

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE FEBRUARY 2005				
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSE-WIDE / 7			R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160403BB Special Operations Aviation Systems Advanced Development/Project SF100							
COST (Dollars in Millions)	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Cost to Complete	Total Cost
PE1160403BB		82.398	104.330	85.032	58.734	40.994	46.863	37.792	Cont.	Cont.
PE1160404BB	68.341									
SF100, Special Operations Aviation Systems Advanced Development	68.341	82.398	104.330	85.032	58.734	40.994	46.863	37.792	Cont.	Cont.
<i>As directed by Congress, a new program element was established beginning in FY 2005 for Special Operations Aviation Systems Advanced Development. FY 2005-2011 resources were moved from PE 1160404BB.</i> A. Mission Description and Budget Item Justification: This project provides for the investigation, evaluation, demonstration and integration of current and maturing technologies for Special Operations Forces (SOF)-unique aviation requirements. Timely application of SOF-unique technology is critical and necessary to meet requirements in such areas as: Low Probability of Intercept/Low Probability of Detection radar; digital terrain elevation data and electronic order of battle; digital maps; enhanced situational awareness; near-real-time intelligence to include data fusion; threat detection and avoidance; electronic support measures for threat geo location and specific emitter identification; navigation; target detection and identification technologies; aerial refueling; and studies for future SOF aircraft requirements.										

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B. Program Change Summary:

	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>
Previous President's Budget	67.713			
Current President's Budget	68.341	82.398	104.330	85.032
Total Adjustments	0.628	82.398	104.330	85.032
Congressional Program Reductions		-1.294		
Congressional Rescissions		-18.500		
Congressional Increases				
Congressionally Directed Transfer		103.982	59.662	23.156
Reprogrammings	0.628		44.668	61.876
SBIR Transfer	-1.882	-1.790		

Funding:

FY04

- Net increase (\$.628) for improved program efficiencies to the Common Avionics Architecture for Penetration (CAAP) program.

FY05

- Transfer from PE1160404BB (\$103.982M) a result of congressionally directed program element change.
- Congressional decrease (-\$18.500M) to CAAP.
- Decrease of (-\$1.294M) resulting from sectional reductions 8122, 8131, and 8095.

FY06

- Transfer from PE1160404BB (\$59.662M) a result of congressionally directed program element change.
- Net increase (\$44.668M) resulting from procurement funds reprogrammed to RDT&E to offset program cost growth and incorporate numerous modifications made to the Avionics Modernization Program/CAAP baseline.

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FY07 - Transfer from PE1160404BB (\$23.156M) a result of congressionally directed program element change. - Net Increase (\$61.876) resulting from procurement funds reprogrammed to RDT&E for integration and testing of equipment and to offset CAAP program cost growth. Schedule: None. Technical: None.		

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Cost (\$ in millions)	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Aviation Sys Adv Dev	68.341	82.398	104.330	85.032	58.734	40.994	46.863	37.792
RDT&E Articles Quantity								

As directed by Congress, a new program element was established beginning in FY 2005 for Special Operations Aviation Systems Advanced Development. FY 2005-2011 resources were moved from PE 1160404BB.

A. Mission Description and Budget Item Justification: This project provides for the investigation, evaluation, demonstration and integration of current and maturing technologies for Special Operations Forces (SOF)-unique aviation requirements. Timely application of SOF-unique technology is critical and necessary to meet requirements in such areas as: Low Probability of Intercept/Low Probability of Detection (LPI/LPD) radar; digital terrain elevation data and electronic order of battle; digital maps; enhanced situational awareness; near-real-time intelligence to include data fusion; threat detection and avoidance; electronic support measures for threat geolocation and specific emitter identification; navigation; target detection and identification technologies; aerial refueling; and studies for future SOF aircraft requirements.

- Aviation Engineering Analysis. Provides a rapid response capability to support SOF fixed wing aircraft. The purpose is to correct system deficiencies, improve asset life, and enhance mission capability through the means of feasibility studies and engineering analyses. This sub-project provides the engineering required to improve the design and performance integrity of the aircraft support systems, sub-systems, equipment, and embedded computer software as they relate to the maintenance, overhaul, repair, quality assurance, modifications, materiel improvements and service life extensions.
- Common Avionics Architecture for Penetration (CAAP). This program is joined with the USAF C-130 Avionics Modernization Program (AMP). CAAP provides LPD navigation for MC-130 E/H/P and off-board enhanced situational awareness (ESA), large color displays and a SOF processor for AC-130H/U and MC-130 E/H/P.
- CAAP On-Board Enhanced Situational Awareness System (OBESA). This program continues development of OBESA which consolidates threat data from on and off-board sensors into a single coherent image to the crew. OBESA includes the Below Line-Of-Sight Electronic Support Measures (BLOSEsM) and the Special Receiver (SR) and processing software. BLOSEsM is an advanced receiver system which provides geo-location data on threats which are below the line of sight of the current SOF threat warning systems. OBESA will be integrated on SOF C-130s, CV-22s, MH-60s and MH-47s.

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- Joint K-band Terrain Following/Terrain Avoidance (TF/TA) Radar. CAAP initiates development of a SOF common K-band LPI/LPD radar to defeat advanced passive detection threat while maintaining ability to fly safe TF. This radar is targeted for use on all MC-130E/Hs, MH-47Gs, MH-60Ms & CV-22 aircraft.
- EC-130 Obsolescence. This program provides for development and design to resolve special mission equipment obsolescence and vanishing vendor issues.
- MC-130H Aerial Refueling (MCAR). Provides 22 MC-130H Combat Talon II aircraft with the capability to air refuel SOF rotary wing aircraft and CV-22. This capability will extend the range of rotary wing and CV-22 aircraft operating in politically sensitive/denied airspace. Elements of the air refueling system include non-developmental item aerial refueling pods, internal flat stackable tanks, and enlarged paratroop door windows.

B. Accomplishments/Planned Program

	FY04	FY05	FY06	FY07
Aviation Engineering Analysis	3.632	1.392	1.484	1.514
RDT&E Articles Quantity				
FY04 Continued engineering analysis of SOF fixed wing aircraft avionics and sensors. FY05 Continued engineering analysis of SOF fixed wing aircraft avionics and sensors. FY06 Continue engineering analysis of SOF fixed wing aircraft avionics and sensors. FY07 Continue engineering analysis of SOF fixed wing aircraft avionics and sensors.				
	FY04	FY05	FY06	FY07
Common Avionics Architecture for Penetration (CAAP)	48.881	54.192	70.145	38.245
RDT&E Articles Quantity				
FY04 Department of Defense accelerated CAAP X-band TF/TA (APN-241) and off-board ESA development under the US Air Force AMP contract. This acceleration was necessitated by a 26 month slip in the Air Force AMP which created unacceptable risks and cost to SOF's effort to field additional MC-130H Combat Talon IIs to address low density/high demand issues. Specific CAAP activities were an acceleration of APN-241 risk reduction, initiation of developmental testing for MC-130H platforms, CAAP hardware preliminary design review, and CAAP software				

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specification review.

FY05 Continue accelerated APN-241 and off-board ESA development. Specific activities scheduled for FY05: AMP/CAAP preliminary and critical design reviews; Gunship software specification review; and Test Readiness Review (TRR) for Combat Talon I preliminary TF DT&E. Due to the \$18.5M reduction in FY05, award of the SOF baseline configuration update contract modifications were delayed a total of six months.

FY06 The C-130 AMP/CAAP program will be testing the Block 2 hardware and software in the Systems Integration Laboratory (SIL) in preparation for first flight of the Development Test & Evaluation (DT&E) configuration for the MC-130E/H/P Combat Talon aircraft.

Additionally, the CAAP ESA capability will complete its SIL evaluations to support a TRR. CAAP ESA goes on all AC/MC-130 aircraft. In parallel, design and development for the baseline configuration update to reflect post-contract award avionic modifications (Block 10) progresses.

FY07 Flight testing continues for TF performance at low levels and against passive detection threats. The interaction between CAAP LPD TF and CAAP ESA threat response, in particular route re-planning, will be evaluated in flight. SIL evaluations of the avionics baseline (Block 10) updates commence.

	FY04	FY05	FY06	FY07
CAAP On-Board ESA	14.154	21.672	11.071	15.615
RDT&E Articles Quantity				

FY04 Continued development of Below Line-of-Sight Electronic Support Measures (BLOSEsM). Continued engineering analysis and development of special receiver, digital map and color displays. Developed software for correlation fusion of special receiver data with off/on-board threat information.

FY05 Continue development of BLOSEsM to include engineering and integration of system components. Initiate planning for technology demonstration flight test of BLOSEsM hardware and software.

FY06 Complete final laboratory integration and test of BLOSEsM components including Integrated Processor threat correlation, fusion, and display software; begin initial installation of BLOSEsM hardware/software components into test aircraft.

FY07: Perform aircraft integration of BLOSEsM on MC-130 flight test aircraft. Conduct MC-130 BLOSEsM system flight test. Provide BLOSEsM system transition documentation to USSOCOM to support CAAP OBESA legacy APR-46 system replacement on AC/MC-130s.

	FY04	FY05	FY06	FY07
EC-130 Equipment Obsolescence		.642		
RDT&E Articles Quantity				

FY05 Develop and design improvements to resolve special mission equipment obsolescence.

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	FY04	FY05	FY06	FY07
Joint K-band TF/TA Radar			21.630	29.658
RDT&E Articles Quantity				

FY06 Development began in Project D615 and was transferred to this project beginning in FY06 to develop a joint radar. Continues development of a SOF common K-band TF/TA radar to defeat advanced passive detection threat while maintaining ability to fly safe TF. This radar is targeted for use on all MC-130E/H , MH-47Gs, MH-60Ms and CV-22 aircraft. Specific activities include hardware and software preliminary design reviews.

FY07 Continues development of SOF common K-band TF/TA radar. Specific activities include hardware and software critical design reviews and initiation of developmental testing for MC-130E/H platform.

	FY04	FY05	FY06	FY07
MC-130H Aerial Refueling	1.674	4.500		
RDT&E Articles Quantity				

FY04 Conducted engineering activities to redesign the fuel vent valve and relocate fuel lines to facilitate entry into the MC-130H Dry Bays for maintenance purposes. Completed development and integration of -902 pods onto the MC-130H.

FY05 Develop carry-on internal flat stackable tanks.

C. Other Program Funding Summary:

	<u>FY04</u>	<u>FY05</u>	<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>FY09</u>	<u>FY10</u>	<u>FY11</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>
Proc, C-130 Mods	208.918	56.397	67.270	52.550	96.151	102.296	101.735	114.561	Cont.	Cont.

D. Acquisition Strategy :

- Aviation Engineering Analysis. Continue engineering analysis activities to correct system deficiencies, improve asset life, and enhance mission capability of SOF fixed-wing aircraft avionics and sensors.
- CAAP. Develop a common technical solution satisfying fixed and rotary wing requirements for penetration missions. The program will leverage knowledge gained on previously conducted advanced technology demonstrations to implement a low risk solution. The fixed wing application of CAAP will be accomplished by merging with the USAF C-130 Avionics Modernization Program (AMP).
- CAAP OBESA. Leverage current technology developed and demonstrated in the Air Force Research Lab Special Threat Awareness Receiver Transmitter Advanced Technology Demonstration to provide enhanced threat awareness to SOF aircrews.

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- Joint K-band TF/TA Radar. Conduct competition to select up to two contractors to conduct 12-month radar technology demonstrations. At the conclusion of these risk reduction activities, a second competition will be conducted to select one contractor to enter into the System Design and Development (SDD) phase.
- EC-130 Obsolescence. Initiate a special mission equipment program via a pre-competed contract to identify obsolete and vanishing vendor parts replacements, maximizing use of commercial off-the-shelf and non-developmental items.
- MCAR. Integrate a non-developmental item aerial refueling system onto MC-130H Talon II aircraft. The first phase of this program is Foreign Comparative Testing of the MK 32B-902E Aerial Refueling pod. Phase II development of aircraft integration and production installations completed on a pre-competed contract with Boeing, Ft. Walton Beach, FL.