometer on the WC-130. During weather observation missions, this device is vital to capturing the total weather picture of the target area.

Requirement

This is one of the few remaining analog devices in the WC-130 data gathering equipment. The digital device provides a higher accuracy and its data is directly transferable to the weather data gathering software.

Funding:

This program is UNFUNDED. Projected cost for AFRC aircraft is $410 K.

FUTURE CAPABILITIES AND MODIFICATIONS

As a vital, but unique member of the versatile C-130 fleet, all modifications and upgrades applied to the C-130 are evaluated for inclusion into the WC-130. Because of the ongoing conversion to the J model, there are no planned upgrades for this system except for direct weather mission related modifications.

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C-5 GALAXY

Mission

The gigantic C-5 Galaxy, with its tremendous payload capability, provides the Air Mobility Command inter-theater airlift in support of United States national defense. The C-5, the C-17 Globemaster III and the C-141 Starlifter are partners of AMC's strategic airlift concept. The aircraft carry fully equipped combat-ready military units to any point in the world on short notice then provide field support required to help sustain the fighting force.

Features

The C-5 is one of the largest aircraft in the world. It can carryoutsize and oversize cargo intercontinental ranges and can take off or land in relatively short distances. Ground crews can load and off load the C-5 simultaneously at the front and rear cargo openings. Other features of the C-5 are:

- Able to take off fully loaded within 8,300 feet (2,530 meters) and land within 4,900 feet (1,493 meters).
- High flotation landing gear with 28 wheels sharing the weight.
- Nose and aft doors that open the full width and height of the cargo compartment to permit faster and easier loading.
- A "kneeling" landing gear system that permits lowering of the parked aircraft so the cargo floor is at truck-bed height or to facilitate vehicle loading and unloading.
- Full width drive-on ramps at each end for loading double rows of vehicles.
- A system that records and analyzes information and detects malfunctions in more than 800 test points.

The C-5 is similar in appearance to its smaller sister transport, the C-141 Starlifter, although the C-5 is much larger. Both aircraft have the distinctive high T-tail, 25-degree wing sweep, and four turbofan engines mounted on pylons beneath the wings.

The Galaxy carries nearly all of the Army's combat equipment, including such bulky items as its 74-ton mobile scissors bridge, from the United States to any theater of combat on the globe.

Four TF39 turbofan engines power the big C-5, rated at 43,000 pounds thrust each. They weigh 7,900 pounds (3,555 kilograms) each and have an air intake diameter of more than 8.5 feet (2.6 meters). Each engine pod is nearly 27 feet long (8.2 meters).

The Galaxy has 12 internal wing tanks with a total capacity of 51,150 gallons (194,370 liters) of fuel -- enough to fill 6 1/2 regular size railroad tank cars. A full fuel load weighs 332,500 pounds (150,820 kilograms). A C-5 with a

cargo load of 270,000 pounds (122,472 kilograms) can fly 2,150 nautical miles, offload, and fly to a second base 500 nautical miles away from the original destination -- all without aerial refueling. With aerial refueling, the aircraft's range is limited only by crew endurance.

Lockheed-Georgia Co. delivered the first operational Galaxy to the 437th Airlift Wing, Charleston Air Force Base, S.C., in June l970. C-5s are stationed at Altus AFB, Okla.; Dover AFB, Del.; and Travis AFB, Calif. AMC transferred some C-5s to the Air Reserve components starting with Kelly AFB, Texas, in 1985; followed by Stewart Air National Guard Base, N.Y.; and Westover Air Reserve Base, Mass.

In March 1989, the last of 50 C-5B aircraft was added to the 76 C-5As in the Air Force's airlift force structure. The C-5B includes all C-5A improvements as well as more than 100 additional system modifications to improve reliability and maintainability. All 50 C-5Bs are scheduled to remain in the active-duty force, shared by comparably sized and collocated Air Force Reserve Associate units.

Based on a recent study showing 80 percent of the C-5 airframe service life remaining, AMC began an aggressive program to modernize the C-5. The C-5 Avionics Modernization Program began in 1998 and includes upgrading avionics to Global Air Traffic Management compliance, improving navigation and safety equipment, and installing a new autopilot system. Another part of the plan is a comprehensive re-engining and reliability improvement program, which includes new engines, pylons and auxiliary power units, with upgrades to aircraft skin and frame, landing gear and the pressurization system. This modernization program will restore aircraft reliability and maintainability, maintain structural and system integrity, reduce cost of ownership and increase operational capability well into the 21st century.

Mission Area Plan Support

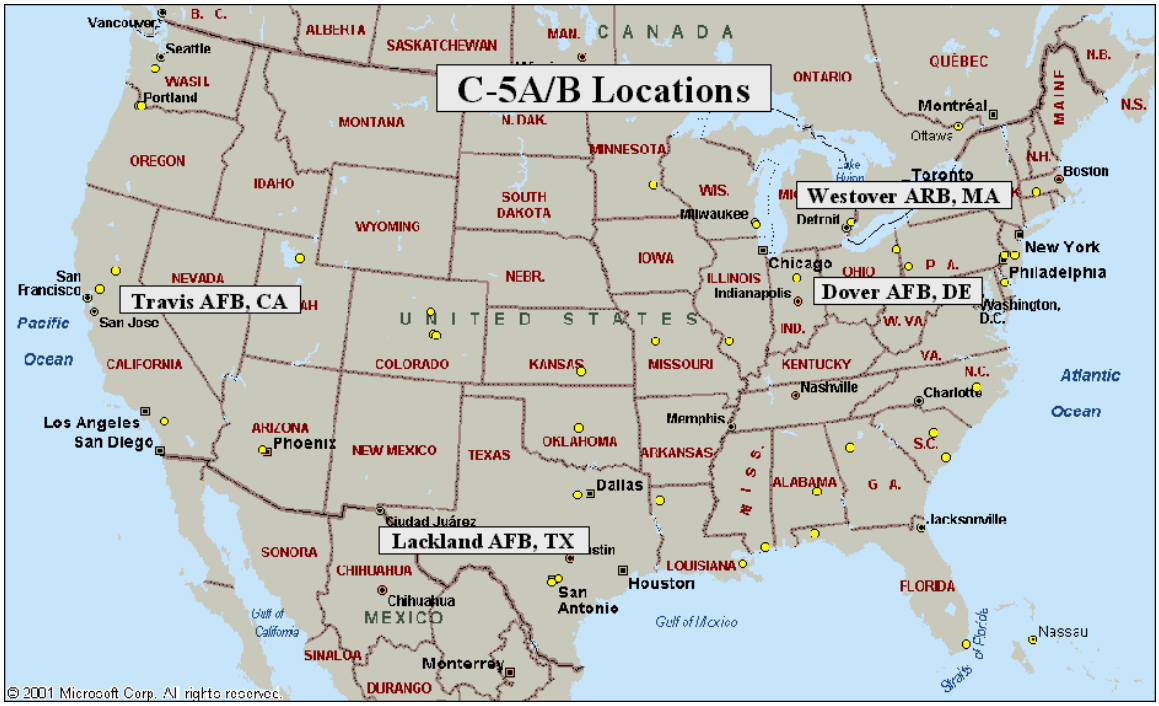
In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X			X	

Modernization Overview

Over the next five years, there will be primarily sustainability modifications to the weapons systems to allow it to continue as the backbone of the airlift community. Two major modifications will be performed on the engines to increase reliability and maintainability. Additionally, the remainder of the fleet will receive the avionics modernization which replaces cockpit displays while upgrading critical navigational and communications equipment.

Locations



Aircraft Units and Supporting Organizations

C-5 Galaxy		
Operational Units		
439th Airlift Wing	Westover ARB, MA	
433rd Airlift Wing	Lackland AFB, TX	
349th Air Mobility Wing	Travis AFB, CA	
512th Airlift Wing	Dover AFB, DE	
Air Force Support Organizations		
Robins Air Logistics Center	Depot Repair and Supply	Robins AFB, GA
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Marietta, GA
General Electric	Engines	Cincinnati, OH
Allied Signal	Radar	Ft. Lauderdale, FL

Funding

C-5											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
TF39 Engine High Pressure Turbine Replacement											
54217F	$ 136.338	$ 31.862	$ 9.865	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 178.065
Avionics Modernization Program (AMP)											
54217F	$ 109.538	$ 77.492	$ 152.771	$ 135.097	$ 80.524	$ 12.062	$ -	$ -	$ -	$ -	$ 567.484
TF39 to CF6-80 Engine Replacement											
54217F	$ -	$ -	$ -	$ 257.000	$ 257.000	$ 257.000	$ 257.000	$ 147.000	$ -	$ -	$ 1,175.000

Schedule

C-5										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
TF39 Engine High Pressure Turbine Replacement										
Avionics Modernization Program (AMP)										
TF39 to CF6-80 Engine Replacement										

PLANNED MODIFICATIONS

TF39 Engine High Pressure Turbine Replacement

Background and Description

This modification redesigns and installs a newer turbine in the TF-39 High Pressure Turbine HPT. The current HPT does not provide the required thrust capability for hot day takeoffs. Existing state-of-the-art technologies will reduce engine overhaul costs by fifty percent and permit max thrust takeoffs when the temperature is greater than 71 degrees Fahrenheit.

Requirement

The existing engine limits the gross weight for takeoff on hot days. Replacement of several critical components will increase engine reliability and reduce maintenance costs significantly.

Funding

This is an AMC funded program. Projected cost for AFRC aircraft is $53.8 M.

Avionics Modernization Program (AMP)

Background and Description

The purpose of this modification is for Global Air Traffic Management compliance and navigation safety. It redesigns the avionics components to replace low reliability Line Replacement Units in the autopilot/flight augmentation systems and the flight and engine instrument suite. This modification also installs safety equipment: Traffic Alert and Collision Avoidance System and Terrain Awareness and Warning System. In addition, installation of new communication, navigation, and surveillance equipment will improve air traffic management under GATM taking advantage of optimum air routes. Connectivity to mobility command and control capabilities will also be incorporated in the AMP design.

Requirement

Compliance with GATM as well as replacement of several obsolete or low reliability components drove AFMC and AMC to combine the modifications into a single integrated program. All the items included in this modification was evaluated separately, but added to this major modification to increase aircraft availability and reduce overhead.

Funding

This is an AMC funded program. Projected cost for AFRC aircraft is $171.3 M.

TF39 to CF6-80 Engine Replacement

Background and Description

This modification replaces the TF39 engine with the CF6-80 engine on 32 AFRC C-5A aircraft. Modification includes replacing engines, thrust reversers, auxiliary power unit and nacelle. This modification is a 100% commercial replacement. It improves aircraft reliability, maintainability, and availability and includes a ten-year, no cost power plant maintenance program.

Requirement

This modification will modernize the C-5A existing TF-39 engines, replacing them with CF6-80 engines. This change will improve the reliability and maintainability of the power plant. Using the same engines that are to be installed on the C-5B during Re-Engining Reliability Program (RERP) will significantly reduce cost of ownership. Insuring fleet commonality is imperative in order for the C-5A to remain a viable source of airlift capability.

Funding

This is an AMC funded program. Projected cost for AFRC aircraft is $354.7 M.

FUTURE CAPABILITIES AND MODIFICATIONS

C-5 Airlift Defensive Systems (ADS)

Background and Description

The C-5 ADS is intended to provide protection against infrared (IR) guided surface-to-air missile threats in low-to-medium threat environments. The system is designed to detect the IR threat, alert the crew, and automatically expend defensive flares. ADS equipment includes the AAR-47 Missile Warning System (MWS), and ALE-47 Countermeasures Dispense Set (CMDS), and expendable flares. This system is essential for the C-5 to successfully operate in today's mission areas. The global increase of inexpensive portable IR threat systems makes this project an urgent one.

Requirement

This project procures 32 kits for AFRC C-5 aircraft.

Funding

This program is UNFUNDED. Projected cost for AFRC aircraft is $21.3 M.

C-141 STARLIFTER

Mission

The C-141B Starlifter is the "workhorse" of the Air Mobility Command. The Starlifter fulfills the vast spectrum of airlift requirements through its ability to airlift combat forces over long distances, deliver those forces and their equipment either by air, land or airdrop, resupply forces, and transport the sick and wounded from the hostile area to advanced medical facilities.

Features

The C-141B is a "stretched" C-141A with in-flight refueling capability. The stretching of the Starlifter consisted of lengthening the planes 23 feet 4 inches (7.11 meters). The added length increased the C-141 cargo capacity by about one-third, for an extra 2,171 cubic feet (62.03 cubic meters). The lengthening of the aircraft had the same overall effect as increasing the number of aircraft by 30 percent. The C-141A, built between 1963 and 1967, was AMC's first jet aircraft designed to meet military standards as a troop and cargo carrier. The development of the B model was the most cost-effective method of increasing AMC's airlift capability.

A universal air refueling receptacle on the C-141B, with the ability to transfer 23,592 gallons (89,649.6 liters) in about 26 minutes, means longer non-stop flights and fewer fuel stops at overseas bases during worldwide airlift missions.

The C-141 force, nearing nine million flying hours, has a proven reliability and long-range capability. In addition to training, worldwide airlift and combat support, the C-141 has amassed a laudatory record in response to humanitarian crises.

The C-141, with its changeable cargo compartment, can transition from rollers on the floor for palletized cargo to a smooth floor for wheeled vehicles to aft facing seats or sidewall canvas seats for passengers, quickly and easily, to handle over 30 different missions.

C-141s are stationed at Charleston Air Force Base, S.C.; McChord AFB, Wash.; McGuire AFB, N.J.; and Travis AFB, Calif. AMC began transferring C-141s to the Air Reserve and Air National Guard forces in July 1986. The first Air Reserve unit was Andrews AFB, Md., followed by others now at Wright-Patterson AFB, Ohio, and March Air Reserve Base, Calif.; and Air National Guard units at Jackson, Miss., and Memphis, Tenn.

The first C-141A, delivered to Tinker AFB, Okla., in October 1964, began squadron operations in April 1965. The C-141 was the first jet transport from which U.S. Army paratroopers jumped, and the first to land in the Antarctic. The first C-141B was received by the Air Force in December 1979. Conversion from A to B models was completed in 1982.

The C-141 continues to be the backbone of military airlift capability and the cornerstone of a valuable national asset -- airlift. The C-141's reliability and intrinsic capabilities enable AFRC and AMC to meet any commitment anywhere national interest dictates.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X			X	

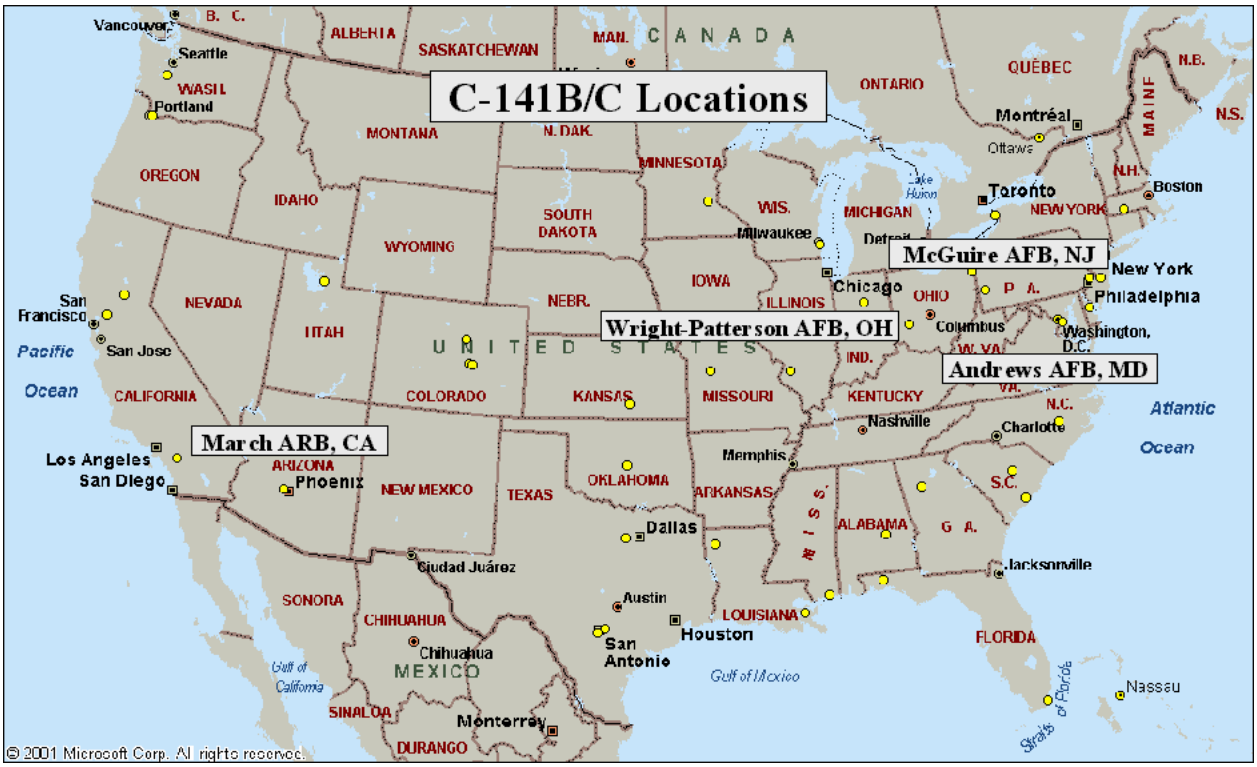
Modernization Overview

For the past 30 years, the C-141 has been the backbone of mobility for the United States military in peacetime and in conflict.

In the very near future, the C-141 will be retired from the active-duty Air Force. However, Air Force Reserve Command continues the proud heritage of this mobility workhorse. AFRC crews will continue to fly the C-141 through fiscal year 2006. It is crucial that AFRC remains focused on flying this mission safely and proficiently until follow-on missions are found.

With the release of the Mobility Requirements Study 05, it is still uncertain what the follow-on missions will be for AFRC C-141 personnel. Replacement missions must be more than the insertion of another airframe. They must be a viable mission that includes modernized equipment.

Locations



Aircraft Units and Supporting Organizations

C-141 Starlifter		
Operational Units		
445th Airlift Wing	Wright–Patterson AFB, OH	
446th Airlift Wing	McChord AFB, WA	
452nd Air Mobility Wing	March ARB, CA	
459th Airlift Wing	Andrews AFB, MD	
514th Air Mobility Wing	McGuire AFB, NJ	
Air Force Support Organizations		
Robins Air Logistics Center	Program Office and Depot	Robins AFB, GA
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Marietta, GA
Pratt & Whitney	Engines	East Hartford, CT

Funding

C-141											
Program Element	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	TOTAL
NO PLANNED MODIFICATIONS											
	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

PLANNED MODIFICATIONS

There are no current modifications ongoing for the C-141 fleet. Modifications are limited to safety-of-flight and minor equipment replacement.

FUTURE CAPABILITIES AND MODIFICATIONS

Due to the imminent phase out of the C-141, there are no long rang plans for major modifications.

C-130 HERCULES

Mission

The C-130 Hercules primarily performs the tactical portion of the airlift mission. The aircraft is capable of operating from rough, dirt strips and is the prime transport for air dropping troops and equipment into hostile areas. The C-130 operates throughout the U.S. Air Force, serving with Air Mobility Command (stateside based), Air Force Special Operations Command, theater commands, Air National Guard and the Air Force Reserve Command, fulfilling a wide range of operational missions in both peace and war situations. Basic and specialized versions of the aircraft airframe perform a diverse number of roles, including airlift support, Antarctic ice resupply, aeromedical missions, weather reconnaissance, aerial spray missions, fire-fighting duties for the U.S. Forest Service, and natural disaster relief missions.

Features

Using its aft loading ramp and door the C-130 can accommodate a wide variety of oversized cargo, including everything from utility helicopters and six wheeled armored vehicles to standard palletized cargo and military personnel. In an aerial delivery role, it can air drop loads up to 42,000 pounds or use its high-floatation landing gear to land and deliver cargo on rough, dirt strips.

The flexible design of the Hercules enables it to be configured for many different missions, allowing a single aircraft to perform the role of many. Much of the special mission equipment added to the Hercules is removable allowing the aircraft to revert to its cargo delivery role if desired. Additionally, the C-130 can be rapidly reconfigured for the various types of cargo such as palletized equipment, floor loaded material, airdrop platforms, container delivery system bundles, vehicles and personnel or aeromedical evacuation.

Four decades have elapsed since the Air Force issued its original design specification, yet the remarkable C-130 remains in production. The initial production model was the C-130A, with four Allison T56-A-11 or -9 turboprops. A total of 219 were ordered and deliveries began in December 1956. The C-130B introduced Allison T56-A-7 turboprops and the first of 134 entered Air Force service in May 1959.

Introduced in August of 1962, the 389 C-130E's that were ordered used the same Allison T56-A-7 engine, but added two 1,290 gallon external fuel tanks and an increased maximum takeoff weight capability. June 1974 introduced the first of 308 C-130H's with the more powerful Allison T56-A-15 turboprop engine. Nearly identical to the C-130E externally, the new engine brought major performance improvements to the aircraft.

The C-130J is the latest addition to the C-130 fleet and it will replace some of the aging C-130E's. The C-130J incorporates state-of-the-art technology to reduce manpower requirements, lower operating and support costs, and provides life cycle cost savings over earlier C-130 models. Compared to older C-130s, the J model climbs faster and higher, flies farther at a higher cruise speed, and takes off and lands in a shorter distance. The C-130J-30 is a stretch version, adding 15 feet (two pallet positions) to fuselage, increasing usable space in the cargo compartment.

The C-130J entered the inventory in February 1999. With the noticeable difference of a six bladed composite propeller coupled to an Allison AE2100D3 turboprop engine, the C-130J promises substantial performance improvements over all previous models, and has allowed the introduction of the C-130J-30, a stretch version with a 15-foot fuselage extension. Air Force has selected the C-130J-30 to replace retiring C-130E's. Approximately 160 C-130J/J-30s are planned for the inventory. To date, the Air Force has purchased 29 C-130J aircraft from Lockheed Martin Aeronautics Company

C-130J/J-30 major system improvements include: advanced two-pilot flight station with fully integrated digital avionics; color multifunctional liquid crystal displays and head-up displays; state-of-the-art navigation systems with dual inertial navigation system and global positioning system; fully integrated defensive systems; low-power color radar; digital moving map display; new turboprop engines with six blades, all composite propellers; digital auto pilot; improved fuel, environmental and ice protection systems; and an enhanced cargo handling system.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

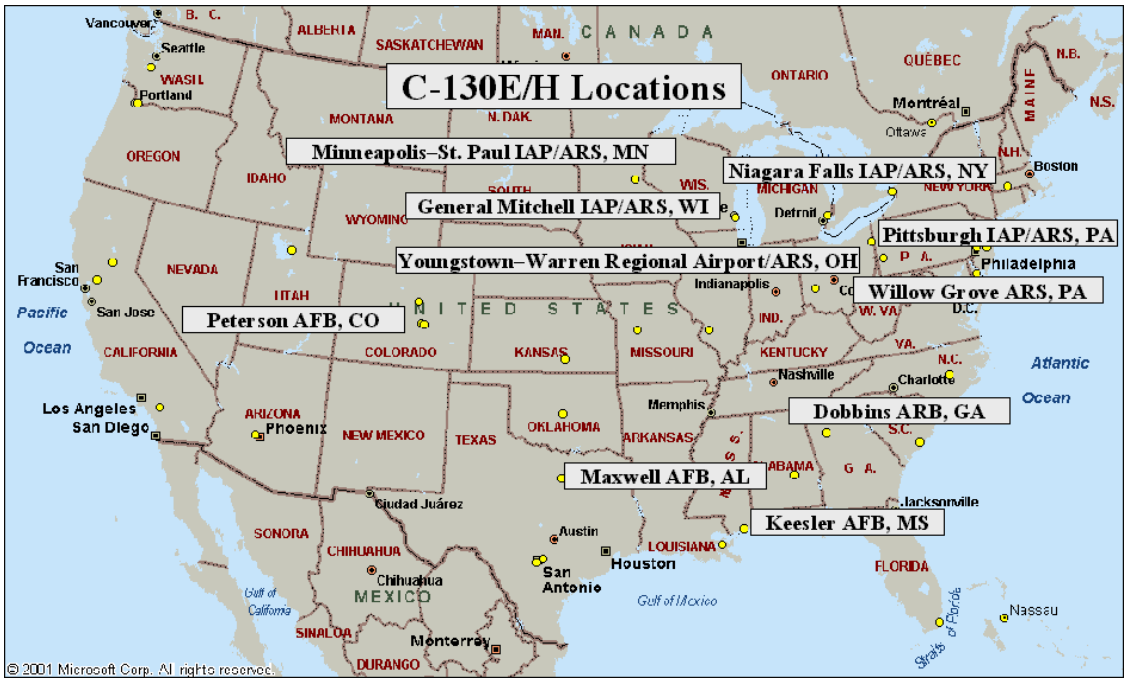
Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X		X	X	X

Modernization Overview

As Air Force Reserve Command moves into the future and we analyze our interoperability with the active component, a key issue is our ability to work within the active-component structure while providing the same capability as the active duty.

AFRC has 127 C-130s including the E, H, J and N/P models. The Mobility Air Forces (MAF) currently operates the world's best theater airlift aircraft, the C-130, and it will continue in service through 2020. In order to continue to meet the Air Force's combat delivery requirements through the next 18 years, aircraft not being replaced by the C-130J will become part of the C-130X Program. Phase 1, Avionics Modernization Program (AMP) program includes a comprehensive cockpit modernization by replacing aging, unreliable equipment and adding additional equipment necessary to meet Nav/Safety and GATM requirements. Together, C-130J and C-130X modernization initiatives reduce the number of aircraft variants from twenty to two core variants, which will significantly reduce the support footprint and increase the capability of the C-130 fleet. The modernization of our C-130 forces strengthens our ability to ensure the success of our warfighting CINCs and lays the foundation for tomorrow's readiness.

Locations



Aircraft Units and Supporting Organizations

C-130 Hercules		
Operational Units		
917th Wing	Barksdale AFB, LA	
934th Airlift Wing	Minneapolis–St. Paul IAP/ARS, MN	
403rd Wing	Keesler AFB, MS	
913th Airlift Wing	Willow Grove ARS, PA	
908th Airlift Wing	Maxwell AFB, AL	
302nd Airlift Wing	Peterson AFB, CO	
94th Airlift Wing	Dobbins ARB, GA	
914th Airlift Wing	Niagara Falls IAP/ARS, NY	
910th Airlift Wing	Youngstown–Warren Regional Airport/ARS, OH	
911th Airlift Wing	Pittsburgh IAP/ARS, PA	
440th Airlift Wing	General Mitchell IAP/ARS, WI	
919th Special Ops Wing	Duke Field, FL	
920th Rescue Wing	Patrick AFB, FL	
939th Rescue Wing	Portland IAP, OR	
403rd Wing (Hurricane Hunters)	Keesler AFB, MS	
Air Force Support Organizations		
Aeronautical Systems Center	Program Office	Wright-Patterson AFB, OH
Robins Air Logistics Center	Depot Repair and Supply	Robins AFB, GA
Supporting Contractors		
Lockheed-Martin	Prime Contractor	Marietta, GA
Allison (Rolls Royce)	Engines	Indianapolis, IN
Boeing Military Aircraft Company	Avionics Modernization	St. Louis, MO

Funding

C-130											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
Autopilot and GCAS											
54343F	$ 228.600	$ 8.600	$ 15.300	$ 5.400	$ 3.400	$ 0.600	$ -	$ -	$ -	$ -	$ 261.900
Engine Conversion											
54343F	$ 1.500	$ 5.900	$ 0.800	$ -	$ 2.100	$ 6.200	$ 5.700	$ 5.800	$ -	$ -	$ 28.000
ALR-69 Radar Warning Receiver											
54343F	$ 46.400	$ 1.000	$ 1.100	$ 15.600	$ 13.900	$ 15.300	$ 37.400	$ 38.300	$ 39.100	$ 67.300	$ 275.400
Enhanced Traffic Alert and Collision Avoidance System											
54343F	$ 51.600	$ 20.100	$ 2.150	$ 3.650	$ 0.300	$ -	$ -	$ -	$ -	$ -	$ 77.800
C-130J Procurement											
54343F	$ 283.579	$ 206.148	$ 221.809	$ 227.319	$ 330.244	$ 523.990	$ 1,000.281	$ 1,042.411	$ -	$ -	$ 3,835.781
C-130 Armor											
54343F	$ 1.740	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.740
C-130/HH-60/KC-135 Carry On SADL											
54343F	$ -	$ -	$ 3.685	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3.685
C-130 AMP Modernization											
54343F	$ -	$ -	$ -	$ -	$ 80.800	$ 180.200	$ 213.600	$ 303.300	$ 368.200	$ 2,111.600	$ 3,257.700

Schedule

C-130										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
Autopilot and GCAS										
Engine Conversion										
ALR-69 Radar Warning Receiver										
Enhanced Traffic Alert and Collision Avoidance System										
C-130J Procurement										
C-130 Armor										
C-130/HH-60/KC-135 Carry On SADL										
C-130 AMP Modernization										

PLANNED MODIFICATIONS

Autopilot and GCAS

Background and Description

This is a three-part program. Part one replaces the obsolete E-4 autopilot system with the AYW-1 autopilot and installs the Ground Collision Warning System (GCAS) on selected C-130 aircraft. Part two replaces the obsolete E-4 autopilot system with a dual AYW-1 autopilot and GCAS on MC-130H, AC-130U, and three C-130H (2) aircraft. Part three replaces the obsolete Ground Proximity Warning System with the GCAS on selected C-130H and LC-130H aircraft.

Requirement

The existing analog based autopilot system is becoming unreliable and increasingly expensive to support. The new generation autopilots effective integrate with the aircraft avionics systems and provide higher reliability and reduced maintenance costs. This three phase program also replaces an obsolete GPWS with an updated GCAS. (Autopilot/GCAS MN-17605B)

Funding

Funded by AMC; includes 133 AFRC aircraft. Projected cost for AFRC aircraft is $68.7 M

Engine Conversion

Background and Description

This program converts the T56-7 and T56-14C engines to T56-15 engines. The result of this conversion will be a significant increase in engine performance and reliability. Four different configurations are involved, based on the need for oil cooler augmentation and /or the SOF configuration with 60/90 KVA generators.

Requirement

This modification increases reliability and improves engine commonality across the C-130 fleet. The basic configurations are modular with the majority of engines being common and usable across the fleet. (Engines MN-6040)

Funding

Funded by AMC; includes 13 AFRC aircraft. Projected cost for AFRC aircraft is $3.8 M.

ALR-69 Radar Warning Receiver

Background and Description

Aircrews flying missions in support of Operation Joint Forge and the Bosnia AOR and other areas, are being subjected to an increasing level of electronic threats, which need to be countered so not to impact our worldwide airlift mission. This program installs a Radar Warning Receiver (RWR) on 366 C-130 aircraft. It provides airborne warning of radar directed AAA, air-inceptors, and surface-to-air threats. This also completes the C-130 fleet for all aircraft already equipped with the Airlift Defense System (ADS).

Requirement

This modification provides an increased level of threat detection to the C-130 fleet. It increases aircrew survivability and mission effectiveness in high threat environments. (ALR-69, MN-8220)

Funding

Funded by AMC; includes 112 AFRC aircraft. Projected cost for AFRC aircraft is $60.8 M.

Enhanced Traffic Alert and Collision Avoidance System

Background and Description

This modification is required by the Air Force Navigation and Safety Master Plan (Nav/Safety) and the Global Air Traffic Management (GATM) mandates which are necessary for worldwide, unrestricted airspace access. The Secretary of Defense also directed the installation of an airborne collision avoidance system in response to the findings of the April 1996 CT-43 crash.

Requirement

The current C-130 fleet will be unable to operate in European airspace in the near future without GATM modifications. This modification also increases commonality across the fleet as other C-130s have already been modified with the mandated airborne collision avoidance system.

Funding

AMC funded; includes 47 AFRC aircraft. Projected cost for AFRC aircraft is $7.2 M.

C-130J Procurement

Background and Description

This program provides additional and replacement C-130 series aircraft into the Air Force fleet. This upgraded version of the C-130 airframe provides immediate and responsive air movement and delivery of combat troops and supplies directly into objective areas using a variety of air-land and airdrop techniques. It provides logistical support of all theater forces, including those engaged in combat operations, to meet specific theater objectives and requirements. Thirteen C-130Js have been procured by the ANG and are not listed as part of the funding table. AFRC beddown plan converts 815 ALS, Keesler AFB, Min St Paul, and Willow Grove to J models in addition to the 10 WC-130J for the 53WRS. . Projected aircraft procurement for 815 AS - (1) FY 02, (1) FY 03, (2) FY 05 with conversion completed in FY 07. The Willow Grove projected conversion date is in FY 15 and Minneapolis-St. Paul has its projected conversion in FY 16.

Requirement

The C-130 is the backbone of the in-theater airlift fleet. Existing C-130E aircraft are approaching the end of their useful service life and will require extensive modifications to remain maintainable and capable for worldwide deployment. Replacement of these airframes with the C-130J provides airlift capability well into this century.

Funding

This modification/procurement is funded by AMC and as part of a Congressional directive using both 3010 and 0350 funds. A Multi Year Buy is under consideration that would allow aircraft to be procured sooner and shorten conversion time.

C-130 AMP

Background and Description

This program upgrades 519 aircraft including SOF aircraft with GATM, navigation safety mandates, glass cockpits including HUDs. It also removes the navigator station and navigator, reintegrates existing capabilities, enhances situational awareness, and terrain following/terrain avoidance capability.

Requirement

This modernization program includes a broad range of avionics improvement programs that are now managed as a single program. (MAF/CAF/AFSOC 902-98-I/II)

Funding

AMC funded through FY 09, still need $510M in FY10; includes all AFRC C-130 units not converting to J models. Projected cost for AFRC aircraft is $122.2 M.

C-130 Armor

Background and Description

Requirement is for light weight "removable" Kevlar/ceramic aircrew armor blankets for the C-130. AFRC previously procured 20 sets. This program procures an additional 15 sets, group A for all C-130s and allows four/five sets of armor for each unit. Low cost, lightweight armor is a commercially available stock listed item. AMC's goal is to have one set per every two aircraft and is procuring additional armor to support the requirement. Some group A replacement is required as armor is moved from aircraft to aircraft with minimal group B recurring cost. This will also standardize equipment with active duty, special operations, and Reserve C-130's.

Requirement

C-130 aircraft must conduct airdrop and re-supply operations at low altitudes and slow airspeeds in a small arms/AAA threat environment and this modification will provide minimum protection of aircrew and critical flight systems. The armor is a prerequisite to meet commanders' in-theater requirements. Lightweight armor enhances mobility by minimizing aircraft preparation time due to ease of installation.

Funding

This is funded by NGREA for 15 additional sets. Projected cost for AFRC aircraft is $ 116 K.

C-130/HH-60/KC-135 Carry On SADL

Background and Description

SADL is a low cost data link that uses the Enhanced Position Location Reporting System (EPLRS) radios to prevent fratricide and enhance situational awareness, while providing accurate combat identification capability. This system is secure, jam resistant and has a low probability of intercept. It provides aircraft-to-aircraft, aircraft-to-ground, and ground-to-aircraft connectivity.

Requirement

Current operations across the spectrum of operations (including MOOTW) have proven the need for a battlefield identification system. SADL will provide the AFRC C-130 fleet with a capability to work with other USAF units as well as similarly equipped Army and Marine units in close-in combat scenarios. Incorporation of SADL into AFRC C-130 aircraft will reduce the possibility of other aircraft or ground units shooting down a SADL equipped aircraft. This also enhances mission survivability due to the ability to pass information between aircraft.

US Army and Marines are purchasing over 10,000 SADL radios. This addition will allow AFRC aircraft to enhance the operations on the digital battlefield map. Also allows for digital moving map, position locating, enroute updates to intelligence feeds, drop zone information, etc.

Funding

This modification is UNFUNDED. Projected cost for AFRC aircraft is $ 3.7 M.

FUTURE CAPABILITIES AND MODIFICATIONS

The acquisition of the C-130J replacement airframe and C-130 AMP programs have drastically reduced the need for fleet wide modifications and improvements due to its state-of-the-art avionics and power plants., however, implementation schedule does not address near term needs to keep the older aircraft viable until conversion.

APN 241 Low Power Color Radar

Background and Description

C-130 aircraft require radar as a primary navigation aid for supplemental formation station keeping and to provide weather phenomenon detection/identification data avoidance. C-130s support ground forces by moving personnel, equipment, and supplies in adverse weather and all light conditions.

Requirement

APN 241 provides Weather Mode, Real Beam Map Mode, Monopulse Ground Map, and Terrain Avoidance, Skin Paint Enhancements, and Display Formats

Funding

Procurement Funds required to support conversion of two units - Total TBD

Lighting Harness

Background and Description

C-130 are required to support operations Enduring Freedom, Just Cause, Restore Democracy, and Desert Storm, Provide Promise, and Uphold Democracy which require C-130 aircrews to operate at night with NVGs without adequate NVIS lighting. NVLS Lighting Harness provides an interim capability until C-130 AMP, Phase II NVIS program is implemented.

Requirement

Procure four lighting harness per unit to support training and four UTC taskings

Funding

Procurement dollars required - Total TBD

KC-135 STRATOTANKER

Mission

The KC-135 Stratotanker's principal mission is air refueling. This unique asset greatly enhances the USAF's capability to accomplish its primary missions of Global Reach and Global Power. It also provides aerial refueling support to Air Force, Navy and Marine Corps aircraft as well as aircraft of allied nations.

Features

Four turbofans, mounted under 35-degree swept wings, power the KC-135 to takeoffs at gross weights up to 322,500 pounds (146,285 kilograms). Nearly all internal fuel can be pumped through the tanker's flying boom, the KC-135's primary fuel transfer method. A special shuttlecock-shaped drogue, attached to and trailing behind the flying boom, may be used to refuel aircraft fitted with probes. An operator stationed in the rear of the plane controls the boom. A cargo deck above the refueling system can hold a mixed load of passengers and cargo. Depending on fuel storage configuration, the KC-135 can carry up to 83,000 pounds (37,648 kilograms) of cargo.

In Southeast Asia, KC-135 Stratotankers made the air war different from all previous aerial conflicts. Midair refueling brought far-flung bombing targets within reach. Combat aircraft, no longer limited by fuel supplies, were able to spend more time in target areas.

AMC manages more than 546 total aircraft inventory Stratotankers, of which the Air Force Reserve and Air National Guard fly 292 of those in support of AMC's mission.

The Boeing Company's model 367-80 was the basic design for the commercial 707 passenger plane as well as the KC-135A Stratotanker. In 1954, the Air Force purchased the first 29 of its future 732-plane fleet. The first aircraft flew in August 1956 and the initial production Stratotanker was delivered to Castle Air Force Base, Calif., in June 1957. The last KC-135 was delivered to the Air Force in 1965.

Of the original KC-135A's, more than 410 have been modified with new CFM-56 engines produced by CFM-International. The re-engined tanker, designated either the KC-135R or KC-135T, can offload 50 percent more fuel, is 25 percent more fuel efficient, costs 25 percent less to operate and is 96 percent quieter than the KC-135A.

Under another modification program, 157 Air Force Reserve and Air National Guard tankers were re-engined with the TF-33-PW-102 engines. The re-engined tanker, designated the KC-135E, is 14 percent more fuel efficient than the KC-135A and can offload 20 percent more fuel.

Through the years, the KC-135 has been altered to do other jobs ranging from flying command post missions to reconnaissance. The EC-135C is U.S. Strategic Command's flying command post. One EC-135C is always on alert,

ready to take to the air and control bombers and missiles if ground control is lost. RC-135s are used for special reconnaissance and Air Force Material Command's NKC-135A's are flown in test programs. The Air Combat Command operates the OC-135 as an observation platform in compliance with the Open Skies Treaty.

Over the next few years, the aircraft will undergo upgrades to expand its capabilities and improve its reliability. Among these are improved communications, navigation and surveillance equipment to meet future civil air traffic control needs.

Mission Area Plan Support

In order to fly productive and effective missions as part of the Total Force, theater commanders require aircraft to be equipped with a core combat capability. The Air Force Modernization Planning Process guides the sustainment, enhancement, and acquisition of new capabilities by identifying the warfighters' needs throughout the Air Force structure.

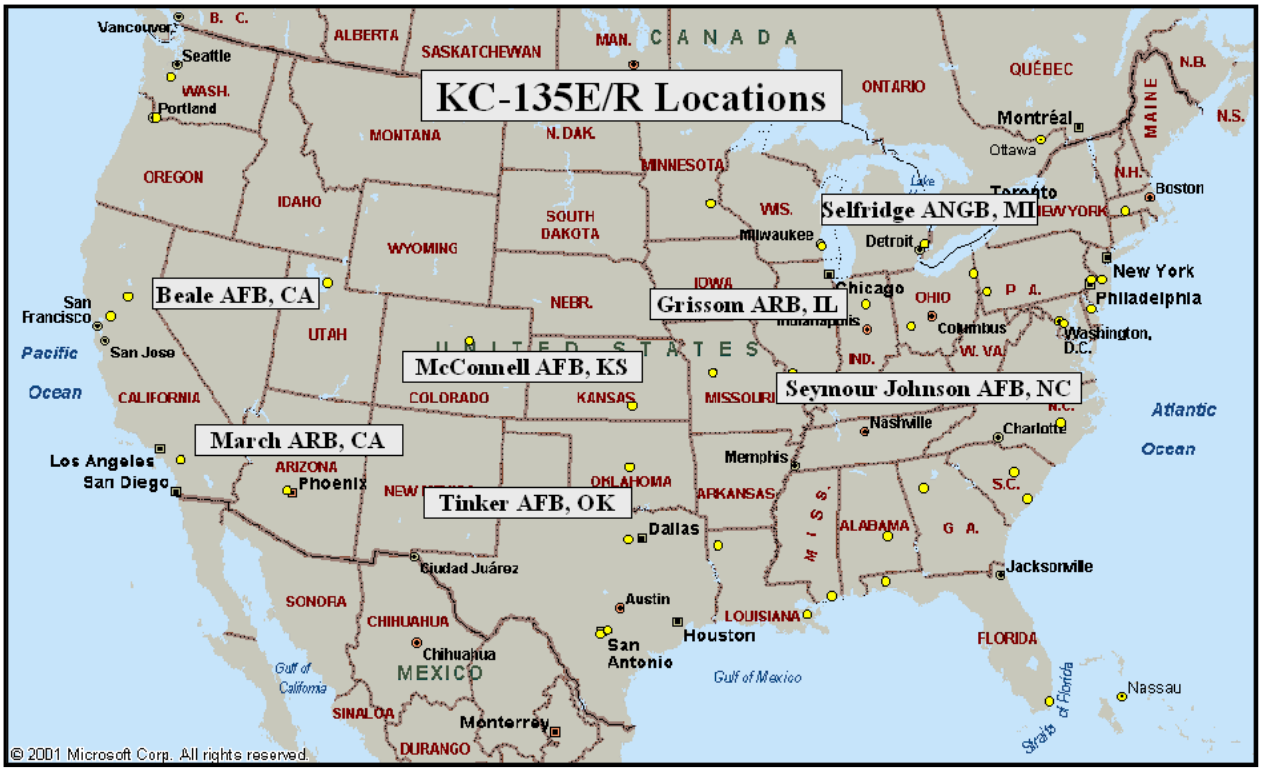
Agile Combat Support	Air Superiority	Combat Search and Rescue	Global Attack	Information Warfare
X	X	X	X	X

Modernization Overview

One of Air Force Reserve Command's most challenging modernization issues concerns our unit-equipped KC-135s. Five of the seven air refueling squadrons are equipped with the KC-135R, while the remaining two squadrons are equipped with KC-135E's. The KC-135E, commonly referred to as the E-model, has engines that were recovered from retiring airliners. This conversion, which was accomplished in the early- to mid-1980s, was intended as an interim solution to provide improvement in capability while awaiting conversion to the R-model with its new, high-bypass, turbofan engines and other modifications. AFRC will continue to look for support to modernize our remaining KC-135E fleet.

The ability of the MAF to conduct the air refueling mission has been stressed in recent years. Although total force contributions have enabled success in previous air campaigns, shortfalls exist to meet the requirements of our National Military Strategy. AMC's Tanker Requirements Study-2005 (TRS-05) identifies a shortfall in the number of tanker aircraft and aircrews needed to meet global refueling requirements in the year 2005. There is currently a shortage of KC-135 crews and maintenance personnel. Additionally, the number of KC-135 aircraft available to perform the mission has decreased in recent years due to an increase in depot-possessed aircraft with a decrease in mission capable (MC) rates. An air refueling Mission Needs Statement has been developed and an Analysis of Alternatives (AoA) will be conducted over the next two years to determine the most effective solution set to meet the nation's future air refueling requirements.

Locations



Aircraft Units and Supporting Organizations

KC-135 Stratotanker		
Operational Units		
940th Air Refueling Wing	Beale AFB, CA	
927th Air Refueling Wing	Selfridge ANGB, MI	
452nd Air Mobility Wing	March ARB, CA	
434th Air Refueling Wing	Grissom ARB, IN	
507th Air Refueling Wing	Tinker AFB, OK	
916th Air Refueling Wing	Seymour Johnson AFB, SC	
931st Air Refueling Group	McConnell AFB, KS	
Air Force Support Organizations		
Oklahoma City Air Logistics Center	Program Office and Depot	Tinker AFB, OK
Supporting Contractors		
Boeing Military Airplane Co.	Prime Contractor	Wichita, KS
Pratt & Whitney	Engines	East Hartford, CT

Funding

KC-135											
Program Element	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**	**TOTAL**
F108 (CFM-56) Re-Engine											
51422F	$ 593.490	$ 52.010	$ 56.010	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 701.510
Flight Data and Cockpit Voice Recorder											
51422F	$ 47.425	$ 44.043	$ 30.676	$ 1.598	$ -	$ -	$ -	$ -	$ -	$ -	$ 123.742
PACER CRAG (Compass, Radar, and GPS)											
51422F	$ 580.054	$ 78.521	$ 1.549	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 660.124
Multi-Point Refueling											
51422F	$ 110.604	$ 1.150	$ 1.000	$ 0.300	$ 4.154	$ 6.105	$ 36.098	$ 38.339	$ 17.342	$ 8.949	$ 224.041
Interphone Replacement											
51422F	$ 32.305	$ 4.259	$ 1.158	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37.722
Precision Altitude Measuring (Reduced Vertical Separation Minima – GATM)											
51422F	$ 82.534	$ 43.801	$ 19.290	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 145.625
GATM Phase II											
51422F	$ 65.126	$ 19.130	$ 84.128	$ 159.307	$ 157.549	$ 151.846	$ 131.427	$ 137.257	$ 125.213	$ -	$ 1,030.983
Electromagnetic Pulse											
51422F	$ -	$ -	$ 6.520	$ 6.940	$ -	$ -	$ -	$ -	$ -	$ -	$ 13.460
Terrain Awareness and Warning System (TAWS)											
51422F	$ 77.442	$ 11.800	$ 8.788	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98.030
Auxiliary Power Unit Boost Pump											
51422F	$ -	$ 160.000	$ 160.000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 320.000
KC-135 Carry On SADL											
51422F	$ -	$ -	$ -	$ 1.450	$ 1.450	$ -	$ -	$ -	$ -	$ -	$ 2.900

Schedule

KC-135										
	Unfunded:		**Partially Funded:**				**Fully Funded:**			
Program	**FY 00 and Prior**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
F108 (CFM-56) Re-Engine										
Flight Data and Cockpit Voice Recorder										
PACER CRAG (Compass, Radar, and GPS)										
Multi-Point Refueling										
Interphone Replacement										
Precision Altitude Measuring (Reduced Vertical Separation Mini										
GATM Phase II										
Electromagnetic Pulse										
Terrain Awareness and Warning System (TAWS)										
Auxiliary Power Unit Boost Pump										
KC-135 Carry On SADL										

PLANNED MODIFICATIONS

F108 (CFM-56) Re-Engine

Background and Description

This modifies the KC-135E aircraft with more powerful, fuel efficient F108 (CFM-56) engines, allowing takeoff on shorter runways with higher gross weights. The cleaner, quieter, F108 engines meet or exceed all noise and pollution standards. Over 25 other systems/sub-systems will extend the life of these aircraft, including reinforced floor, new strengthened main landing gear, reinforced wing structure, new struts, modified air cycle machine, revised nose wheel steering, strut bleed air overheat warning system, fuel temperature probe, Flight Control Augmentation System (FCAS), larger hydraulic lines in fin, Turbine Engine Monitoring System (TEMS), new nacelles/fairing/ducts, modified throttle control system, and rearranged cockpit controls and displays. The combination of these upgrades provides the aircraft with substantially greater capability: better fuel efficiency, greater fuel offload, greater loiter time, and reduced Operations and Maintenance costs.

Requirement

Current "E" model engines no longer meet EPA standards for noise and pollution. This will create common support requirements with the previously re-engined KC-135R. (PMD 7021)

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $43.2 M.

Flight Data and Cockpit Voice Recorder

Background and Description

The Navigation and Safety Upgrade Program combines the C/KC-135 Navigation and Safety Upgrades on Air Force aircraft designated for passenger missions. These modifications include Flight Data Recorder (FDR), Cockpit Voice Recorder (CVR), and Emergency Locator Transmitter (ELT). This modification is baselined with PACER CRAG and Block 30 upgrade.

Requirement

This modification provides safety equipment mandated following the (AMC ORD 010-93-I/II/III)

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $13.3 M.

PACER CRAG (Compass, Radar, and GPS)

Background and Description

This is a combined Global Air Traffic Management (GATM)/Nav Safety Program which replaces the compass and radar. It adds a GPS receiver (embedded GPS/inertial navigation unit) and TCAS integrated through a commercial, off-the-shelf/non-developmental item flight management system, which includes new multi-functional displays. The program does not degrade the capability of the KC-135 in an NBC environment. The program is the foundation for the GATM modification. In October 1999, these modifications became part of the Block 30 and are baselined with RVSM, Nav/Safety, TAWS, and High Reliability Maintenance Free Battery.

Requirement

(AMC ORD 007-97B)

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $71.1 M.

Multi-Point Refueling

Background and Description

This installs drogue/hose reels on aircraft to provide multipoint refueling capability to support US Navy, Marine and Allied aircraft equipped with probe refueling equipment.

Requirement

AMC ORD 003-92-I/II

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $6.2 M.

Interphone Replacement

Background and Description

This is a Global Air Traffic Management communication modification which replace the existing interphone system with a new state-of-the-art interphone which provides improved communication between all crew positions through a highly reliable and maintainable integrated system that also support future growth for GATM requirements. This is being installed concurrently with PACER CRAG.

Requirement

AMC ORD 011-93-I/II/III

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $4.1 M.

Precision Altitude Measuring (Reduced Vertical Separation Minima – GATM)

Background and Description

This is a Global Air Traffic Management (GATM) modification which installs precision altitude measuring equipment that allows KC-135 aircraft to operate in premium reduced vertical separation ICAO airspace. This modification meets oceanic vertical requirements and allows aircraft to operate between FL290and FL410 preventing operations in non-optimum regimes.

Requirement

AMC ORD 007-97B

Funding

This is an AMC and AFMC funded modification. Projected cost for AFRC aircraft is $15.6 M.

GATM Phase II

Background and Description

This is a Global Air Traffic Management (GATM) modification, which includes avionics, upgrades, wiring interfaces, and associated preparation activities for added communications, navigation, and surveillance equipment needed for operation in oceanic airspace where reduced horizontal separations are implemented. The aeronautical satellite communications equipment provides a beyond-line-of-sight capability to support controller-pilot data link communications and automatic reporting of the aircraft's GPS-derived position. It provides direct pilot to controller voice communications. The second HF radio and HF data link modem provide a backup to the SATCOM data link. Dual CMUs prevent a single point of failure in the ATC data link system.

Requirement

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $11.7 M.

Electromagnetic Pulse

Background and Description

This modification incorporates the interphone, and RVSM modifications, which are both on-going Global Air Traffic Management communication/navigation requirements. USSTRANSCOM highlighted a system vulnerability to EMP threat environment associated with the C/KC-135 incorporation of digital technology. For aircraft with a Single Integrated Operation Plan (SIOP) mission, any GATM modification must maintain the same level of electromagnetic pulse protection as the system that it replaces.

Requirement

AMC ORD 007-93

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $1.5 M.

Terrain Awareness and Warning System (TAWS)

Background and Description

The Terrain Awareness and Warning System (formerly known as the Ground Collision Avoidance System) is a Congressionally mandated system that alerts aircrews to flight profiles that project an impact with the ground. It implements the Enhanced Ground Proximity Warning System and uses data from existing aircraft sensors to project the flight path forward in time and avoid controlled flight into terrain incidents.

Requirement

AMC ORD 001-94I/II/III

Funding

This is an AMC funded modification. Projected cost for AFRC aircraft is $10.5 M.

KC-135 Auxiliary Power Unit Boost Pump

Background and Description

This modification replaces the existing KC-135E APU fuel boost pump with the KC-135R-model QSAS in-tank pump. The E-model fuel boost pump impeller fails, leaks internally and is not designed for continuous operation. The modification includes pump, brackets, wiring, trial install, kit-proof support, T.O. updates and TCTO. The change proposal for replacing the pump was received from the contractor in September 2000. This is a Guard/Reserve joint effort.

Requirement

This modification drastically decreases the failure rate and maintenance activity for the auxiliary power unit. The current pump is the original design for the KC-135.

Funding

This program is AMC funded. Projected cost for AFRC aircraft is $ 311 K.

KC-135 Carry On SADL

Background and Description

SADL is a low cost data link that uses the Enhanced Position Location Reporting System (EPLRS) radios to prevent fratricide and enhance situational awareness, while providing accurate combat identification capability. This system is secure, jam resistant and has a low probability of intercept. It provides aircraft-to-aircraft, aircraft-to-ground, and ground-to-aircraft connectivity.

Requirement

Current operations across the spectrum of operations (including MOOTW) have proven the need for a battlefield identification system. SADL will provide the AFRC KC-135 fleet with a capability to work with other USAF units as well as similarly equipped Army and Marine units in close-in combat scenarios. Incorporation of SADL into AFRC KC-135 aircraft will reduce the possibility of other aircraft or ground units shooting down a SADL equipped aircraft. This also enhances mission survivability due to the ability to pass information between aircraft.

US Army and Marines are purchasing over 10,000 SADL radios. This addition will allow AFRC aircraft to enhance the operations on the digital battlefield map. Also allows for digital moving map, position locating, enroute updates to intelligence feeds, drop zone information, etc.

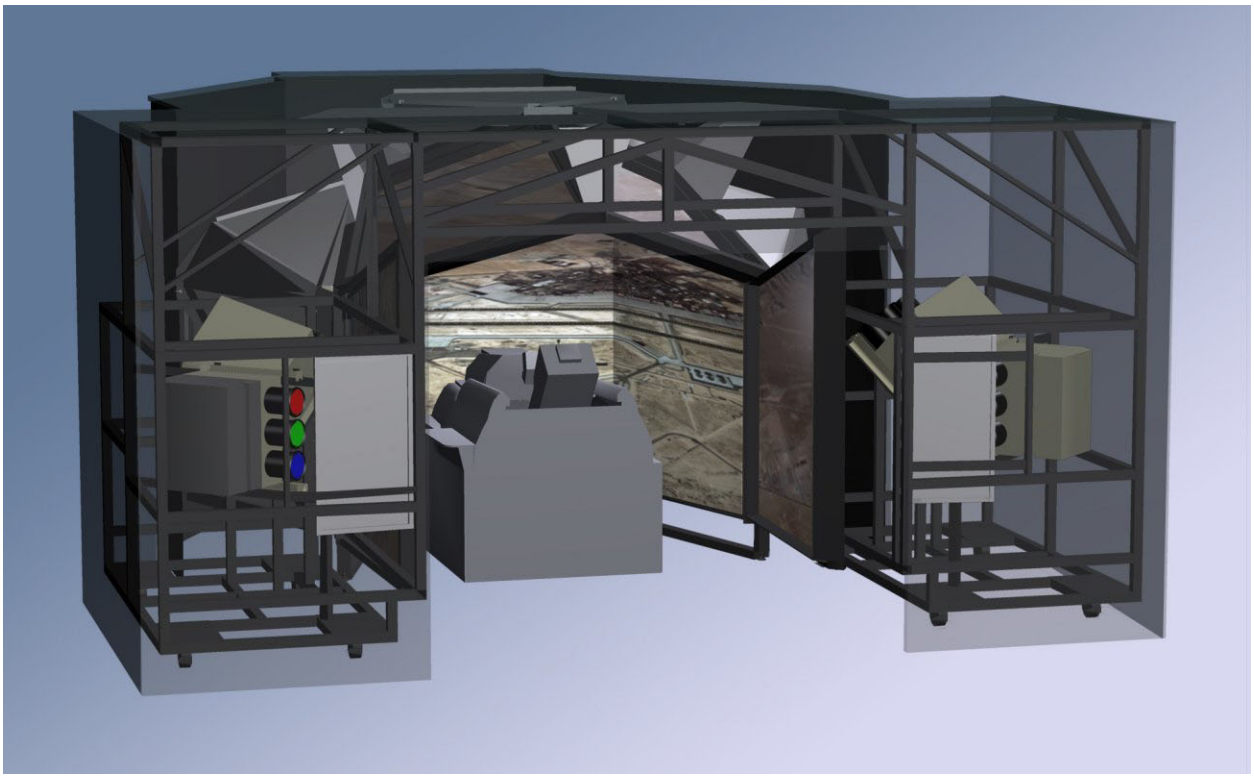
Funding

This modification is UNFUNDED. Projected cost for AFRC aircraft is $ 2.9M.

TRAINING SYSTEMS

Readiness is a key part of both the active duty and reserve requirements. Today's weapons systems demand that both the operators and the maintainers know their procedures and are able to practice them regularly. This equates to constant training. To support this training, each weapon system has a variety of training devices and methods used for these purposes. In many cases, the reserve aircrews and maintenance personnel train with active forces on active duty owned devices. In others, where the Reserve is the primary, or only, operator of a system, the devices are owned, operated and maintained by the Air Force Reserve. The following sections describe the training systems for each of the Air Force Reserve weapons systems and the current and planned modernization objectives.

F-16 Training Systems



F-16 Multi-Task Trainer

The active duty forces share a broad variety of training devices with the AFRC and ANG units. Initial training and requalification training for Reserve personnel is accomplished at Luke AFB, AZ. All training devices there are owned and maintained by AETC for FTU training and AFRC for Reserve continuation training. Following return to their assigned units, F-16 pilots use a unit based Multi-Task Trainer (MTT) to train in Air-to-Air Combat, Navigation, Normal and Emergency Procedures. A variety of visual packages are available, and Ethernet capability is included. F-16 MTT software is fully Government-owned and was used as a basis for A-10 FMT software development. The use of common core software across the different AFRC trainers significantly reduces cost and schedule for performance enhancements and concurrency upgrades.

AFRC (through AFRL and Luke TSC) sustains and improves the F-16 MTT at Ft. Worth, Luke, Hill and Homestead. AFRC is providing MTT upgrades to full tactical training capability (including Counter Measures Suite (CMS)) and planned upgrades of visual systems. AFRC also provides interim sustainment through AFRL/Luke Training Support Center (TSC) until FY04 competition through Ogden.

Planned Modifications

F16 MTT Software Concurrency

This is a series of ongoing modifications to the MTT software to maintain currency with the aircraft. Ongoing upgrades include SCU 4.1 and 4.2, development and integration of the SCU 5.0 upgrade as well as improvements to the visual system. In addition, it maintains the Government-owned common core software for additional Block 30 simulators. This has been entirely an AFRC funded effort. ANG plans to use the F-16 MTT common core software to build additional Block20/30 flight simulators in the outyears.

Future Capabilities and Modifications

Distributed Mission Training/High Level Architecture

Through AFRL efforts, networking capabilities already exist for AFRC's A-10 and F-16 trainers. DMT/HLA initiatives are future technology applications being advocated by several AF acquisition and MAJCOM offices to operate simulators in a broad, networked environment. AFRC is assessing DMT/HLA activities and their impacts to existing AFRC training requirements and assets. Impacts to AFRC F-16 training assets are being reviewed in conjunction with A-10 CASNET studies and developments.

A-10 Training Systems

A-10 Multi-Task Trainer

Like the F-16, AFRC A-10 pilots share similar training devices with both the active duty forces and ANG units. Initial training and requalification training for Reserve personnel is accomplished at either Davis-Monthan AFB, AZ or Barksdale AFB, LA. Following return to their assigned units, A-10 pilots use unit based Full Mission Trainers to train Weapons Delivery, Navigation, Close Air Support, as well as Normal and Emergency Procedures.

AFRC (through Ogden ALC) provides A-10 FMTs at Whiteman AFB and New Orleans NAS and two A-10 FMTs at Barksdale AFB. ACC has four A-10 FMTs and ANG has three at different unit sites. AFRC also provides FMT upgrades to full tactical training capability upgrades of visual systems, and sustainment improvements. AFRL maintains the common core software baseline, which was developed from the AFRC F-16 MTTs.

Planned Modifications

Visual System Upgrades

Using technologies developed by AFRL in Mesa, AZ, this upgrades the visual system in the FMT to a PC-based image generator, with a wrap around visual display system and upgrades the visual database using real world photographic imagery. This allows the pilots to train in a realistic environment and provides excellent training for the A-10 close air support mission. The schedule for these upgrades at Whiteman and Barksdale currently extends through FY07, with an accelerated schedule being planned.

Concurrency Modifications

As additional capabilities are added to the A-10, the training systems must be modified to provide training in the new capabilities. These modifications include upgrade of the two, older Barksdale FMTs to newer, NVG compatible cockpit configuration as well as the Counter Measures Suite (CMS/EGI), Suite 2, and planned Precision Engagement upgrades to the aircraft. This support is an AFRC funded effort.

Future Capabilities and Modifications

CASNET/Distributed Mission Training/High Level Architecture

Through AFRL efforts, networking capabilities already exist in the AFRC's A-10 trainers. AFRC and AFRL are evaluating DMT concepts and capabilities through the AFRC funded CASNET for coordinated close air support/combat search and rescue mission training. DMT/HLA initiatives are future technology applications being advocated by several AF acquisition and MAJCOM offices to operate simulators in a broad, networked environment, to assess DMT/HLA activities and their impacts on existing AFRC training requirements and assets.

CASNET will be the initial entry of the CAS/CSAR community into the larger Distributed Mission Training (DMT) arena. COTS (non-developmental) hardware components are required to be added to AFRC A-10 flight simulators to provide a secure gateway for CASNET participation. Components include a secure Network Encryption Device, Network Interface Unit Board, , router, hub, WAN card, cables, and connections for each device/location.

This is a joint AFRC/ANG funded effort. ACC has projected an investment into CASNET, but to date, has not funded any activity. As the AFRL/AFRC/ANG concept matures, it is anticipated that ACC will participate for the active duty units.

B-52 Training Systems

B-52 Weapon Systems Trainer

The 917th Operations Wing at Barksdale AFB LA operates the only AFRC B-52 unit. Collocated with the active duty 2nd Bomb Wing, the B-52 maintenance and aircrews train alongside their active duty counterparts. Training devices are provided and maintained by Air Combat Command. Likewise, all upgrades and modernization activities are provided by ACC.

C-130 Training Systems

C-130 H2/H3 Mission Simulator

All C-130 crew members, regardless of their final assignment, are trained at Little Rock AFB, AR in the C-130. Specialty training is provided by the gaining command/flying unit. The C-130 Aircrew Training System is operated by AMC and includes all academics, simulation and flight training.

Planned Modifications

C-130 H2/H3 Aircrew Training System (ATS)

The C-130 H2 and H3 Aircrew Training System (ATS) operates at Dobbins ARB to support AFRC, ANG, and AMC required training. AFRC assumed the H2 Formal Training Unit (FTU) responsibilities at Dobbins in Aug 2001. As part of this transition, training analyses concluded the need for an additional H2 aircrew training device for Dobbins ARB. This FTU requirement will be satisfied by conversion of an existing H3 Unit Level Trainer to an H2 configuration to support FTU operations as well as satisfy the training requirements to support H2/H3 ATS and FTU projected student throughput.

This modification also includes concurrency modifications as well as increase of the visual and radar databases for the trainers. The FTU O&M is funded through AMC while the continuation/refresher training O&M is funded by AFRC. AFRC will fund the conversion of the H3 ULT to an H2 training device. As the FTU matures, curriculum evaluations should yield changes to the training systems to maximize the utilization of the devices and minimize impacts to aircraft.

C-130J MATS

Supports AFRC by furnishing a contractor-operated training system to provide C-130J maintenance and aircrew training. The instant contract procures one C-130J WST for Keesler AFB, MS, a Training Systems Requirements Analysis, C-130J Aircrew Courseware, Technical Data, Spares, Change Management and DMT capability. Contract options recently exercised provide for a second WST to be located at Little Rock, FTU standup to include a Training System Support Center, a TMS, an Avionics Systems Management Trainer (ASMT), and various training media. The C-130J MATS program is being coordinated with the C-130J aircraft procurement program.

Future Capabilities and Modifications

C-130 Avionics Modernization Program (AMP)

The C-130 Avionics Modernization Program (AMP) Development Systems Office (DSO), Aeronautical Systems Center (ASC) has selected Boeing as the prime contractor for the C-130 AMP to include avionics upgrade to 519 C-130 aircraft. Boeing will be required to perform development, integration, fabrication, testing, installation, installation support, and logistics support of the avionics modernization of the C-130 fleet. This acquisition will also include upgrade and/or replacement of existing training systems. Training devices will be acquired by Boeing in a future source selection following government agreement to TSRA results.

MC-130 Training Systems

AFRC MC-130 personnel are provided initial training at Kirtland AFB, NM by the 58th Special Operations Wing. Initial training for the C-130 aircraft is accomplished at Little Rock AFB, AR. AFRC MC-130 aircraft and personnel work closely with their active duty counterparts at both Duke Field and Hurlburt AFB FL. AFRC personnel use the Weapons Systems Trainers at Hurlburt. Training devices are provided and maintained by AETC and AFSOC. Likewise, all upgrades and modernization activities are provided by AETC and AFSOC.

HC-130P/N Search and Rescue

Although the HC-130 is designated to perform a unique mission, aircrew device training is primarily accomplished through MC-130P and C-130H training devices provided and maintained by AETC and AMC. Specialized training is accomplished at the unit level with the active duty units. Likewise, all upgrades and modernization activities are provided by AETC and AMC.

Future Capabilities and Modifications

Air Combat Command HC-130 Trainer

Air Combat Command has requested funding to develop and deploy a high fidelity training device dedicated to the HC-130P fleet. This effort is currently under study and is programmed to start in FY 04.

WC-130 Training Systems

The WC-130 fleet is currently transitioning to the WC-130J model. During this transition, all training is being conducted on airframe contractor owned assets. Procurement is underway for the C-130J Maintenance and Aircrew Training System (MATS) provides the USAF with a long term training solution for the C-130J aircraft. The C-130J MATS is unique because it is the first known government-owned, contractor-operated training system procured as a commercial item under Federal Acquisition Regulation Part 12 by the USAF. The first WST will be delivered to Keesler AFB and used by AFRC for their WC-130 crews. This device will be in place in 2003. As soon as the Formal Training Unit for the C-130J is established at Little Rock AFB, AR, initial and qualification simulator training will transition there. The Keesler device will remain operational and used by both active duty and Reserve personnel. This procurement is funded under the overall C-130J MATS program.

AFRC is monitoring this development to ensure that AFRC requirements are included in the training planning and device development.

HH-60G Training Systems

Like many other AFRC aircraft, the AFRC HH-60 crewmembers share a broad variety of training devices with both the active duty forces. Initial training and requalification training for Reserve personnel is accomplished at Kirtland AFB NM. Following return to their assigned units, HH-60G pilots use unit based Mission Trainers and Multi-Task Trainers (MTT) to train in Navigation, Normal and Emergency Procedures, and mission rehearsals. Training devices are provided and maintained by Air Combat Command. Likewise, all upgrades and modernization activities are provided by ACC. There are no AFRC initiatives to procure or modify training devices for the HH-60G.

C-5 Training Systems

C-5 Weapons System Trainer

Initial and transition training for all C-5 crew members is accomplished at Altus AFB, OK by active duty personnel and assets. A realignment of the C-5 fleet in the mid 1990s included a transfer of assets from Dover AFB, DE to Lackland AFB, TX to support the C-5 Southern Hemisphere mission. Formerly, all C-5 activity was performed as an Associate Unit, but the new wing at Lackland was a total Reserve unit. Parallel to the realignment, AMC procured a suite of new training devices including Weapons Systems Trainers, part task trainers, courseware to form a new total training system. Each C-5 base was to have at least one WST for continuation training. This realignment opened two new C-5 bases (Kelly AFB, TX for AFRC and Stewart AFB NY for the ANG) that were not included in the procurement to receive trainers. Both the ANG and AFRC provided funds to modify the procurement and acquire two new C-5 WSTs for their new bases. The AFRC C-5 WST became operational in 2000 and is being used now for continuation training for Lackland C-5 crews.

Planned Modifications

Avionics Modernization Program

The C-5 aircraft is undergoing a major modification to the avionics suite and cockpit displays. This aircraft program will continue through 2005. As the modified aircraft are reassigned to the units, the training systems will be modified to ensure all crews are trained in the new configuration. Current activity is evaluation of the AMP modifications on the training system. The modification will be funded by AMC.

Future Capabilities and Modifications

Engine Replacement

Replacement of the C-5 power plants is not a funded procurement yet, but is programmed to begin in 2004. Training system modifications will be necessary as the handling characteristics of the aircraft will be changed. AFRC is monitoring this development and will ensure that funding is included for training system changes.

C-141 Training Systems

C-141 Weapon System Trainer Interior

The C-141C is a unique system within the Air Force. It is the only weapon system totally owned and operated by AFRC. A single squadron of active duty C-141B models exists at McGuire AFB, NJ. As part of the transition of the C-141 out of the active inventory, the active duty training unit at Altus AFB, OK was closed down, leaving no

initial or upgrade training capability for the C-141. During FY 01, AFRC established a full ground and flying training operation at Wright-Patterson AFB, OH and in early FY02, the first training class of C-141 crewmembers entered the school.

As part of this training unit, the entire C-141 Training System was transferred to Wright-Patterson and in a fully contractor operated system for all academics and simulation training. In flight training is accomplished by AFRC personnel. AFRC instructors and instructional specialists monitor and review all training materials and assess the effectiveness of the contractor training. All C-141 training systems are controlled and maintained by AFRC and the Command is responsible for ensuring concurrency with the aircraft.

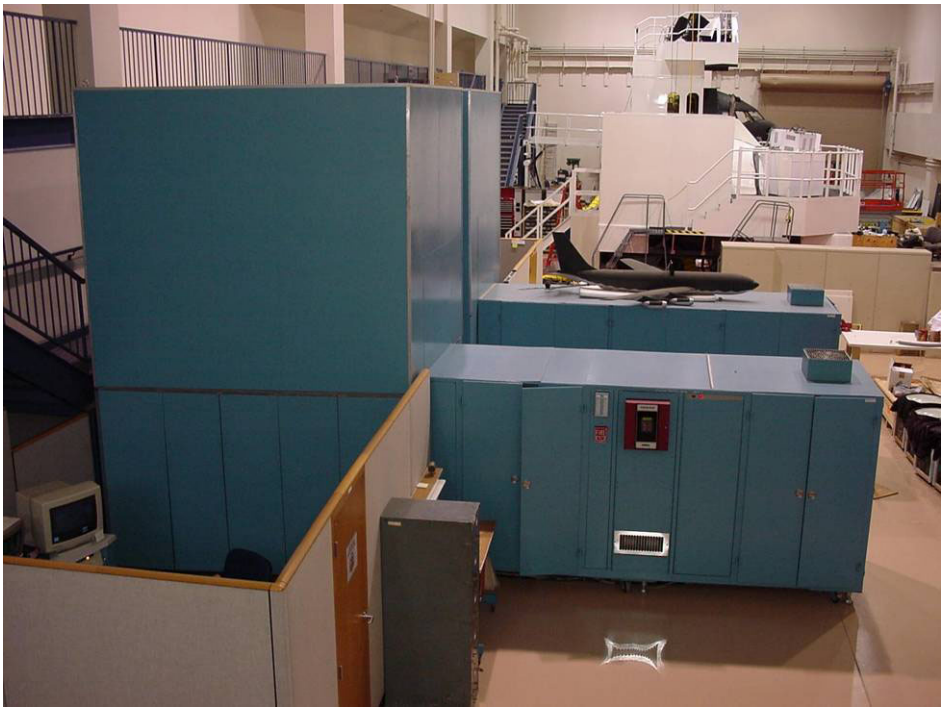
Planned Modifications

The C-141 is projected to be retired in the next five years. As such, no modifications are planned for the aircraft. Safety of flight changes will be incorporated and these will be evaluated for inclusion into the training system.

Training Management System

As part of the new Total Training System contract, the new contractor is supplying a replacement Training Management System and will be converting all training materials, scheduling and student tracking into that system by the end of 2002.

KC-135 Training Systems



KC-135 Weapon System Trainer

The KC-135 Simulator System is comprised of 19 KC-135 Operational Flight Trainers (OFT), 1 WC-135 Weapon System Trainer (WST), 2 Boom Operator Part Task Trainers (BOPTT), 15 Cockpit Familiarization Trainers (CFT), 3 Tabletop Navigational Rendezvous Trainers, 258 Computer Based Training Workstations (CBT), 258 Pacer Crag Part Task Trainers, 24 Pacer Crag Table Top Trainers (6 fielded, others to be delivered), 1 Cargo Loading Trainer, 40 AFMSS Computers, 102 CBT Laptop computers for a total of 723 systems.

The OFTs are fully replicated and functional cockpit trainers with visual systems. Some are modified with full 6 Degree of Freedom (DOF) motion systems. The WST is a fully replicated and functional cockpit trainer with visual

system and is modified with a 3 DOF motion system. The BOPTTs have a complete boom compartment electrified to provide feed back to students practicing normal procedures. Computer generated visual systems adds to the realism. The 15 CFTs are broken out as eight for the Pilot, three for the Boom Operator and four for the Navigator. These systems are constructed of wood and contain no active electronics. They train switch and gauge positions and are used for limited normal procedure training. The Tabletop Navigational Rendezvous Trainers consist of two CPUs, a keyboard and three touch screen monitors. They function as a mockup of the navigator station and provide computer generated simulation during rendezvous. The CBTs are located throughout the world at KC-135 active duty and ARC sites. These trainers aid in teaching various topics through interactive software. The Pacer Crag Part Task Trainers are CBS with Pacer Crag related information and software components. The Pacer Crag Table Top Trainers are actual Pacer CRAG components and display the functions and to a limited extent, respond as if in the aircraft. The Cargo Loading Trainer is a full sized trainer using a modified KC-135 fuselage completely contained within a building. It is designed to train boom operators on cargo loading and handling. The AFMSS Desktop Computers are for training crews on mission-planning. The remaining CBT laptop computers have the same software as the normal CBTs but are deployed to KC-135 active duty and ARC units.

Although most of the KC-135 fleet is assigned to AFRC and ANG units, the training devices are provided and maintained by Air Mobility Command. Likewise, all concurrency modifications, upgrades, and modernization activities are provided by AMC.

SUPPORT SYSTEMS

As a separate agency with multiple stand-alone units, AFRC does not depend on the active duty forces for many of the necessary, day-to-day functions of operating, maintaining, and securing airfields and facilities. Just like our counterparts in the active force and the Air National Guard, we must upgrade and enhance our support forces continually.

Funding

Support Systems											
Program Element	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	TOTAL
C-130 Spray Paint Booth											
52576F	$ -	$ -	$ -	$ 0.640	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.640
Secure Tactical Radios											
55395F	$ -	$ -	$ -	$ 4.000	$ 4.000	$ 10.500	$ -	$ -	$ -	$ -	$ 18.500
Vehicles for Medical UTCs											
59393F	$ -	$ -	$ -	$ 2.040	$ 0.600	$ -	$ -	$ -	$ -	$ -	$ 2.640
Snow Removal Vehicles											
59393F	$ -	$ -	$ -	$ 1.200	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.200
Land Mobile Radios											
55395F	$ -	$ -	$ -	$ 6.930	$ -	$ -	$ -	$ -	$ -	$ -	$ 6.930
Hydrant Fueling Trucks											
59393F	$ -	$ -	$ -	$ 1.410	$ -	$ -	$ -	$ -	$ -	$ -	$ 1.410
Truck Tractors											
59393F	$ -	$ -	$ -	$ 0.689	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.689
Crew Cab Trucks (4x4)											
59393F	$ -	$ -	$ -	$ 0.910	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.910
Flight Line Video Surveillance											
52576F	$ -	$ -	$ -	$ 0.336	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.336

Schedule

Support Systems										
Unfunded:			Partially Funded:				Fully Funded:			
Program	FY 00 and Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09
C-130 Spray Paint Booth										
Secure Tactical Radios										
Vehicles for Medical UTCs										
Snow Removal Vehicles										
Land Mobile Radios										
Hydrant Fueling Trucks										
Truck Tractors										
Crew Cab Trucks (4x4)										
Flight Line Video Surveillance										

PLANNED MODIFICATIONS

C-130 Spray Paint Booth

Background and Description

This is an environmentally compliant, side-down draft, pressurized, dry filter aircraft parts/support equipment paint spray booth insert to be located in 403d Structural Maintenance Paint Shop. This facility upgrade will be used for maintenance painting on C-130J, WC-130J, and WC-130H aircraft parts and both Powered and Non-Powered Aerospace Ground Equipment. Cost: $639,000.00. Included in this requirement is a paint mix room, using non-pressurized, dry filter industrial type ventilation.

Maintenance touch-up is the majority of the workload due to the unit's aircraft flying into hurricane conditions. These conditions result in paint being blasted off from all leading edge surfaces over the entire aircraft from hail and high winds. During isochronical inspections, components requiring maintenance touch-up or total repaint are removed from the aircraft and presented to the Structural maintenance shop for preparation and painting. Bare metal in these areas leads to corrosion of exterior and interior structural components which will then lead to component failure and degrade our mission effective rates if left unattended.

Requirement

Presently, the paint facilities at the 403d Structural Maintenance shop are barely passing exhaust velocity tests. These booths were originally installed during the building construction back in 1985 and were originally continuous water film booths. In 1997, these booths were retrofitted with a dry filter insert that required partial modification to eliminate the water clean-up sludge. This also left the water as a hazardous waste. The system over the past four annual velocity checks has been failing for numerous causes and due to pressurization problems, fumes leak into nearby office and hallway areas, exposing non-painting personnel to isocyanates from the paint being sprayed.

Funding

Requirement submitted and validated by AFRC RRB, FY 01 - 3080 funds identified, awaiting funding document from OSD.

Secure Tactical Radios

Description

This provides tactical field radio sets for all AFRC Force Protection UTCs

Requirement

Updated tactical radio sets are needed for AFRC personnel to assist their duties in the protection of AFRC assets both stateside and when deployed to overseas locations.

Funding

This is an AFRC funded addition and has stretched from its initial funding in FY98 into FY01 and FY 02.

Vehicles for Med UTCs

Description

This multi-purpose vehicle provides AFRC units with necessary personnel and equipment mobility when units are deployed as part of wartime and other contingencies. Since AFRC units are often deployed as stand-alone operations and are unable to rely on active air or ground units for ground transportation for the movement of equipment and supplies. Our planning must ensure that our weapons systems and personnel are properly supported in deployed operations.

The M1097A2 Truck (TRUCK, HIGH MOBILITY MULTIPURPOSE VEHICLE HMMWV M1097A2 – Shelter Carrier) will transport equipment and personnel to the battlefield in support of wartime UTC taskings AECCS, AELTs and MASFs. HMMWVs can be adapted, interchanged, or shared with other agencies, components, or

agencies for a wide variety of taskings. Vehicle replacement has been averaging 4-8 percent annually over the last four years. After warranty period, unit level O&M funds will be required for HMMWV preventive maintenance and fuel costs and estimated at $3,000/yr/asset.

Requirement

The current inventory of vehicles requires some annual replacement due to wear and tear and accidental damage.

Funding

Last order with FY97 funds went to: Westover ARB MA. This effort funds a total of 34 vehicles for 3 bases: Lackland, MacDill, and Westover ARB.

Snow Removal Vehicles

Description

These vehicles (SNOW PLOW, 54000 GVW, ROLL OVER NSN 3825-00-443-7657) provide necessary snow removal activity to CONUS bases. With the transfer of former active duty bases to AFRC, all base maintenance activities have likewise reverted to the Reserve units, including aerodrome snow removal.

Requirement

The current fleet of 15 truck-mounted, 54000 GVW, roll over snow plows are coded as obsolete and no longer available. Depot and local repairs to these older vehicles are no longer cost effective. Procurement of replacements through the depot funded program has been hampered due to the lack of funding.

Funding

The last procurement of snow removal vehicles was in FY98and were assigned to Grissom ARB, IN; Westover ARB, MA; Youngstown–Warren Regional Airport/ARS, OH; and Niagara Falls IAP/ARS, NY. The need still exists for Minneapolis–St. Paul IAP/ARS, MN; General Mitchell IAP/ARS, WI; Pittsburgh IAP/ARS, PA; and Willow Grove ARS, PA.

Land Mobile Radios

Description

This mobile radio provides communications on the flight line and during other operations both in the CONUS and during deployed operations.

Requirement

All Phase I Land Mobile Radios (LMR) must convert from wide to narrow-band per DoD Policy for Land Mobile Radios (LMR), 1 August 2001 and the National Telecommunications and Information Administration (NTIA) directive no later than January 2005. These directives require transition of all assets. Phase II LMRs must comply by January 2008. Phase I is 138-174 MHz; Phase II is 406-420 MHz. Technical solution is either trunked or conventional configuration per base.

Funding

Eleven bases to convert. Costs will vary for each base depending on technical solution. Transition to the narrow band radios is complete at General Mitchell IAP/ARS, WI; Homestead ARS, FL; and NAS Fort Worth JRB, TX. Remaining bases are Niagara Falls IAP/ARS, NY; Willow Grove ARS, PA; Minneapolis–St. Paul IAP/ARS, MN; Youngstown–Warren Regional Airport/ARS, OH; Pittsburgh IAP/ARS, PA; NAS New Orleans JRB, LA; Dobbins ARB, GA; Grissom ARB, IL; and March ARB, CA.

Hydrant Fueling Trucks

Description

The R-12 Hydrant Fuel Truck for hydrant/pit fueling of aircraft increases the capability of ground operations by significantly reducing the required time to refuel cargo and refueling aircraft. Newer models of these vehicles have doubled the fuel transfer capability.

Requirement

The pumping capability of the flight line hydrant is 1200 gallons per minute where the existing R11 pumps are only 600 gallons per minute. AFRC has a total of ten trucks authorized and assigned with nine of which are both eligible for replacement and have exceeded their life expectancy. The funding level of new procurements through the vehicle priority buy system has been consistently under funded. Additionally, the existing hydrant trucks are not eligible for depot repair.

Funding

The new vehicles will be assigned to Westover ARB, MA and March ARB, CA. The upcoming conversion of Portland IAP, OR increases the requirement and allocation of vehicles by three.

Cost: $156,598 Quantity: 9 Total Cost: $1,409,382

FUTURE CAPABILITIES AND MODIFICATIONS

Truck Tractors

Description

Truck, Tractor, 44500 lbs. Gross Vehicle Weight, 6x4 Diesel Engine Driven

Requirement

We currently have a shortage of five vehicles, with 20 additional on-hand assets categorized as replacement eligible. This shortage is driven by mission changes within aerial ports having air-drop taskings is the main cause for this shortage. These tractors are multipurpose and are used in a wide variety of scenarios while providing the necessary capability for which they are intended.

Funding

In FY98, the last order was assigned to Pittsburgh IAP/ARS, PA. The newly purchased vehicles will be assigned to those units where there are the greatest shortages.

Cost: $76,553 Quantity: 9 Total Cost: $689,000

Crew Cab Trucks (4x4)

Description

These 6-passenger, 6000 lbs. Gross Vehicle Weight trucks are a 4x4 commercial design vehicle that support local operations and off base support and recovery operations for air drop assigned units.

Requirement

These utility vehicles are required to transport drop zone management and cargo recovery teams to and from drop zones. One-way distance to many drop zones exceeds 100 miles.

Vehicles provide drop zone management and cargo recovery teams with the capability to travel at any time over any land surface in and around drop zones to set up runway markers and locate recoverable air-dropped loads. Replacement assets have exceeded their service life by more than five years.

Funding

In FY99, the last order was assigned to Peterson AFB, CO; Maxwell AFB, AL; and Youngstown–Warren Regional Airport/ARS, OH. The newly purchased vehicles will be assigned to those units where there are the greatest shortages.

Cost: $30,370 Quantity: 3 Total Cost: $91,110

Flightline Video Surveillance

Description

The flight line video surveillance system (VSS) allows remote monitoring of AFRC Protection Level (PL) 3 resources by security forces personnel. It consists of all-weather cameras, centrally located monitors and video recording capabilities.

Requirement

The flight line VSS is phase I of the AFRC Flight line Threat Reduction Program (formerly Flight line Enhancement Program), which was approved by AFRC/CV on 20 Nov 94. AFRC installations security forces are minimally manned with few or no additional personnel for increased patrols or posting during emergencies and periods of increased threat. The flight line VSS acts as a force enhancer, providing real time assessment and command and control for responding forces. Used in conjunction with other physical security aids such as intrusion detection systems (IDS), lighting and fencing; flight line VSS will greatly enhance security forces' detection and assessment capabilities, and provide a very effective integrated/layered security. Additionally, the flight line VSS allows commanders to observe maintenance operations in progress and security situations, in near real time, via command post remote monitors.

Funding

Cost: $168K/Site + 5% logistical risk Quantity: 12 Total Cost: $2.1M

Funding to date: $705,000 (FY98); $385,000 (FY98 – Flight line IDS transfer/closeout funding)

Funding received through APPN 0350 and projects complete for March ARB CA, Grissom ARB IN, Westover ARB MA, Homestead ARS FL, NAS JRB New Orleans LA, and Youngstown ARS OH. Dobbins ARB GA system was funded through Olympic funds. Funds received through APPN 0350 and projects pending for Gen Mitchell ARS WI and Willow Grove ARS PA. Funds pending through UBM Reprogramming 1415 ($360K) for Pittsburgh ARS PA and Niagara Falls ARS NY. Funding required for Carswell ARS TX and Minn-St Paul MN.

Antiterrorism/Force Protection (AT/FP) Equipment

Description

AT/FP equipment items, which will provide increased efficiency and effectiveness in some or all the core AT/FP capabilities of deterrence, denial, detection and assessment. These equipment items combine to improved application of the Integrated Base Defense concept.

Requirement

The dramatically increased terrorism threat to US assets coupled with the minimal security manpower available at AFRC installations mandate immediate equipment mitigation. Identified equipment provides early warning and deterrence to counter acts of international and domestic terrorism. The uniqueness of the AFRC mission and limited day-to-day maintenance activity, make our restricted areas and installations slightly more vulnerable to common criminal activity as well as those threats previous mentioned.

Funding

Total Cost: $7,882,932 (APPN 3080 - $1,498,128) (APPN 3740 - $6,384,804) This program is UNFUNDED.

APPENDIX A – GLOSSARY

Acronym	Definition
A/C	Aircraft
AAA	Anti-Aircraft Artillery
AAM	Air to Air Missile
AAR	Air to Air Refueling
ABDR	Aircraft Battle Damage Repair
ACATS	AEF Common Avionics Test Set
ACC	Air Combat Command
CCIU	Advanced Central Interface Unit
ACM	Air Combat Maneuvering
ADC	Analog to Digital Converter
ADP	Advanced Display Processor
ADS	Advanced Distributed Simulation
ADT	Active Denial Technology
AEF	Air Expeditionary Force
AETC	Air Education and Training Command
AEU	Advanced Electrical Unit
AF/XOC	Air Force Directorate of Command and Control
AFAE	Air Force Acquisition Executive
AFCS	Automatic Flight Control System
AFIT	Air Force Institute of Technology
AFMC	Air Force Material Command
AFOSR	Air Force Office of Scientific Research
AFRC	Air Force Reserve Command
AFRL	Air Force Research Laboratories
AFSAA	Air Force Studies and Analysis Agency
AFSOC	Air Force Special Operations Command
AFSPC	Air Force Space Command
AGC	Automatic Gain Control
AGE	Aerospace Ground Equipment
AGL	Air to Ground Laser
AGM	Air to Ground Missile
AI	Artificial Intelligence
AIA	Air Intelligence Agency
AIFF	Advanced Identify Friend or Foe
AIM	Air Intercept Missile
AIRCMM	Advanced IRCM Munitions
AIS	Avionics Intermediate Station
AL	Armstrong Lab
ALARM	Air-Launched Anti-Radiation Missile
ALC	Air Logistics Center
ALCM	Air Launched Cruise Missile
AMC	Air Mobility Command
AMFABS	Advanced Maintenance Free Aircraft Battery System
AMP	Avionics Modernization Program
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
ANGB	Air National Guard Base
AOA	Analysis of Alternatives (formerly: COEA)
AOA	Angle of Attack
APPN	Appropriation
APU	Auxiliary Power Unit

Acronym	Definition
ARC	Air Reserve Component
ARM	Anti-radiation Missile
ASC	Aeronautical Systems Center
ASC/YW	Aeronautical Systems Center, Training Systems Product Group
ASE	Automatic Support Equipment
ASIP	Airframe Structural Integrity Program
ASP	Aircraft Self-Protection
ASRAAM	Advanced Short-Range Air to Air Missile
ATD	Advanced Technology Demonstration
ATF	Advanced Tactical Fighter
AT/FP	Antiterrorism/Force Protection
ATIRCM	Advanced Threat Infrared Countermeasures
ATP	Advanced Targeting Pod
ATR	Automatic Target Recognition
AVRS	Advanced Video Recording System
AVTR	Airborne Visual Tape Recorder
AWACS	Airborne Warning and Control System
BA	Budget Authority
BAI	Battle Area Interdiction
BDA	Bomb/Battle Damage Assessment
BIT	Built in Test
BLADE-GT	Blade Life Analysis and Design Evaluation for Gas Turbines
BLOS	Beyond Line of Sight
BMC3I	Battle Management C3I
BVR	Beyond Visual Range
C2	Command and Control
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
CA	Counter Air
CAD	Computer Aided Design
CAF	Combat Air Forces
CAM	Computer Aided Manufacturing
CAOC	Combined Air Operations Center
CAP	Combat Air Patrol
CAS	Close Air Support
CBU	Cluster Bomb Unit
CCG	Computer Control Group
CEP	Circular Error Probable
CGB	Central Gearbox
CINC	Commander-in Charge
CIT	Combined Interrogator Transponder
CLS	Contractor Logistics Support
CM	Countermeasures
CMUP	Conventional Mission Upgrade
CODEL	Congressional Members/Delegations
COEA	Cost and Operational Effectiveness Analysis
COSSI	Commercial Operations and Support Savings Initiative
COTS	Commercial Off-the-Shelf
CPU	Central Processor Unit
CRDA	Cooperative Research and Development Agreement
CRM	Cockpit Resource Management
CSAR	Combat Search and Rescue
CSARTF	Combat Search and Rescue Task Force
CTSS	Contractor Training Support Services
CUPID	Combat Upgrade Program Integration Details

Acronym	Definition
CVR	Crystal Video Receiver
DARPA	Defense Advanced Research Projects Agency
DCA	Defensive Counter-Air
DDR&E	Director, Defense Research and Engineering
DF	Digital Frequency
DGPS	Differential Global Positioning System
DIA	Defense Intelligence Agency
DIRCM	Directed Infrared Countermeasures
DIS	Distributed Interactive Simulation
DLA	Defense Logistics Agency
DMA	Defense Mapping Agency
DME	Distance Measuring Equipment
DMS	Diminishing Manufacturing Sources
DMT	Distributed Mission Training
DNA	Defense Nuclear Agency
DoD	Department of Defense
DSB	Defense Science Board
DSCS	Defense Satellite Communication System
DSMS	Digital Stores Management System
DSO	Defensive System Operator
DT&E	Development, Test, and Evaluation
DUSD	Deputy Undersecretary of Defense
EA	Electronic Attack
EAF	Expeditionary Air Force
ECCM	Electronic Counter-Countermeasures
ECM	Electronic Countermeasures
ECS	Electronic Communications Systems
EGI	Embedded GPS/INS
EHF	Extremely High Frequency
EID	Electronic Identification
ELINT	Electronic Intelligence
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EO	Electro-Optical
EO/IR	Electro-optical/Infrared
EOB	Electronic Order of Battle
EPLRS	Enhanced Position Location Reporting System
ESC	Electronic Systems Center
EU or E/U	Electrical Unit
EW	Electronic Warfare
EWO	Electronic Warfare Officer (backseater)
FAA	Federal Aviation Administration
FAC	Forward Air Controller
FC	Front Cockpit
FCS	Flight Control System
FLIP	Flight Information Publications
FLIR	Forward Looking Infrared (Sensors)
FMC	Fully Mission Capable
FMT	Full Mission Trainer
FOC	Full Operational Capability
FOD	Foreign Object Damage
FoV	Field of View
FSRS	Frequency Select Receiver System
FTU	Flying Training Unit

Acronym	Definition
FY	Fiscal Year
FYDP	Five Year Defense Plan
GaAs	Gallium Arsenide
GBU	Guided Bomb Unit
GHz	Gigahertz
GPS	Global Positioning System
GRFL	Groundwater Remediation Field Laboratory
GUI	Graphical User Interface
HARM	High-Speed Anti-Radiation Missile
HF	High Frequency
HLA	High Level Architecture
HMCS	Helmet Mounted Cueing System
HMD	Hemet Mounted Display
HMT/D	Helmet-Mounted Tracker and Display
HOTAS	Hands On Throttle and Stick
HQ	Headquarters
HTS	HARM Targeting System
HUD	Heads Up Display
Hz	Hertz
ICCIU	Improved Advanced Central Interface Unit
IAIS	Improved Avionics Intermediate Station
IAW	In Accordance With
IC	Integrated Circuit
ICBM	Intercontinental Ballistic Missile
ID	Identification
IFF	Identification Friend or Foe
IG	Image Generator
ILS	Instrument Landing System
ILSE	Intermediate Level Support Equipment
IMU	Inertial Measurement Unit
INFOSEC	Information Security
INS	Inertial Navigation System
IR	Infrared
IRAD	Independent Research and Development
IRCM	Infrared Counter Measures
IRE	IFF Reply Evaluator
ITA	Integrated Test Adapters
JASSM	Joint Air to Surface Stand-off Missile
JDAM	Joint Direct Attack Munition
JDAM(ER)	JDAM Extended Range
JFC/NCA	Joint Force Commander/National Command Authority
JFS	Jet Fuel Starter
JMTOP	Joint Multi-Tactical Digital Information Link (TADIL Operating Procedures
JP-10	Jet Propellant 10 (standard missile fuel, MIL-P-87107)
JP-5	Jet Propellant 5 (standard high flash point Navy fuel, MIL-T-5624)
JP-7	Jet Propellant 7 (high temperature, low volatility jet fuel, MIL-T-38219)
JP-8	Jet Propellant 8 (standard AF kerosene jet fuel, MIL-T-83133)
JPATS	Joint Primary Aircraft Training System
JPL	Jet Propulsion Laboratory
JPTS	Jet Propellant Thermally Stable (high thermal stability, high altitude fuel, MIL-T-25524)
JSF	Joint Strike Fighter
JSIMS	Joint Simulation System
JSOW	Joint Standoff Weapon
JSTARS	Joint Surveillance and Target Attack Reconnaissance System
JTIDS	Joint Tactical Information Distribution System

Acronym	Definition
KEAS	Knots Equivalent Airspeed
kHz	Kilohertz
LAN	Local Area Network
LANTIRN	Low Altitude Navigation and Targeting Infrared for Night
LARS	Lightweight Airborne Recovery System
LCC	Life Cycle Cost
LCF	Low Cycle Fatigue
LEF	Leading Edge Flap
LGB	Laser Guided Bomb
LMSS	LANTRIN Mobile Test Set
LO	Low Observable
LORAN	Long-Range Radio Aid to Navigation
LPD	Low Probability of Detection
LPI	Low Probability of Intercept
LST	Laser Spot Tracker
MAF	Mobility Air Forces
MAJCOM	Major Command
MAP	Mission Area Plan
MDF	Mission Data File
MFD	Multifunction Display
MICAP	Mission Capability
MILSATCOM	Military Satellite Communications
MILSTAR	Military Strategic and Tactical Relay Satellite
MISREP	Mission Report
MNS	Mission Need Statement
MOOTW	Military Operations Other Than War
MPM	Microwave Power Modules
MPRS	Multi-Point Refueling System
MROC	JTIDS Multiple Required Operational Capabilities Document
MSIP	Multi-Stage Improvement Program
MTBF	Mean Time Between Failure
MTD	Missile Technology Demonstration
MTI	Moving Target Indicator
MWS	Missile Warning System
Nav/EWO	Navigator/Electronic Warfare Officers
NCALS	NVIS Compatible Aircraft Lighting System
NGREA	National Guard and Reserve Equipment Account
NVD	Night Vision Device
NVG	Night Vision Goggles
NVIS	Night Vision Imaging System
O&M	Operations and Maintenance
OBOGS	On-Board Oxygen Generation System
OFP	Operational Flight Program
OFT	Operational Flight Trainer
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OSO	Offensive System Operator
OT&E	Operational Test and Evaluation
OUE	Operational Utility Evaluation
P3I	Pre-Planned Product Improvement
PACAF	Pacific Air Force
PATS	Precision Attack Targeting System
PC	Personal Computer
PCMCIA	Personal Computer Memory Card International Association
PD	Pulse Doppler (Radar)

Acronym	Definition
PDM	Program Decision Memorandum
PE	Program Element
PE	Precision Engagement
PGM	Precision Guided Munitions
PIDS	Pylon Integrated Dispenser System
PIP	Product Improvement Plan
Pk	Kill Probability
PL	Protection Level
PLAID	Precision Location and Identification
PMAI	Primary Mission Aircraft Inventory
PMD	Program Management Directive
POM	Program Objective Memorandum
PPBS	Planning, Program, and Budgeting System
PRAM	Producability, Reliability, and Maintainability
PRF	Pulse Repetition Frequency
PRIDE	Provide Reliability Improvement Dedicated Effort
PSP	Programmable Signal Processor
PSYOP	Psychological Operations
R&D	Research and Development
R&M	Reliability and Maintainability
R2CSR	Rapid Response to Critical System Requirements
RAM	Radar Absorbing Material
RAMTIP	Reliability and Maintainability Technology Insertion Program
RCS	Radar Cross Section
RDT&E	Research, Development, Test, and Evaluation
RERP	Re-Engining Reliability Program
RF	Radio Frequency
RFP	Request for Proposal
RM&S	Reliability, Maintainability, and Supportability
ROC	Required Operational Capability
ROE	Rules Of Engagement
RPV	Remotely Piloted Vehicle
RSLP	Rocket System Launch Program
RTIC	Real Time in Cockpit
RTIC/RTOC	Realtime Information Into and Out of Cockpit
RULER	Remaining Useful Life Evaluation Routine (lubricants)
RWR	Radar Warning Receiver
Rx	Receive
S/DEAD	Suppression/Destruction of Air Defenses
SADL	Situational Awareness Data Link
SALT	Strategic Arms Limitation Treaty
SAM	Surface to Air Missile
SAMP	Single Acquisition Master Plan
SAOC	Sector Air Operations Center
SAR	Search and Rescue
SAR	Synthetic Aperture Radar
SATCOM	Satellite Communications
SCU	Software Configuration Update
SLEP	Service Life Extension Program
SME	Special Mission Equipment
SOC	Special Operations Command
SOF	Special Operations Forces
SORD	System Operational Requirements Document
SPD	System Program Director
SPO	System Program Office

Acronym	Definition
SRD	System Requirements Document
SRM	Short Range Missiles
SSM	System Support Manager
STRATCOM	Strategic Command
SWC	Space Warfare Center
T&E	Test and Evaluation
T/R	Transmit/Receive
T/W	Thrust to Weight Ratio
TACAN	Tactical Air Navigation
TACC	Tactical Air Control Center
TADIL	Tactical Data Link
TAF	Tactical Air Forces
TAP	Technology Area Plan
TBA	Theater Battle Arena
TBD	To Be Determined
TDU	Tactical Data Unit
TEWS	Tactical Electronic Warfare Systems
TGP	Targeting Pod
TMD	Theater Missile Defense
TOA	Total Obligation Authority
TPS	Test Program Sets
TRP	Threat Response Program
TSF/CNMS	Tactical Situation Format/Communication and Navigation Management System
TSPG	Training Systems Product Group
TWT	Traveling Wave Tubes
Tx	Transmit
UARRSI	Universal Air Refueling Receptacle Slipway Installation
UAV	Unmanned Aerospace/Aerial Vehicle
UHF	Ultra High Frequency
ULT	Unit-Level Trainer
USAF	United States Air Force
USAFA	United States Air Force Academy
USAFE	United States Air Forces in Europe
USMA	United States Military Academy
USNA	United States Naval Academy
USSOCOM	United States Special Operation Command
USSPACECOM	United States Space Command
UTD	Unit Training Device
UV	Ultraviolet
VFR	Visual Flight Rules
VHF	Very High Frequency
VHSIC	Very High Speed Integrated Circuit
VLF	Very Low Frequency
VSD	Vertical Situation Display
VSS	Video Surveillance System
VTC	Video Teleconferencing Network
WAN	Wide Area Network
WCMD	Wind Corrected Munitions Dispenser
WEPTEC	Weapons and Tactics Conference
WLT	Weapons Load Trainer
WSC	Wideband Satellite Connectivity
WSO	Weapon Systems Officer
WST	Weapon System Trainer
WVR	Within Visual Range

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APPENDIX B – CONTACTS

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APPENDIX C – AFRC MODERNIZATION ROADMAP CHARTS

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APPENDIX D – FEBRUARY RROC UNFUNDED REQUIREMENTS

Air Force Reserve Command
Robins Air Force Base, Georgia

Reserve Requirements Oversight Council
27-28 Feb 2002

Unfunded Requirements Charts

Process Owners:
Requirements Division, Directorate of Plans & Programs
HQ AFRC/XPR

Prty	AFRC Unfunded Procurement List 1-Mar-02	FY03 Qty	FY03 Cost	Total Qty	Cost $M	Unit $M
	Congressional Add - Appropriation 3010					
1	C-130 Js (Multi-Yr)	2	145.40	3	218.10	72.700
2	C-5A Airlift Defensive Systems	6	8.30	32	21.30	0.500
3	F-16 Litening Pod Upgrade Modification	36	14.50	36	14.50	0.400
4	F-16 Litening ER Pod Procurement	8	9.42	8	9.42	1.040
5	F-16 Advanced Targeting Pod Procurement	10	12.00	40	48.00	1.200
6	C-130 Radar Replacement (APN-241)	16	8.00	27	13.50	0.500
7	KC-135 R Engine Kits (Multi-Yr)	2	54.00	16	432.00	27.000
8	C-5A Re-Engining (Multi-Yr)	0	0.00	32	1176.00	36.750
	Miscellaneous Equipment - Appropriation 0350YR					
1	F-16 Commercial Central Interface Unit (CCIU)	80	3.20	80	3.20	0.040
2	WC-130 Digital Dewpoint Hygrometer	13	0.41	13	0.41	0.032
3	F-16 Color Display (Multi-year - NRE in 02)	23	4.80	72	11.60	0.161
4	Tactical Radios	41	4.25	82	8.50	0.104
5	A-10 Fuel Tank Foam Modification	33	0.18	33	0.18	0.006
6	HH-60G 200 Gallon Auxillary Fuel Tank	15	2.10	15	2.10	0.140
7	C-130H3 Unit Level Trainer Conversion	1	3.90	1	3.90	3.900
8	F-16 Helmet Mounted Cueing System (HMCS)	0	0.00	80	20.60	0.258
9	F-16 Situational Awareness Data Link(SADL) Upgrade	103	0.65	103	0.65	0.006
10	F-16 Combat Airborne Solid State Video Recorder	36	4.00	72	8.60	0.119
11	HH-60/C-130/KC-135 Carry-on SADL (Multi-Yr)	0	0.00	67	3.69	0.055
12	C-130 Spray Paint Booth	1	0.57	1	0.57	0.565
13	HH-60G Lightweight Aircrew Retrieval System (LARS)	1	0.13	1	0.13	0.130
14	Anti-Terrorism/Force Protection (AT/FP) Equipment	3	1.20	11	1.50	0.136
15	Flightline Video Surveillance System (VSS)	3	0.51	6	1.01	0.168
16	Moter Vehicles for Medical UTC's	34	1.87	44	2.42	0.055
17	Snow Removal Vehicles	7	1.20	7	1.20	0.171
18	Land Mobile Radios (Multi-Yr- NRE in 02)	10	4.00	10	4.00	0.400
19	Hydrant Fueling Trucks	9	1.40	9	1.40	0.156
20	Next Generation Vight Vision Devices	0	0.00	100	1.50	0.015
21	Truck Tractors	10	0.77	10	0.77	0.077
22	Utility Truck	5	0.15	5	0.15	0.030
	A-10 Re-Engin Study	0	1.00			
	Unfunded Requirements Totals		**287.91**		**2010.90**	

Requirement	Submitted By	RROC Recommendation	Explaination for RROC Recommended Action	Other Issues/Impacts
A-10 1760 Weapons System Integration	10AF	Hold	Recommend study to explore and define requirement	
A-10 CSEL Integration/LARS Upgrade	10AF	Hold	Support requirements lacked sufficient definition	
A-10 Combat Fuel Tank – Fire Suppressant Foam Kits	10 AF	Approve	Adds combat capability	LG concerned with structural integrety under G stress
A-10 Radar Altimeter Upgrade	10 AF	Hold	Component qualification test requirements undefined	
A-10 SADL/Moving Map	10 AF	Hold	Capability included within Precision Engagement (PE)	
A-10 Targeting POD	10 AF	Hold	Capability included within Precision Engagement (PE)	
C-5 Defensive Systems	22 AF	Approve	Same systems as C-5B	Manpower impact (est 5 part A;10 part B) O&M impact for DLR
C-5 LAIRCM	4 AF	Disapprove	Non-standard with AMC C-5B's. Cost prohibitive.	
WC-130 Vigilant Digital Hygrometer Installation	22 AF	Approve	AFRC is lead command for WC peculiar systems	
F-16 Avionics MUX Upgrade	10 AF	Hold	Propriety of funding under review by AF/RECB	
F-16 Commercial Based CCIU	10 AF	Approve	Required for advanced weapons deployment	
F-16 Common Airborne Solid State Video Recorder	10 AF	Approve	Current system no longer available and un-supportable	
F-16 DTC Debrief Upgrade	10 AF	Hold	AF/RECB viewed project as an O&M requirement	
F-16 SADL Upgrade	10 AF	Approve	Upgrades AFRC EPLRS to maintain compatibility with USA	
F-16 Litening II Targeting POD Modernization	10 AF	Approve	Provides increased capability and precision	
F-16 Litening ER Targeting POD Procurement	10 AF	Approve	1 POD per 2 PAI not sufficient with current OPS tempo	Out-year CLS costs (O&M) will increase
HH-60G Robertson 200 Gal Single AUX Fuel Tank	10 AF	Approve	Saves weight and provides additional space in cargo area	ACC does not support nor plan to implement this program
HH-60G Lightweight Aircrew Recovery System	10 AF	Approve	One AFRC HH-60 not equipped. Combat requirement	XPR attempting to fund with FY00 fall-out funds. Awaiting OSD OK
Fall Protection System	4 AF	Disapprove	O&M funding required	
Anti-terrorism/Force Protection (AT/FP) Equipment	AFRC/SF	Approve	Includes procurement items only. 04 POM for O&M	
C-130 NVIS Cockpit (Wiring Harness)	22 AF	Hold	Requirement not clearly defined. Further RDT action required	Fall-out procurement funds could be used on current contract. However, item is being stock listed and can be procured with unit
315AW Radios	4 AF	Disapprove	O&M funding required	
315AW Mobility Requirements	4 AF	Disapprove	O&M funding required	
315AW Quick-Don Oxygen Mask	4 AF	Disapprove	O&M funding required	
315AW Night Vision Devices	4 AF	Disapprove	Requirement for next generation NVGs already established. DOT to allocate Goggles to 315AW from	
Advanced Targeting Pods (ATP) (Brought in at RROC)	10 AF	Approve	Aligns AFRC with ACC for inter-operability	4 years ICS, out-year CLS costs (O&M) est. .608M per yr.

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APPENDIX E – AFRC/XPR QUAD CHARTS

AFRC/XPR QUAD CHARTS

AFRC/XPR OL-S QUAD CHARTS