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The article, its author, and its audience deserve better editing and formatting than we have provided at the moment, i.e. none. It is being released in this format because the Small Wars Community of Interest needs this material, and this is the way we can get it out without further delay (which, in some cases, has already been substantial).

The throughput of our publishing has not kept pace with the enthusiasm of our audience and the productivity of our contributing authors. We're working on that, but the author's ideas are ready now. So this article is provided "as is" for the moment. Revised versions of this article for edits, format, and presentation will be posted when they are available and as site improvements are made.

A Method & Estimate

For

Counterinsurgency Aircraft Procurement

by:
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A Method & Estimates for Counterinsurgency Aircraft Procurement

Abstract

Within military academic circles and the special operations community, a call is being made for an aircraft dedicated to the COIN mission. Given the Air Force's budget constraints brought on buy the dedication to the F-22A, advocacy for a COIN aircraft needs the concreteness of hard numbers. Building on Arthur Davis' COIN aircraft advocacy paper, this research focuses not on further advocacy, but on a process and method to actually procure a COIN aircraft. The acquisition focus is on US Special Operations Command's acquisition authority to couple its GWOT mission responsibility with commercial-off-the-shelf aircraft procurement to specifically address the need for an airborne COIN capability.

Beyond the acquisition process, the performance, schedule, and cost information associated with Raytheon's T-6A NTA and Stavatti's SM-27 were reviewed and compared. Additionally, acquisition and operations, maintenance, and support cost estimates were produced for both alternatives. The estimates reflect respective acquisition costs of approximately \$211 million and \$426 million; and operations, maintenance, and support costs of \$38 million and \$47 million, respectively. The latter two costs stated in fiscal year 2007 dollars.

The analysis of alternatives yields a recommendation based on the three key acquisition areas of performance, schedule, and cost. The T-6A NTA is recommended by this analysis. This platform possesses demonstrated performance, immediate availability, and lower costs.

Introduction

Aircraft have shown to be effective in small wars. Particularly effective have been small, comparatively slower, lower technology platforms. The United States Air Force currently possesses no counterinsurgency aircraft of the type advocated by many students of small wars. Given the Air Force's preoccupation with procurement of the F-22A advanced fighter aircraft, little attention is placed on obtaining a platform with specifications aimed at counterinsurgency operations. However, within academic circles and the special operations community, the need for a "low-tech" airborne participant in counterinsurgency operations is gaining traction.

Acquiring a weapons system platform is serious business, with meticulously defined processes and authorities. The purpose of this analysis is to evaluate the possibility of quickly acquiring a counterinsurgency aircraft. By examining the opportunities to turn ideas into aircraft, this analysis identifies specific authorities, processes, requirements, and methodologies for actually procuring an aircraft for counterinsurgency operations. In addition to discussing some of the specifics of the DoD weapon systems acquisition business, an alternative method for procuring a counterinsurgency aircraft platform will be discussed, as will the specific performance attributes, schedule details, and costs associated with two airborne platform options.

Backdrop… or Basis for this Analysis

In his Air Command and Staff College thesis, Major Arthur D. Davis proposed an aircraft solution specifically for counterinsurgency.[1] His paper serves as the backdrop for the current analysis and sets the initial conditions for this appraisal of counterinsurgency aircraft purchase

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[1] Davis, Arthur D., "Back to the Basics: An Aviation Solution to Counterinsurgent Warfare." Air Command and Staff College Wright Flyer Paper No. 23. Air University Press, Maxwell Air Force Base, Alabama, December 2005.

options. Davis' study forms the stepping off point for investigating a possible avenue and estimating the cost of procuring an aircraft platform specifically for the modern counterinsurgency and/or counterterrorism mission. By delving into the specifics of procuring a counterinsurgency aircraft, this analysis serves to advance Davis' work.

Davis provided a recommendation on the type and specifications of an aircraft for the counterinsurgency role. Arriving at his recommendation, Davis took a look at the nature of insurgency and how aircraft were used to suppress insurgents. He looked at the situation in Iraq and specifically the aircraft in use today.

To add credence to his call for a different type of aircraft, Davis presented two case studies in counterinsurgency, where aircraft had validated successes in thwarting insurgents. In both the Algerian and Vietnam experiences, the T-6 Texan and A-1 Skyraider proved to be effective. [2] Davis used this examination of the types and roles of the aircraft previously used to address airpower and countering modern insurgent and terrorist groups.

From his examination, Davis proposed a "low-tech" solution – not meaning the absence of advanced technology, but abdicating the desire to have the latest and greatest of all technological advances. Rather to retain the advantages of slower, proven aspects of good counterinsurgency platforms. "…instead of fast, expensive turbojets, we need reliable, propeller-driven aircraft designed to work in the environment favored by the insurgent."[3] To this end, Davis proposes that:

> Such an aircraft should have the following characteristics: (1) off-the-shelf technology, (2) long range and loiter capability, (3) short takeoff and landing (STOL) capability, (4) ability to operate from austere airfields, (5) diverse weapons-carrying capability, (6) good navigation and fire-control systems, (7) good pilot visibility, (8) speed and maneuverability at low-to-medium altitudes, and (9) ability to absorb ground fire with a high degree of survivability. Of special importance, the aircraft should be inexpensive and suited to the type of support expected of it. As

[2] Ibid, page 8-14.
[3] Ibid, page 2.

> a corollary, it should lend itself well to training pilots from "lesser-developed" nations that will eventually assume responsibility for internal security against insurgent factions…[4]

Based on his examination of both historical and current counterinsurgency demands, Davis recommends the T-6A Texan II as a possible replacement for the Skyradier's role.[5] Taking Davis' recommendation and looking beyond just the T-6A Texan II, this analysis explores the best avenue for procuring a counterinsurgency aircraft; and then estimates the costs of buying and maintaining such a platform.

United States Special Operations Command

The most likely opportunity to quickly procure an inexpensive[6] aircraft platform, meeting the characteristics identified by Davis, is through the acquisition agility provided by United States Special Operations Command (USSOCOM). USSOCOM has Acquisition Agility, meaning it has Title 10 Procurement Authority (the only Unified Command empowered therewith), its own budget line from Congress in the appropriation process, and it is chartered to purchase non-mainstream military equipment.[7] The acquisition flexibility provided by USSOCOM is associated with its role in the Global War on Terrorism (GWOT). The mission of USSOCOM includes leading the GWOT.[8] This lead role involves "the planning and synchronization of DOD activities in support of the GWOT."[9] The extent to which USSOCOM has embraced its role in the GWOT is evidenced by the emphasis placed on this role in both its mission and vision statements. The command's mission statement reads:

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[4] Ibid, page 17.
[5] Ibid, page 19.
[6] This use of inexpensive is relative. The cost of buying a propeller-driven aircraft is inexpensive relative to the cost of modern, 4th generation jet aircraft. In fact, there is an order of magnitude difference – \$20M vis-à-vis \$200M.
[7] Register, Homer W., former USSOCOM contracting officer. E-mail correspondence, 14 February 2006.
[8] Brown, Bryan D. "Statement of General Bryan D. Brown, U.S. Army Commander, United States Special Operations Command before the Senate Armed Services Committee Subcommittee on Emerging Threats and Capabilities on Special Operations Roles and Missions, April 22, 2005.
[9] Ibid.

> USSOCOM leads, plans, synchronizes, and as directed, executes global operations against terrorist networks. USSOCOM trains, organizes, equips and deploys combat ready special operations forces to combatant commands.[10]

And the command's vision is:

> To be the premier team of special warriors, thoroughly prepared, properly equipped, and highly motivated: at the right place, at the right time, facing the right adversary, leading the Global War on Terrorism, accomplishing the strategic objectives of the United States.[11]

Further, the command's annual report states that, "In order to remain decisive on the battlefield of today and posture for success in the future, our priorities remain (1) the Global War on Terrorism, (2) Readiness, and (3) Future SOF."[12] Leveraging the assigned mission and number one priority of USSOCOM, one could argue that a counterinsurgency aircraft would add significant capability to address all three priorities.

The GWOT is a war against insurgency, as the global terrorists' networks will not meet United States forces on a traditional field of battle. Therefore, the GWOT and the tools to fight it, so long as they do not already exist in the services' inventories, are within the preview of USSOCOM. As the "nations lead command for planning and executing the GWOT,"[13] USSOCOM is focusing on the GWOT and the special operations peculiar equipment necessary to confront the enemy.

To buy such equipment USSOCOM possesses its own budget authority, separate from the services. The Cohen-Nunn Amendment to the DoD Authorization Act of 1987, amending the Goldwater-Nichols Reorganization Act of 1986, created USSOCOM as a unified combatant command for all special operations forces; and vested it with its own budget. This budget, identified as Major Force Program Eleven (MFP-11), is specifically for special operations forces. Use of MFP-11 is limited to special operations peculiar equipment and operations, not to be used

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[10] United States Special Operations Command Mission Statement.
[11] United States Special Operations Command Vision Statement.
[12] United States Special Operations Command Annual Report, 2005, page 3.
[13] Ibid.

in any way to augment the budgets of the military services. The role of the Services responsibilities are clearly specified, with support arrangements and categories for common support to all forces and bases.[14]

The law requires that the Secretary of Defense will include in the budget submission a separate request for special operations forces training with foreign forces.[15] Additionally, the legislative intent calls for the special operations command budget proposal to "include requests for funding for – (1) development and acquisition of special operations-peculiar equipment; and (2) acquisition of other material, supplies, or services that are peculiar to special operations activities."[16] Therefore, USSOCOM holds funding and acquisition authority for special operations activities to include foreign internal defense (FID) training.

The definition of special operations peculiar is provided below. Items and material that meet this definition are the only things that are authorized for purchase with MFP-11 funding.

> Equipment, material, supplies, and services required for special operations mission support for which there is no broad conventional force requirement. This includes standard items used by other … Department of Defense (DOD) forces but modified for special operations Forces (SOF); items initially designed for, or used by, SOF until adapted for use as Service-common by other DOD forces; and items approved by the Commander in Chief, US Special Operations Command (USCINCSOC) [*sic*] as critically urgent for the immediate accomplishment of a special operations mission but not normally procured by USCINCSOC [*sic*].[17]

To accomplish its GWOT and FID missions USSOCOM has budget authority to buy special operations peculiar items. This authority would logically apply to an aircraft designed specifically for counterinsurgency operations and/or to enhance FID training with allies and partners in the GWOT.

[14] DoD Instruction 4000.19; DoD Directives 5100.1 and 5100.3.
[15] Title 10 United States Code, Subsection 166(c).
[16] Title 10 United States Code, Subsection 167(f).
[17] Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms, 12 April 2001, page 397.

In addition to straight procurement authority – funds authorized in an annual budget to buy things, recent defense budget supplementals have included "Temporary Authority to use O&M [Operations and Maintenance] funds for combat or contingency construction projects outside the United States, subject to certification of certain requirements and notification to Congress."[18] USSOCOM could request such authority for procurement of a counterinsurgency aircraft, if the case was made that such an aircraft was immediately necessary in the GWOT. This avenue for requesting funds would be much faster than the normal budget process. If approved by Congress supplemental funds could be used to purchase a COIN aircraft, thus speeding the asset into the inventory and saving procurement dollars.[19]

If USSOCOM chooses not to request such temporary procurement authority via an O&M supplemental funding request, or in the event that Congress refuses to grant such authority, the normal acquisition and budget processes remain available to USSOCOM. While the established acquisition processes take time, USSOCOM does possess special agility that can expedite critical acquisition requirements. However, before one can appreciate USSOCOM's special acquisition position, a perfunctory understanding of the formal process is beneficial.

Acquisition Process Requirements

Before discussing the specific requirements associated with a platform, it is necessary to understand a little about the acquisition process. Three principle things should be understood. First, the total cost of the procurement – research, development, test, evaluation, and production

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[18] Hughes, Brian. "Uses and Abuses of O&M Funded Construction: Never Build on a Foundation of Sand." *The Army Lawyer*, August 2005, pages 14-15. Taken by Hughes from the FY04 Emergency Supplemental, Public Law No. 108-106, § 1301, 117 Stat. 1209, 1221 (2003).

[19] Title 10 United States Code, Subsection 2805(c); Thomas, John D., AF/A7CX, and former executor of CE projects using O&M construction authority; and Hughes, Brian. "Uses and Abuses of O&M Funded Construction: Never Build on a Foundation of Sand." *The Army Lawyer*, August 2005, pages 14-15.

costs – determines the acquisition category assigned to the project; and sometimes merely interest in a program will garner it acquisition category status. Second, the level of acquisition category designation also determines the requirement and approval levels for a single acquisition management plan (SAMP). Finally, the milestone decision authority is determined by the program's acquisition category (ACAT). Table 1 summarizes the fiscal thresholds for ACAT designation and the associated decision authority. Adjusted for inflation the ACAT I thresholds

Acquisition Category	Reason for ACAT Designation	Decision Authority

ACAT I	• MDAP (10 USC 2430, reference (n))
	  o Dollar value: estimated by the USD(AT&L) to require an eventual total expenditure for research, development, test and evaluation (RDT&E) of more than $365 million in fiscal year (FY) 2000 constant dollars or, for procurement, of more than $2.190 billion in FY 2000 constant dollars
	  o MDA designation
	• MDA designation as special interest
		ACAT ID: USD(AT&L)
		ACAT IC: Head of the DoD Component or, if delegated, the DoD Component Acquisition Executive (CAE)

ACAT II	• Does not meet criteria for ACAT I
	• Major system
	  o Dollar value: estimated by the DoD Component Head to require an eventual total expenditure for RDT&E of more than $140 million in FY 2000 constant dollars, or for procurement of more than $660 million in FY 2000 constant dollars (10 USC 2302d, reference (o))
	  o MDA designation4 (10 USC 2302(5), reference (p))
	• MDA designation as special interest
		DoD CAE or the individual designated by the CAE

ACAT III	• Does not meet criteria for ACAT II or above	Designated by DoD CAE at the lowest level appropriate

Table 1. Description and Decision Authority for ACAT I - III Programs[20]

[20] DoD Instruction 5000.2, page 21.

come to just under $441.5 million for RDT&E and over $2.408 billion for production in FY06. As for the ACAT II thresholds, the FY06 equivalents for RDT&E and production are over $153.9 million and $725.8 million, respectively.

USSOCOM currently does not manage ACAT I programs. The acquisition program office at USSOCOM is too small to handle large programs. ACAT I programs are executed by the Services for USSOCOM.[21] This fact has significance for the execution of an aircraft program in addition to the F-22A. If USSOCOM choose to pursue the purchase of a counterinsurgency aircraft platform, the command would have to keep the total procurement costs below the ACAT I threshold or face turning it over to Air Combat Command (ACC) for program execution. Another option would be to break with practice and manage it within USSOCOM. This is an important realization, as the general consensus is that ACC would oppose the introduction of a non-jet platform of the likes proposed by Davis and others for the counterinsurgency mission.

The ACAT level, which might be determinable by the type and quantity of aircraft desired, will determine the need for a Single Acquisition Management Plan (SAMP). "A SAMP is required for all non-space Acquisition Category (ACAT) I and ACAT II acquisition programs. For non-space ACAT III programs, SAMPs may be prepared at the discretion of the Milestone Decision Authority (MDA)."[22] The operational structure for the development of a SAMP is depicted in Figure 1, while its development process is shown in Figure 2. "The SAMP results from the collaborative efforts of a multifunctional team. In many respects, the process used to

[21] Johnson, Collie J. "Program Manager Interviews Gary Smith, SOCOM acquisition executive." *Program Manager*, Sep/Oct 1997, Vol. 26, Issue 5, page 6.
[22] SAF/AQ, "Air Force Single Acquisition Management Plan Guide," 24 August 2004, page 1.

develop the SAMP is as important as the document itself. All stakeholders must be active participants in this process."[23]

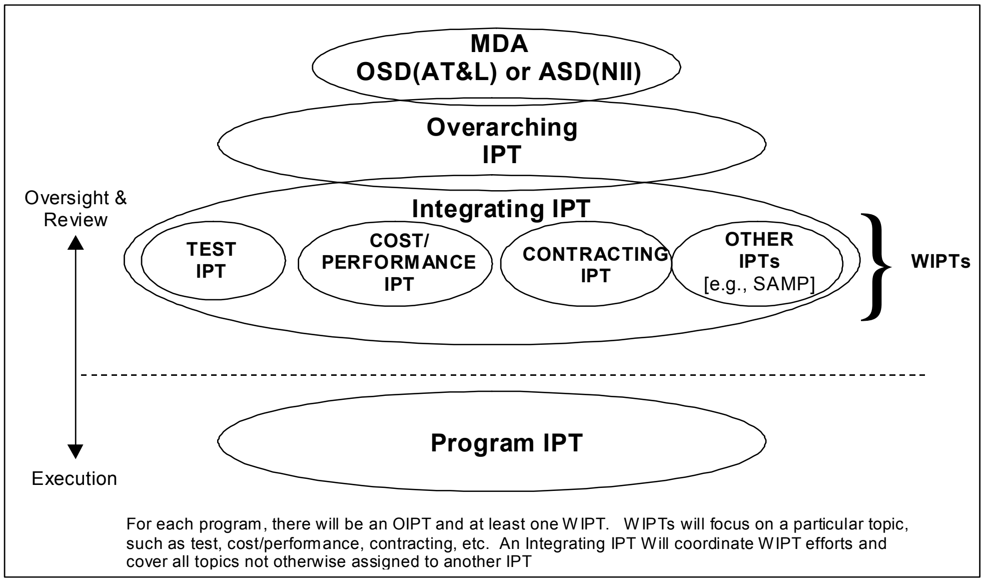

Figure 1. DoD IPT Operational Structure[24]

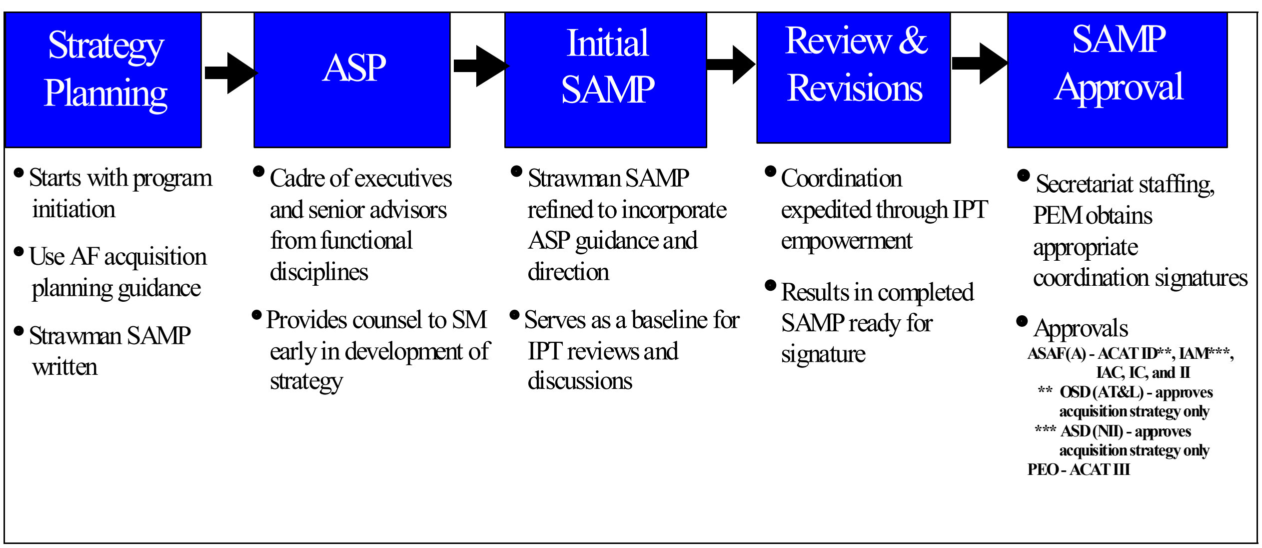

Figure 2. SAMP Development Process[25]

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[23] SAF/AQ, "Air Force Single Acquisition Management Plan Guide," 24 August 2004, page 3.
[24] Ibid.
[25] Ibid, page 5.

Developing an executable acquisition plan is critical to a programs success. "The nature of the stakeholders' involvement in the SAMP process depends primarily on the size and complexity of the program."[26]

> Each of the program's stakeholders must be involved in the SAMP preparation process. This includes representation from all staff levels (Secretariat, Air Staff, AFOTEC, and OSD) as well as the local Center staff. In addition, representation from other participating service agencies should be involved for joint programs. [*Single Managers*] SMs should contact the cognizant Program Element Monitor (PEM) to identify which agencies from Headquarters Air Force, OSD, and AFOTEC should participate. Representatives from these organizations should be identified according to the appropriate ACAT level of the program. Additionally, since industry also plays to a great extent an equally important role in managing and executing program requirements, SMs may find it beneficial to engage them in the SAMP development process. Early and continuous involvement with industry has proven to enhance a cooperative relationship and maximize the opportunity for a successful program.[27]

This structure and process lays out the basics for good program management. This oversight is typically needed due to the size and complexity of large acquisition projects, but does serve to slow down decisions with its inherently bureaucratic nature. Accompanying the structure is an approval process. For ACAT I & II designated programs, the SAMP must be processed as shown in Figure 3.

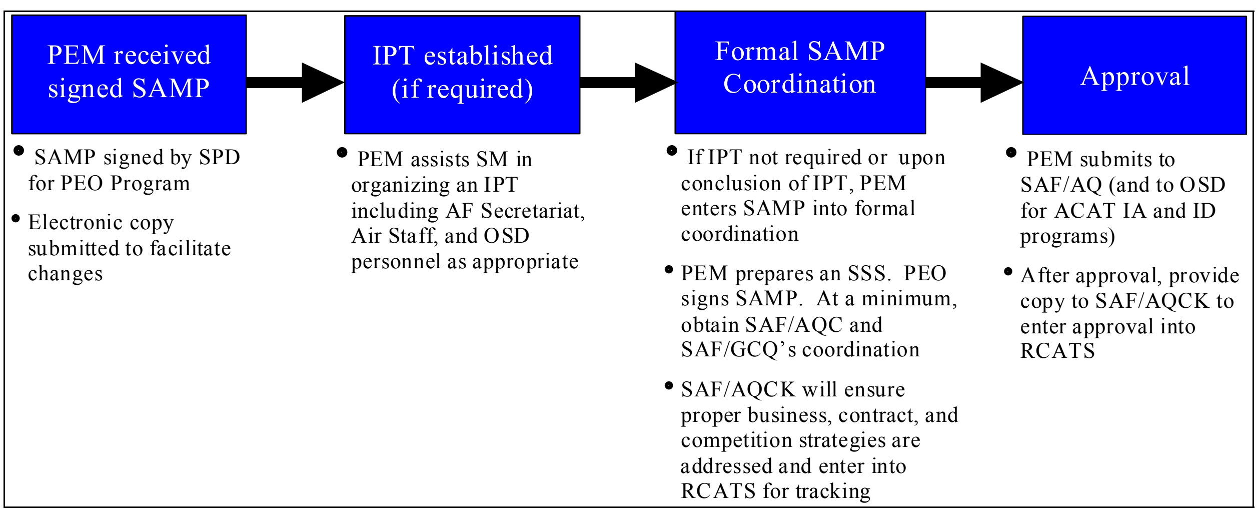

Figure 3 - Air Force SAMP Processing[28]

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[26] Ibid.
[27] Ibid, page 4.
[28] Ibid, page 6.

The final aspect of the acquisition process to be generally discussed herein involves milestone decision authority and timing. If programs are sufficiently large enough to fall into the ACAT I category, a great deal of milestone decision authority is lost to SAF/AQ and OSD. If the acquisition is kept below the ACAT I & II thresholds, it can be managed at lower levels, even down to the acquisition center level.[29]

USSOCOM manages its ACAT II and below programs within the combatant command, without as much outside scrutiny as ACAT I programs. Additionally, the command's location, outside the Washington, D.C. area, translates into less oversight from OSD. USSOCOM's separate budget and acquisition authorities – the only unified command with acquisition authority – enable it to move faster on development an equipment purchases. Reduced external oversight fits in with the rapid acquisition concept that permits the command to quickly meet the needs of the troops engaged in operations.[30]

With regard to the SAMP process, USSOCOM Directive 70-1, a SAMP guide, is the command's tailored process guide for streamlined acquisition. Their authorities are similar to those of the Air Force outlined above, but the timelines are much faster. The hierarchy of approval authorities are co-located, which precludes the long timeframes typically associated with attaining higher headquarters signatures and serves to streamline acquisition efforts in USSOCOM.[31]

This streamlined approach is a response to acquisition reform. Indeed USSOCOM's acquisition authority was granted specifically to overcome the cumbersome acquisition processes

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[29] Ibid.

[30] Johnson, Collie J. "Program Manager Interviews Gary Smith, SOCOM Acquisition Executive." *Program Manager*, Sep/Oct 1997, Vol. 26, Issue 5, page 6.

[31] Register, Homer W. Former US Special Operations Command Contracting Officer. Electronic correspondence, 13 & 16 February 2006.

of the services.[32] In this regard, the processes at USSOCOM predate and fuse nicely with the Air Force's Air Force Smart Operations 21 (AFSO 21) effort to "… seek to constantly give value to our 'customers.'"[33] In keeping with the spirit of AFSO 21, if the special operations or other community within the services value a counterinsurgency aircraft, the Air Force should work with this customer community to see that it receives what it values.

Acquisition Alternatives

Several alternatives exist in procuring an aircraft especially for the COIN mission. Four alternatives are readily apparent: (1) do nothing; (2) stand up an organic systems program office, and develop a COIN platform from scratch; (3) buy a commercially developed airframe suited for the counterterrorist and COIN missions; or (4) continue to fill the COIN mission with *ad hoc* platforms. Of the four choices above 1 & 4 are somewhat interrelated. If nothing specific is done to fill the requirement for a COIN aircraft, either no platform will be available for COIN or a grouping of mixed and ill-suited platforms will serve in the role. Either way, the requirement to provide COIN aircraft for the missions associated with the Global War on Terrorism (GWOT) is under-equipped at best and at worst the requirement is simply not met.

Choice 2, standing up a full blown development effort within the Air Force, seems unlikely. The pressure on both funding and human resources make this option unviable. The people and dollars required to staff and fund such an effort simply do not exist. A low cost commercial alternative – choice 3 – provides the ideal option for procuring a COIN aircraft. This choice offers the opportunity to acquire the performance characteristics desired for a COIN

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[32] Johnson, Collie J. "Program Manager Interviews Gary Smith, SOCOM Acquisition Executive." *Program Manager*, Sep/Oct 1997, Vol. 26, Issue 5, page 62

[33] Wynne, Michael W. Air Force Smart Operations 21. Letter to Airmen, dated 8 March 2006.

aircraft, with a schedule much shorter than organic development; and at a cost far lower than anticipated in an organic effort.[34]

With a preference for choice 3, buying a COTS option,[35] what follows is a look at two COTS alternatives for an effective COIN aircraft, chosen from among five different airframe possibilities. The candidates were: the EMB-314 Super Tucano/A-29 ALX, by Embraer; the PC-21/PC-9M Turbo Trainer, by Pilatus; the T-6A/T-6B Texan II, by Raytheon; the KT-1/KO-1 Woongbee, by Korea Aerospace Industries; and the SM-27S/SM-27T, by Stavatti. The two platforms profiled below – the T-6A NTA Raytheon variant and the Stavatti Machete – were chosen for their respective distinctions of ready availability and specific design as a COIN/CAS aircraft.

The T-6A NTA and SM-27 platforms are profiled in the analyses below. Each platform's performance characteristics, schedule specifics, and cost ramifications are examined, with attention to Davis' nine desired characteristics for a COIN aircraft, reference bottom of page 2. This look at their peculiar performance, schedule, and cost traits is followed by an evaluative comparison of these two platform alternatives. Additionally, their specifications are laid-out beside the quintessential CAS aircraft, the A-1 Skyraider, and the A-10 Thunderbolt II, a.k.a. the Warthog. Initially, we will examine the T-6A NTA.

[34] The commercial route precludes "gold plating" that typically accompanies organic development; and the tendency to alter the design every time a new capability becomes available. Additionally, commercial purchase prevents redesign for every manifestation of the recognized threat. Thus COTS protects schedule and costs, will also guarding against performance degradation due to over-loading the initial design.

[35] If contracting to this extent, serious consideration should be given to turning over Total System Performance Responsibility (TSPR) to the contractor. Just as the COTS purchase can eliminate the need for an Air Force standing Systems Program Office, TSPR can remove the requirement for an organic Air Logistics Center function. COTS with TSPR allows the private sector marketplace to provide an end-to-end solution for a COIN aircraft. Such simple solutions, supportable in the marketplace, can provide critical capability ideally suited for the situation at hand; and all for an affordable cost.

T-6A NTA. The T-6A NTA is a weaponized T-6A, the latter currently in production as the trainer of choice for the United States Air Force. This weaponized variant is also a production aircraft, previously built and sold to the country of Greece for use by the Hellenic Air Force. "The T-6A NTA was originally developed for the Hellenic Air Force to serve in a dual role as both a pilot trainer and as an inexpensive counter-insurgency aircraft."[36] Greece demonstrated the platform's effectiveness by using it to conduct 24-hour airborne security over Athens during the 2004 Olympic Games.[37] Given that the aircraft is in production, its performance characteristics are well defined, as is its production schedule and costs.

Performance. The T-6A NTA provides demonstrated performance. The two-seater aircraft has been produced and flown; and its weapon stores qualified in five configurations.[38] The platform is not a design on paper, but a physical finished product with demonstrated performance characteristics. The T-6A NTA provides the counterinsurgency characteristics that many experts desire. The platform is sufficiently armed to protect ground troops, promote deterrence missions, or engage in punitive strikes. Furthermore, and perhaps most importantly the aircraft provides "long endurance for extended loiters"[39] over areas of interest or concern. Figure 4 illustrates the five weapon stores configurations currently tested and approved for the T-6A NTA. Qualification for weapons employment from these store configurations was done at Eglin AFB's Air Armament Center.[40]

[36] Raytheon Aircraft Company. "Response to Request for Information: Fixed Wing Platform Procurement for the Iraqi Air Force." Proposal GBD05-IT6-049, December, 2005, page 11.
[37] Ibid.
[38] Ibid, page 20.
[39] Downs, William Brian. "Unconventional Airpower." *Air & Space Power Journal*, Spring 2005, Volume XIX, Number 1, page 23.
[40] Raytheon Aircraft Company, page 20.

In order for an aircraft to provide the traits for good counterinsurgency operations, a balance must be achieved between weaponry, weight, and fuel consumption. The T-6A currently being used as a trainer by the US Air Force possesses an approximate range of 900 nautical miles. The weaponized version, the T-6A NTA, has a range of about 450 nautical miles, with a much longer reach with the use of external tanks, see Figure 5. However, external tanks do reduce the number of pylon hard points available for weapons.

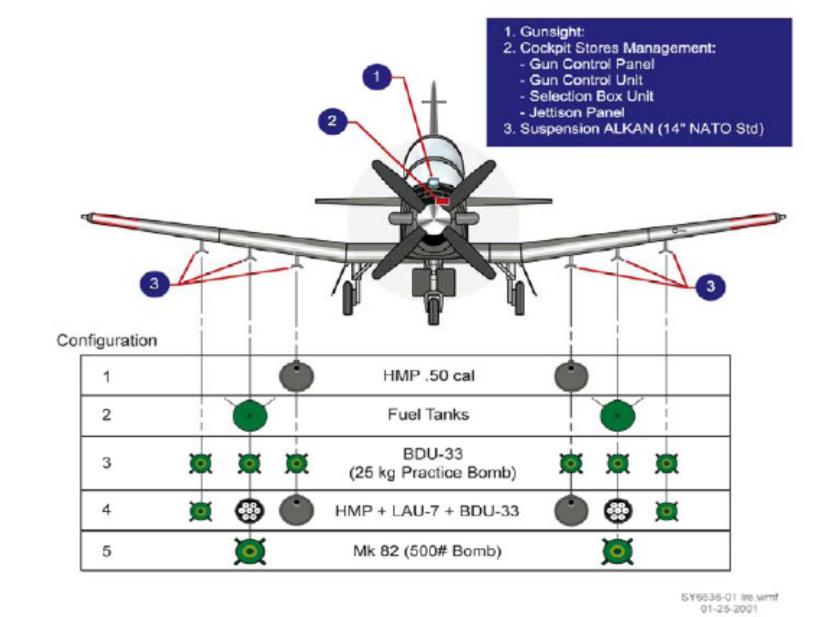

Figure 4. Typical T-6A NTA Stores Configuration

Depending on the ingress and egress times, and the extent to which the T-6A NTA is weaponized, it possess the capability to loiter for over 4½ hours at 25,000 feet. Loiter time falls significantly with weapons load coupled with activity at lower altitudes.[41] Without weapons, or minimally armed – possibly, machine gun only – the T-6A NTA becomes an observation platform with over 1,100 miles range and 9 hours of loiter time. The range and altitude tradeoffs for both the unarmed and weaponized T-6A NTA are depicted in Figure 5 below.

An additional positive performance trait is the T-6A's ability to operate out of short, austere airfields or even off roadways. The aircraft's takeoff requirement is 1,775 feet and it can land in as little as 1,900 feet, making it ideal for use in small base operations; or for contact with

[41] Scott, Doug. Raytheon Aircraft Company, Director of Strategy & Business Development for Government Business. Interview via phone, 26 February 2006.

ground troops via primitive roads or open fields. Further performance specification and capabilities can be found in Table 4, on page 24.

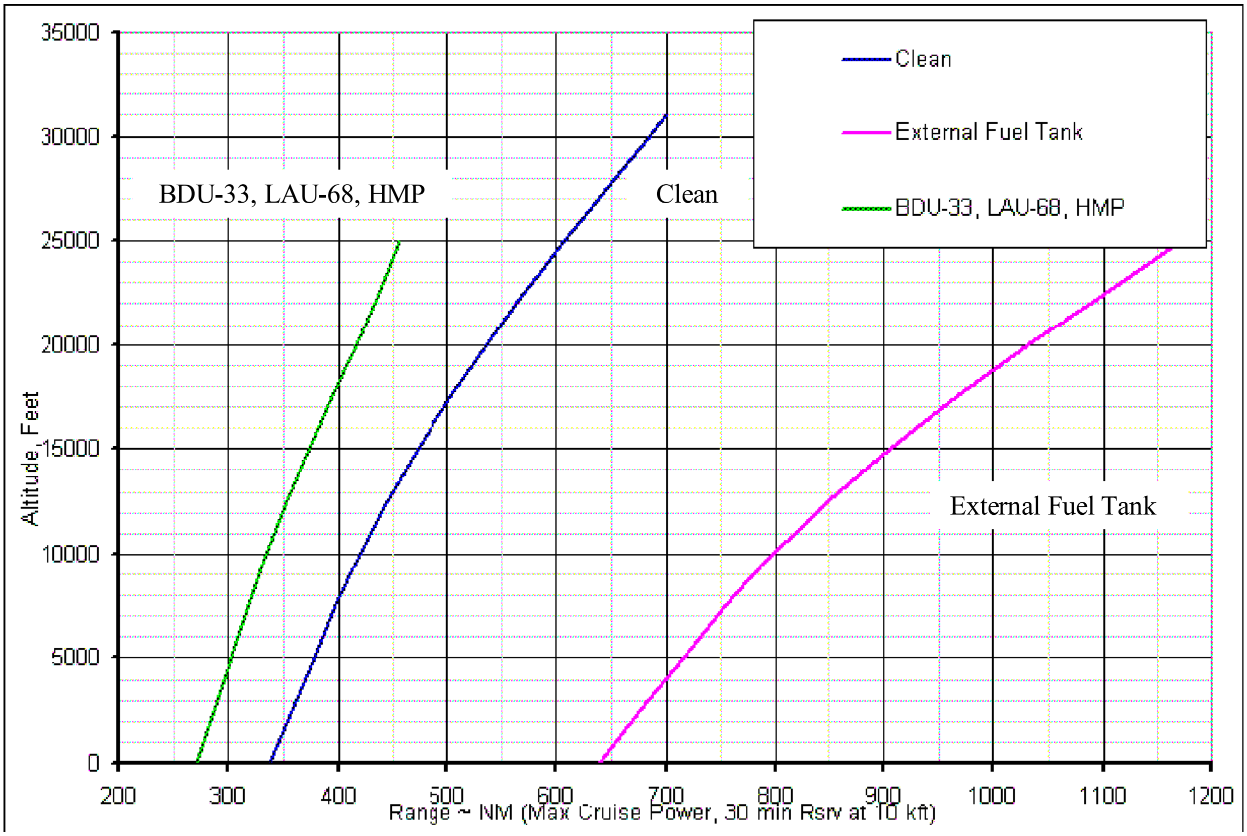

Figure 5. T-6A NTA Range versus Altitude Comparison of Clean, EFT, and HMP/LAU-68/BDU Configurations[42]

The fact that the T-6A NTA is a production aircraft with qualified weapons stores and tested performance should bode well for its consideration as a COIN platform. The platform provides the much desired trait of long loiter capability, in conjunction with the ability to carry weapons. These demonstrated performance characteristics provide a positive affect on production schedules.

Schedule. Shifting from the platform's performance, we now turn to schedule considerations. In terms of production schedule, the T-6A NTA provides an almost immediate response to the need

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[42] Raytheon Aircraft Company, page 7.

for a COIN aircraft. Having already produced this variant for the Hellenic Air Force, spin-up and production time is minimal. Production timelines and delivery schedules are known for the T-6A NTA. Currently, the T-6A production line is 40 aircraft ahead of schedule for the US Air Force's trainer replacement program, so schedule capacity exists for this platform and the production design is mature.

Based on Raytheon's demonstrated production performance and experience in actually building T-6A NTAs, they can confidently forecast production for the airframe. Raytheon's production facilities can produce five T-6A NTA aircraft per month.[43] For the purposes of this analysis, three aircraft per month is the fastest production schedule examined. This pace was chosen simply to accommodate the assumption, made in this analysis, of USSOCOM standing up a squadron of 36 COIN aircraft. Additionally, a USSOCOM buy schedule of 36 of these aircraft in a year would leave excess production capacity for US allies and partners in the GWOT to simultaneously begin purchase of the same aircraft.

Cost. In addition to its highly definitized schedule, another advantage of the T-6A NTA alternative is its known purchase costs. The cost to produce the T-6A NTA is known from the Greek production line. Thus, the aircraft itself is commercially priced at $5,500,000.[44] The total cost, in fiscal year 2007 dollars, to buy 36 of these platforms would be approximately $211.2 million, see Table A-1 in Appendix A. The low purchase price makes the T-6A NTA an attractive alternative for COIN.

The price for a squadron of 36 T-6A NTAs is far below the ACAT I or II limits, and thus easily with the purview of USSOCOM's acquisition authority and ability to manage. In fact, purchase of approximately 130 T-6A NTAs is required to eclipse the ACAT II threshold, and

[43] Ibid, page 2.
[44] Ibid, page 43.

thus require a SAMP. In the event that fewer than 36 aircraft are desired, the estimates provided in Tables B-1 and C-1 in Appendices B and C depict the inflation adjusted costs of the T-6A NTA for schedules calling for 18 or 12 aircraft per year. Given that the operations and support costs for 36 aircraft eclipse their purchase price within 5 years, a good deal of time went into estimating these annual sustainment costs.

In order to estimate the total costs of the T-6A NTA to the US military, the costs of operating the T-6A trainer already owned by the US Air Force was used as an analogous system – which indeed it is. Table 2, derived from data contained in the Air Force Total Ownership Cost (AFTOC) database, displays the total fiscal year 2005 costs for the T-6A platform. The T-6A fleet's total cost of $132,673,358 can be divided into the total inventory of 192 T-6A's at the end of fiscal year 2005 for an individual aircraft average cost of $691,007 per year. These costs, displayed in the format required by the Cost Analysis Improvement Group (CAIG), show costs in each of the CAIG elements associated with unit personnel, unit operations, maintenance, sustaining

Level 2 CAIG Data for the T-6A Texan II		
CAIG element	**CAIG Description**	**Total**
1	Unit Personnel	$31,315,166
1.1	Operations Personnel	$28,935,735
1.2	Maintenance Personnel	$1,432,861
1.3	Other Direct Support Personnel	$946,571
2	Unit Operations	$4,131,662
2.1	Operating Material	$4,131,662
2.2	Support Services	
2.3	TDY	
3	Maintenance (Mx)	$54,652,564
3.1	Organizational Mx & Support	$54,652,564
3.2	Intermediate Mx	
3.3	Depot Mx	
4	Sustaining Support	$26,592,227
4.1	System Specific Training	$26,481,565
4.2	Support Equipment Replacement	
4.3	Operating Equipment Replacement	
4.4	Sustaining Engineering & PM	$110,662
4.5	Other Sustaining Support	
5	Continuing System Improvements	
5.1	Hardware Modifications	
5.2	Software Mx & Modifications	
6	Indirect Support	$15,981,738
6.1	Installation Support	$15,886,580
6.2	Personnel Support	$86,721
6.3	General Training & Education	$8,437
Total	Total Expenditures	$132,673,358

Notes:
1. In Then Year Dollars.
2. Slight addition errors may occur in totals due to rounding.

Table 2. T-6A Operations and Maintenance Costs (FY05)

support, continuing system improvements, and indirect support. In Table 2, blank cells associated with a CAIG element indicate that no costs were incurred in that area for the platform in fiscal year 2005. However, one must note that with significant contractor logistics support, some elements are aggregated as contract costs and not disaggregated into the level of detail intended by the CAIG structure. One can see this in Table 2, under the CAIG element denoted 3.1; the contractor provides maintenance under one all encompassing contract; thus the distinction of intermediate and depot maintenance is lost to the database and estimators trying to delineate costs at such a level.[45]

In order to arrive at an adequate, rough order of magnitude (ROM) estimate for the costs of a weaponized T-6A, one must include the costs of operating, maintaining, and supporting the munitions. For the purposes of this analysis, the munitions costs associated with the 23d Fighter Group, a stand-alone group of A-10s with their own munitions storage area, were deemed analogous to the munitions costs expected of the weaponized T-6A. Therefore, the data pertaining to the munitions costs of the 23d Fighter Group's A-10s was extracted from the AFTOC database. Table 3 contains the data for the 41.5 primary aircraft assigned (PAA) to the 23d Fighter Group. The $4,340,466 total munitions associated costs amounted to an average of $104,590 per A-10 aircraft in fiscal year 2005.

Level 3 CAIG Data for the A-10 Thunderbolt II at Pope AFB		
CAIG element	**CAIG Description**	**23 Fighter Group**
2.1.2	Training Munitions & Expendable Stores	$4,340,466
2.1.2.1	Ammunition	$2,613,084
2.1.2.2	Bombs	$799,657
2.1.2.3	Rockets	$395,679
2.1.2.4	Training Missiles	
2.1.2.5	Sonobuoys	
2.1.2.6	Pyrotechnics	$532,046

Table 3. Training Munitions & Expendable Stores Costs (FY05)

In the estimates generated for the costs of a weaponized Raytheon platform, the level 3 CAIG elements for 23d Fighter Group munitions and stores were incorporated into the T-6A AFTOC data reflected in Table 2. Both data sets were normalized for

[45] This would be the case for either aircraft alternatives examined in this study, if TSPR is sought and approved.

number of aircraft, adjusting the T-6A data from 192 PAA and the A-10 data from 41.5 PAA to the 36 COIN aircraft inventory assumption used in this analysis. Data normalization took place simultaneously with the embedding of the munitions costs into the overall estimate for the T-6A NTA.[46] Rows 18 through 24 of Table A-1 in Appendix A show the embedding of the munitions and stores costs into the T-6A platform's total costs.[47]

Machete SM-27. The Machete is a proposed product of Stavatti Aerospace. The SM-27 is a design aimed at building a platform specifically for CAS and COIN missions. When looking at the characteristics and specifications of the SM-27, one should keep in mind that none are in production and, as of this writing, the research and development phase remains incomplete.[48]

Performance. The SM-27 design calls for a large weapons store, with multiple configurations. Figure 6 depicts the weapons store configurations for the Machete. None of these configurations have been qualified, as the airframe is still in design. One should understand that elimination of some configurations might

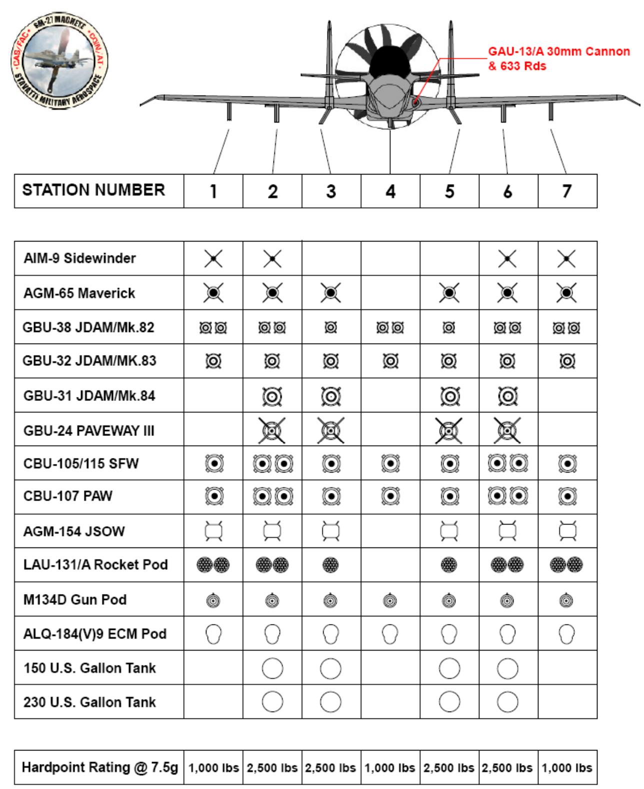

Figure 6. SM-27 Stores Configuration

[46] This was done using the Automated Cost Estimator – Integrated Tools (ACE-IT) cost engine. ACE-IT is a product of Tecolote Research, Inc.
[47] Each of the estimates generated for the T-6A NTA and SM-27 alternatives, see Appendices A through C uses the T-6A and 23d Fighter Group A-10 costs as an analogy.
[48] Beskar, Chris, President of Stavatti Aerospace. Interview via phone, 27 February 2006.

occur as a result of weapons qualification testing.

The design of the SM-27 is well suited for CAS and COIN, with a balance between weaponry, weight, and fuel consumption. The SM-27 is designed to provide a tactical radius of 700 nautical miles and a ferrying range over 1,500. However, external tanks do reduce the number of stations available for weapons. Given these specifications, a long loiter time is expected, but the large weapons store might significantly reduce loiter capability. Loiter time falls significantly with weapons load at lower altitudes, but the specifications data for the SM-27, see Table 4 on page 24, would indicate impressively long loiter times when armed solely with its built-in cannon. The tactical radius and weapons payload tradeoffs are illustrated in Figure 7.

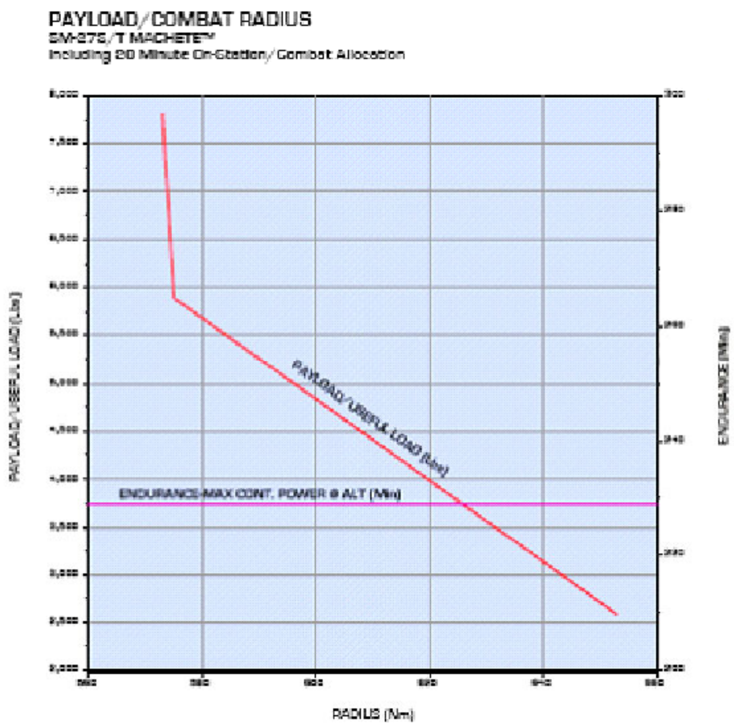

Figure 7. SM-27 Machete
Payload to Combat Radius

One other performance characteristic of note is the SM-27's short take off and landing capability. The Machete is designed to takeoff in a distance of only 1,678 feet, while landing requires 2,081 feet. This capability enables the airplane to operate in austere environments, under less than optimal conditions – possibly without the necessity of a landing strip – depending on the particular circumstances.

Schedule. The planned production schedule is dependent upon the version of the SM-27 desired. Current plans are to produce only 17 two-seater SM-27Ts annually and 33 each year of the one seat SM-27S.[49] Due to the long lead time in beginning production, one would assume these annual production plans are adjustable.

The most important aspect of the SM-27 Machete's schedule is the expected date of full rate production – 2009 or 2010. Provided all goes well with development, test, evaluation, and tooling, the first Machete's are years away. Unfortunately, engineering change orders are likely during the conclusion of the SM-27's RDT&E phases and during its production. These changes will likely delay full production until at least 2010.

Possibly the second most significant aspect of Machete production is that any attempt by USSOCOM to quickly obtain 36 aircraft effectively crowds out any allied purchase for the first two years of production. Stavatti's production plans call for far less SM-27s each year than assumed required. If USSOCOM tries to build a squadron, while encouraging other countries to join in purchasing these aircraft for compatibility of training, there simply will not be enough to go around in the near term – 2010 through 2014. With this in mind Tables B-3, C-2, and C-3 in Appendices B and C, reflect production rates of 12 SM-27Ts, and 18 & 12 SM-27S, respectively. The production schedules for 36 and 18 SM-27T a year are identical, as maximum output is 17 annually – thus a 17, 17, 2 profile in both cases.

Cost. The respective costs of the SM-27's – T and S variants – are approximately $10,300,000 and $9,500,000. Thus, the total purchase price for the SM-27T is just over $426.1 million and that of the SM-27S amounts to a little more than $388.9 million. See Tables A-2 and A-3 in Appendix A for more details. The schedule constraints of 17 SM-27Ts and 33 SM-27Ss each

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[49] Stavatti Military Aerospace. "Machete RDT&E: A Business Overview & Summary of the SM-27S/T Machete™ RDT&E Program as Undertaken by the Military Aerospace/Tactical Warfare Systems Division of Stavatti." SD-87700-WS, June 28, 2005, page 60.

year contribute to cost growth beyond the mere price difference between the variants. Spreading the production runs over two years for the SM-17S and three years for the SM-27T incurs an inflation cost increase of $46.9 million and $55.3 million, respectively. These inflation costs worsen if production is further extended to allow for allied purchases, see Appendices B and C.

Like the T-6A NTA, the SM-27's acquisition costs for 36 aircraft come in significantly under the ACAT II threshold. In order to trigger the requirement for a SAMP, nearly double the number of SM-27s is required. This is a more realistic possibility than for the T-6A NTA, as purchase of several squadrons worth of SM-27s crosses the ACAT II threshold.

The costs associated with airframe purchase are the most problematic, with the operating and support costs more manageable. To generate the operations and maintenance costs for the SM-27, several assumptions were required, as the Machete program office at Stavatti has not yet delved into these costs.[50] Two primary assumptions pertinent to this analysis concern: the nature of overall operations and support costs; and that the variants incur the same maintenance costs.

For the purposes of this analysis, the T-6A operating and support costs documented in the AFTOC database were used as the starting point to derive the SM-27's operations and support costs. This assumption was made based on the reality that commercial aircraft design and production utilize common materials and processes. Therefore, the T-6A costs were used to base those of the Machete's, with specific adjustments in the estimates for fuel consumption and maintenance requirements.[51] The fuel costs and the intermediate maintenance lines were changed to reflect those costs specific to the SM-27. All other costs remain the same as for the T-6A. Refer to Appendix A, Table A-2, rows 68 and 84, for the estimated costs associated with SM-27 fuel consumption and maintenance. The data in Appendices B & C mirror that in A.

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[50] Sugarman, Robert. SM-27 Machete Program Director of Human Factors. Stavatti Corporation. Interview via phone, 24 February 2006.

[51] Stavatti Military Aeorspace, Cost per Flying Hour Datasheet, SM-27T, page 1.

Performance. Performance is in the eye of the beholder. Both the T-6A NTA and the SM-27 provide long loiter and/or extended range. However, the SM-27 is designed to carry a heavier weapons load. Table 4 contains a detailed look at the specifications and capabilities of the two aircraft profiled herein, as well as the often referenced A-1 Skyraider and the Air Force's current CAS airframe, the A-10 Thunderbolt II.

MANUFACTURER AIRCRAFT PROFILED	**STAVETTI** SM-27 MACHETE™	**RAYTHEON** T-6A TEXAN II	**DOUGLAS** A-1E SKYRAIDER	**FAIRCHILD** A-10A THUNDERBOLT II
Crew	1 to 2	2	1	1
Powerplant(s)	1 x PW127G	PT6A-68	1 x R-3350-26WB	2 x TF34-GE-100
Max Power (SHP) / Thrust (LBS)	2,920 SHP	1,100 SHP	3,050 HP	18,130 LBS
Span (ft)	43.0	33.4	50.8	57.5
Length (ft)	34.0	33.3	38.8	53.3
Height (ft)	12.0	10.7	15.8	14.7
Wing Area (sq ft)	194	175.3	400	506
MTOW (lbs)	15,500	6,500	25,000	50,000
Empty Weight (lbs)	7,120	4,709	12,313	24,959
External/War Load (lbs)	5,250	2,300	8,000	16,000
Internal Fuel (lbs)	6,600	1,163	NO DATA	10,700
Internal Fuel (USG)	400	164	NO DATA	1,646
Stores Stations (No.)	7	6	15	11
Internal Gun	1 x 30mm KCA	None	4 x 20mm	1 x 30mm GAU-8
Maximum Speed @ SL (Kts)	350	316	276	381
Maximum Speed @ ALT (Kts)	403	316	297	380
Maximum Cruise @ ALT (Kts)	360	230	164	336
Stall Speed @ SL (Kts)	97	74	NO DATA	NA
Max Climb Rate @ SL (ft/Min)	7,050	4,500	2,300	6,000
Service Ceiling (ft)	44,000	35,000	31,168	45,000
Tactical Radius, Internal Fuel (nm)	700	400+	NO DATA	540
Ferry Range, Internal Fuel (nm)	1,530	900	1,300	2,130
Max Range, External Tanks (nm)	3,600	1,125	NO DATA	2,454
Wing Loading (lbs/sq ft)	75	37.1	62.5	99
Power/Weight or Thrust/Weight	5 lbs/SHP	5.9 lbs/SHP	8.1 lbs/HP	0.37 to 1
Load Limits (g)	7.5	7.5	NO DATA	7.33
Takeoff Distance (ft)	1,678	1,775	NO DATA	4,000
Landing Distance (ft)	2,081	1,900	NO DATA	2,000
Flyaway Cost (Millions USD)	6 to 9	4 to 7	NO DATA	18

Table 4: Platform Specifications/Capabilities[52]

[52] Data found in various locations: Air Force Fact Sheets, http://www.af.mil/library/factsheets/; Military Factory, http://www.militaryfactory.com/aircraft_comparison.asp; Raytheon Aircraft Company, "Response to Request for Information: Fixed Wing Platform Procurement for the Iraqi Air Force."; and Stavatti Military Aerospace,

The T-6A NTA is a single-engine, front mounted, propeller-driven aircraft, while the SM-27, a single-engine, propeller driven aircraft, is powered by a rear-mounted turboprop that pushes the plane, much like a swamp boat. The SM-27's 6-blade propeller system is a relatively new Pratt Whitney design made up of modern composites. While the propulsion system on the T-6A NTA is of a proven design, the SM-27 propulsion method is new. The design serves to make the Machete's appearance more "jet-like."

Overall the SM-27 is more capable than the T-6 NTA, but its weight does disadvantage it. The T-6A NTA has a better thrust to weight ratio and a shorter landing distance. Both platforms have some advantages over A-10, which is not particularly suited for the COIN mission. In keeping with Davis' 9 characteristics for a COIN aircraft,[53] both the T-6A NTA and the SM-27 measure up. Both alternatives: (1) are COTS; (2) provide long range and loiter; (3) possess STOL capability; (4) advertise austere airfield ability; (5) provide diverse weapons loads – albeit the Machete touts more; (6) are designed for navigation and fire-control; (7) provide great visibility with a second seat for an observer; (8) possess sufficient speed; (9) lack ground fire absorption capability.[54]

As for the corollary requirement to "lend itself well to training pilots from 'lesser developed' nations,"[55] the costs of both aircraft fit well into USSOCOM's FID mission. However, the T-6A NTA is approximately 45% cheaper than the SM-27, likely making it the more attractive alternative to cash-strapped nations. More important is the availability of a

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"Machete RDT&E: A Business Overview & Summary of the SM-27S/T Machete™ RDT&E Program as Undertaken by the Military Aerospace/Tactical Warfare Systems Division of Stavatti."

[53] Davis, page 17.

[54] Raytheon Aircraft Company, "Response to Request for Information: Fixed Wing Platform Procurement for the Iraqi Air Force."; and Stavatti Military Aerospace, "Machete RDT&E: A Business Overview & Summary of the SM-27S/T Machete™ RDT&E Program as Undertaken by the Military Aerospace/Tactical Warfare Systems Division of Stavatti."

[55] Davis, page 17.

common aircraft in the US and foreign inventories. Joint training is better facilitated; and politically the US looks better in the eyes of its allies when flying in identical platforms.

The political element seems a little out of place, but it is important in the FID role. USSOCOM can benefit by possessing aircraft identical to what the ally can afford. Additionally, integrated, coalition GWOT missions involving COIN aircraft are enhanced. USSOCOM and allied COIN pilots would be in a better position to collaborate and fight as integrated units in GWOT engagements. To ensure allied access to common COIN aircraft, the production schedules of the alternatives become relevant to the decision.

Schedule. Delivery dates and quantities provide the T-6A NTA with a decided advantage over the SM-27. Near-term delivery is possible for the T-6A NTA. In fact, Raytheon could begin putting their COIN design in the hands of USSOCOM pilots in 2007. The earliest realistic date for SM-27 delivery is 2010. The old adage "a bird in the hand is worth two in the bush" applies here. The T-6A NTA provides COIN aircraft capability 3 to 4 years in advance of the SM-27.

Beyond delivery dates, and serving to further eclipse the SM-27, Raytheon can produce almost twice the number of aircraft per year – 60 verses 50, for both Stavatti variants. This production capability would allow allied nations to concurrently purchase the same platform. Before Stavatti produced its first SM-27, Raytheon could manufacture approximately 180 of its T-6A NTA aircraft – a deficiency Stavatti has no plans to overcome.

Cost. The purchase price of both options is well below ACAT I & II thresholds for high level oversight; and equally important, within the acquisition authority and management ability of USSOCOM. Although there is an approximately $200 million difference between the Raytheon and Stavatti alternatives, the cost considerations in the analysis below address the cost per flying hour differences, based on an annual total of 18,000 flying hours.

The operation, maintenance, and support cost estimates associated with each alternative aircraft, the T-6A NTA and the SM-27, are based on the costs of the T-6A Texan II airframe and the munitions costs associated with the A-10s of the 23d Fighter Group. While it is intuitively obvious that the T-6A NTA is very similar to the T-6A, recall the discussion in the above SM-27 cost section as to why this was also assumed for the Machete alternative. The incremental costs of transforming a T-6A into a T-6A NTA is the increase in fuel consumption and some added maintenance. To fairly cost the SM-27 within the T-6A analogy, the SM-27 estimate was adjusted for the Stavatti projected fuel costs and maintenance costs not already in the T-6A data.

The resulting total costs and cost per flying hour are provided in Table 5 below. Pay close attention to the footnotes associated with each platform. The fiscal years differ, but they do not work contrary to first impressions when viewing the data. As expected the weaponized

Operation & Support Costs Comparison					
	T-6A Texan II[56]	**T-6A NTA Texan II**[57]	**SM-27 Machete**[58]	**A-10/OA-10 (Pope) Thunderbolt II**[59]	**A-10/OA-10 (Fleet) Thunderbolt II**[60]
Total costs	$132,673,358	$44,038,200	$50,158,800	$126,201,549	$1,303,169,482
Flying Hours	83,919	18,000	18,000	21,305	111,825
Cost per flying hour	$1,581	$2,447	$2,787	$5,924	$11,654

Table 5. Operation and Support Costs Comparison

T-6A NTA is more expensive per flying hour to operate and maintain than the T-6A. Also in accordance with expectations, the SM-27 per flying hour costs are higher than the T-6A's. Although the T-6A NTA and SM-27 costs are in fiscal year 2013 dollars, they remain far lower than the fiscal year 2005 amount for the 23d Fighter Group's A-10s at Pope AFB.[61]

[56] AFTOC database. Actual operating costs for fiscal year 2005, stated in FY05 dollars. Inventory = 192 PAA.
[57] Peeler estimates for operating costs stated in fiscal year 2013, using OSD approved indices. Inventory = 36 PAA.
[58] Ibid.
[59] AFTOC database. Actual operating costs for fiscal year 2005, stated in FY05 dollars. Inventory = 41.5 PAA.
[60] AFTOC database. Actual operating costs for fiscal year 2005, stated in FY05 dollars. Inventory = 125.5 PAA
[61] Interesting to note is the large O&M cost difference between the A-10 and the alternatives presented here. If one of the alternatives herein were considered as a replacement for the A-10, the Air Force could fulfill two desires simultaneously – acquire a COIN aircraft and decommission the A-10 – while reducing its total ownership costs.

Directly comparing the costs per flying hour for the T-6A NTA and the SM-27, one can see that little difference exists – $340 per flying hour. The T-6A NTA possess the lower operating costs. Analysis of the cost input data supports this result, in that the incremental costs of fuel and maintenance for the SM-27 is greater than that for the T-6A NTA. Therefore, when allowances are added for these two incremental costs within the analogous system, the SM-27 with the higher incremental costs remains the more expensive airframe to operate, support, and maintain.

Using the data in Table 5 and the cost estimate provided in Table A-1 of Appendix A, the cost of quickly standing up a squadron of 36 T-6A NTAs involves an initial procurement investment of $211.2 million in fiscal year 2007. The associated annual operations costs run approximately $38 million. As for the costs of setting up a SM-27 squadron, the procurement costs run $426.2 million for the SM-27T and slightly lower for the SM-27S at $388.9 million. Reference Tables 5, A-2, & A-3. These costs are spread over the fiscal years 2010-2013, and have associated annual operations costs of approximately $50 million starting in fiscal year 2013.

Recommendation

Bringing together the performance, schedule, and cost aspects of each alternative, one can make a recommendation regarding which alternative best provides a COIN aircraft solution. While the SM-27 Machete has selection advantages with regard to performance, it falls far short of the T-6A NTA in the areas of cost and schedule. The Machete is a more powerful aircraft, and arguably more aesthetically pleasing – looking more "jet-like." However, the performance characteristics exist only on paper and might never come to fruition. Therefore, the perhaps less appealing, but still proficient performance characteristics of the T-6A NTA should not be discounted vis-à-vis the SM-27's concept design. The T-6A NTA provides demonstrated capability.

Moving from performance to schedule, the T-6A NTA is far ahead of the SM-27, as discussed above in the evaluation schedule section. The T-6A NTA is in production; and the pace is 60 aircraft per year. The SM-27 is at least three years from first production; and is slated to only produce 50 aircraft per year, starting in 2010. This discrepancy in production is a disadvantage if the US wishes to quickly address the need for an aircraft platform specifically suited for COIN operations. Further, the difference in production start and annual totals creates a problem for encouraging allies to operate the same aircraft.

As with a USSOCOM purchase decisions, allied participation is also tied to aircraft costs. The T-6A NTA is about half the cost of the SM-27, at $5,500,000 per copy. Coupled with the $340 cost per flying hour differential, the T-6A NTA is significantly cheaper to purchase and less expensive to operate. These savings alone should not be the decisive factor in USSOCOM choosing to purchase the T-6A NTA rather than the SM-27. On a side note, the T-6A NTA is an affordable option for less wealthy, allied nations as they engage along with the US in the GWOT. Any decision to purchase aircraft should focus on value, not solely on price.

The performance characteristics, delivery schedules, and costs differences clearly indicate which alternative to choose. The T-6A NTA is similar to the SM-27 in performance capability, while it completely out classes the SM-27 in both schedule and cost considerations. Therefore, USSOCOM should select the T-6A NTA as the United States' COIN aircraft. The schedule advantages and cost savings of the T-6A NTA far outweigh the minor performance benefits of the SM-27. The T-6A NTA provides immediate availability of a demonstrated capability at a cost clearly within the budget.

Conclusion

Analysis of the costs estimates, schedule analyses, and performance evaluations indicate that the T-6A NTA is the best aircraft option for COIN air operations. The decision resulted from a detailed evaluation of the two alternatives, involving each aircraft's performance, schedule, and cost variables. The acquisition alternatives available to USSOCOM, with regard to the call for a COIN aircraft, were investigated; as were the requirements of the formal acquisition process. Additionally, the streamlined nature of the USSOCOM acquisition process was generally presented, with close attention paid to the ACAT thresholds. The quick tour of acquisition requirements and peculiarities served to educate the reader on the responsibilities inherent in any USSOCOM decision to pursue procurement of a COIN aircraft. Some discussion was dedicated to USSOCOM's missions as codified in title 10 and embraced by the command, as well as the command's unique acquisition agility. This agility offers an opportunity to provide an aircraft particularly suited for the counterinsurgency/counterterrorism role associated with the GWOT. Increasingly, advocates within the traditional military services and the special operations community believe that an airborne participant in counterinsurgency operations is needed. Historically, aircraft have certainly proven effective in small wars.

APPENDICES[62]

[62] All estimated and actual costs adjusted for inflation using OSD approved inflation indices, 8 September 2005; and all estimates were generated with the aid of ACE-IT.

APPENDIX A – estimates

Table A-1

	A	B	C	D	E
1	**Cost by CAIG Element ($K)**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**
2					
3	**T-6A NTA Aircraft System**	$230,631	$39,692	$40,525	$41,376
4					
5	T-6 Texan II EMD System	No EMD. Aircraft already in production.			
6					
7	T-6 Texan II Production System	$211,193			
8	COTS Purchase Price	$211,193			
9					
10	T-6 Texan II Operations & Support Phase	$19,438	$39,692	$40,525	$41,376
11	Unit Personnel	$3,091	$6,311	$6,444	$6,579
12	Operations Personnel	$2,856	$5,832	$5,954	$6,079
13	Maintenance Personnel	$141	$289	$295	$301
14	Other Direct Support Personnel	$93	$191	$195	$199
15	Unit Operations	$4,472	$9,132	$9,324	$9,520
16	Operating Material	$700	$1,429	$1,459	$1,490
17	Fuel	$700	$1,429	$1,459	$1,490
18	Training Munitions & Expendable Stores	$1,982	$4,047	$4,132	$4,219
19	Ammunition	$1,193	$2,436	$2,488	$2,540
20	Bombs	$365	$746	$761	$777
21	Rockets	$181	$369	$377	$385
22	Training Missiles	No Analogy Costs reflected in AFTOC			
23	Sonobuoys	No Analogy Costs reflected in AFTOC			
24	Pyrotechnics	$243	$496	$507	$517
25	Other Operational Material	$1,791	$3,656	$3,733	$3,812
26	Support Services	$192	$392	$400	$409
27	Purchased Services	$172	$352	$359	$367
28	Transportation	$20	$40	$41	$42
29	Other	No Costs reflected in AFTOC database			
30	TDY	$605	$1,236	$1,262	$1,288
31	Maintenance	$5,394	$11,015	$11,246	$11,482
32	Organizational Maintenance & Support	$5,394	$11,014	$11,246	$11,482
33	Intermediate Maintenance	$0	$0	$0	$0
34	Depot Maintenance	No Costs reflected in AFTOC database			
35	Sustaining Support	$3,543	$7,235	$7,387	$7,542
36	System Specific Training	$3,485	$7,116	$7,265	$7,418
37	Support Equipment Replacement	No Costs reflected in AFTOC database			
38	Operating Equipment Replacement	No Costs reflected in AFTOC database			
39	Sustaining Engineering & Prog Mgmt	$58	$119	$121	$124
40	Other Sustaining Support	No Costs reflected in AFTOC database			
41	Continuing System Improvements	No Costs reflected in AFTOC database			
42	Hardware Modifications	No Costs reflected in AFTOC database			
43	Software Maintenance & Modifications	No Costs reflected in AFTOC database			
44	Indirect Support	$2,141	$4,371	$4,463	$4,557
45	Installation Support	$2,091	$4,269	$4,359	$4,450
46	Personnel Support	$46	$93	$95	$97
47	General Training & Education	$4	$9	$9	$10

Table A-2

	A	B	C	D	E
52	**Cost by CAIG Element ($K)**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
53					
54	**Machete Aircraft System (SM-27T)**	$210,093	$237,119	$71,050	$50,159
55					
56	Machete EMD System	EMD costs embedded in purchase price.			
57					
58	Machete Production System	$198,782	$202,957	$24,379	
59	COTS Purchase Price	$198,782	$202,957	$24,379	
60					
61	Machete Operations & Support Phase	$11,311	$34,163	$46,671	$50,159
62	Unit Personnel	$1,579	$4,769	$6,515	$7,002
63	Operations Personnel	$1,459	$4,407	$6,020	$6,470
64	Maintenance Personnel	$72	$218	$298	$320
65	Other Direct Support Personnel	$48	$144	$197	$212
66	Unit Operations	$2,905	$8,775	$11,987	$12,883
67	Operating Material	$978	$2,953	$4,035	$4,336
68	Fuel	$978	$2,953	$4,035	$4,336
69	Training Munitions & Expendable Stores	$1,013	$3,058	$4,178	$4,490
70	Ammunition	$610	$1,841	$2,515	$2,703
71	Bombs	$187	$563	$770	$827
72	Rockets	$92	$279	$381	$409
73	Training Missiles	No Analogy Costs reflected in AFTOC			
74	Sonobuoys	No Analogy Costs reflected in AFTOC			
75	Pyrotechnics	$124	$375	$512	$550
76	Other Operational Material	$915	$2,763	$3,775	$4,057
77	Support Services	$98	$296	$405	$435
78	Purchased Services	$88	$266	$363	$391
79	Transportation	$10	$30	$41	$45
80	Other	No Analogy Costs reflected in AFTOC			
81	TDY	$309	$934	$1,276	$1,371
82	Maintenance	$3,516	$10,619	$14,507	$15,591
83	Organizational Maintenance & Support	$2,756	$8,323	$11,371	$12,221
84	Intermediate Maintenance	$760	$2,295	$3,136	$3,370
85	Depot Maintenance	No Analogy Costs reflected in AFTOC			
86	Sustaining Support	$1,810	$5,467	$7,469	$8,027
87	System Specific Training	$1,780	$5,377	$7,346	$7,895
88	Support Equipment Replacement	No Analogy Costs reflected in AFTOC			
89	Operating Equipment Replacement	No Analogy Costs reflected in AFTOC			
90	Sustaining Engineering & Prog Mgmt	$30	$90	$123	$132
91	Other Sustaining Support	No Analogy Costs reflected in AFTOC			
92	Continuing System Improvements	No Analogy Costs reflected in AFTOC			
93	Hardware Modifications	No Analogy Costs reflected in AFTOC			
94	Software Maintenance & Modifications	No Analogy Costs reflected in AFTOC			
95	Indirect Support	$1,094	$3,303	$4,513	$4,850
96	Installation Support	$1,068	$3,226	$4,407	$4,736
97	Personnel Support	$23	$70	$96	$103
98	General Training & Education	$2	$7	$9	$10

Table A-3

	A	B	C	D	E
102	**Cost by CAIG Element ($K)**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
103					
104	**Machete Aircraft System (SM-27S)**	$377,579	$77,301	$49,127	$50,159
105					
106	Machete EMD System	EMD costs embedded in purchase price.			
107					
108	Machete Production System	$355,901	$33,034		
109	COTS Purchase Price	$355,901	$33,034		
110					
111	Machete Operations & Support Phase	$21,678	$44,267	$49,127	$50,159
112	Unit Personnel	$3,026	$6,180	$6,858	$7,002
113	Operations Personnel	$2,796	$5,710	$6,337	$6,470
114	Maintenance Personnel	$139	$283	$314	$320
115	Other Direct Support Personnel	$92	$187	$207	$212
116	Unit Operations	$5,568	$11,370	$12,618	$12,883
117	Operating Material	$1,874	$3,827	$4,247	$4,336
118	Fuel	$1,874	$3,827	$4,247	$4,336
119	Training Munitions & Expendable Stores	$1,941	$3,963	$4,398	$4,490
120	Ammunition	$1,168	$2,386	$2,648	$2,703
121	Bombs	$358	$730	$810	$827
122	Rockets	$177	$361	$401	$409
123	Training Missiles	No Analogy Costs reflected in AFTOC			
124	Sonobuoys	No Analogy Costs reflected in AFTOC			
125	Pyrotechnics	$238	$486	$539	$550
126	Other Operational Material	$1,753	$3,580	$3,973	$4,057
127	Support Services	$188	$384	$426	$435
128	Purchased Services	$169	$345	$382	$391
129	Transportation	$19	$39	$44	$45
130	Other	No Analogy Costs reflected in AFTOC			
131	TDY	$593	$1,210	$1,343	$1,371
132	Maintenance	$6,738	$13,760	$15,270	$15,591
133	Organizational Maintenance & Support	$5,282	$10,785	$11,969	$12,221
134	Intermediate Maintenance	$1,457	$2,974	$3,301	$3,370
135	Depot Maintenance	No Analogy Costs reflected in AFTOC			
136	Sustaining Support	$3,469	$7,084	$7,862	$8,027
137	System Specific Training	$3,412	$6,968	$7,733	$7,895
138	Support Equipment Replacement	No Analogy Costs reflected in AFTOC			
139	Operating Equipment Replacement	No Analogy Costs reflected in AFTOC			
140	Sustaining Engineering & Prog Mgmt	$57	$117	$129	$132
141	Other Sustaining Support	No Analogy Costs reflected in AFTOC			
142	Continuing System Improvements	No Analogy Costs reflected in AFTOC			
143	Hardware Modifications	No Analogy Costs reflected in AFTOC			
144	Software Maintenance & Modifications	No Analogy Costs reflected in AFTOC			
145	Indirect Support	$2,096	$4,280	$4,750	$4,850
146	Installation Support	$2,047	$4,180	$4,639	$4,736
147	Personnel Support	$45	$91	$101	$103
148	General Training & Education	$4	$9	$10	$10

APPENDIX B – estimates

Table B-1

	A	B	C	D	E
1	**Cost by CAIG Element ($K)**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**
2					
3	**T-6A NTA Aircraft System**	$115,315	$137,583	$40,525	$41,376
4					
5	T-6 Texan II EMD System	No EMD. Aircraft already in production.			
6					
7	T-6 Texan II Production System	$105,596	$107,814		
8	COTS Purchase Price	$105,596	$107,814		
9					
10	T-6 Texan II Operations & Support Phase	$9,719	$29,769	$40,525	$41,376
11	Unit Personnel	$1,545	$4,733	$6,444	$6,579
12	Operations Personnel	$1,428	$4,374	$5,954	$6,079
13	Maintenance Personnel	$71	$217	$295	$301
14	Other Direct Support Personnel	$47	$143	$195	$199
15	Unit Operations	$2,236	$6,849	$9,324	$9,520
16	Operating Material	$350	$1,072	$1,459	$1,490
17	Fuel	$350	$1,072	$1,459	$1,490
18	Training Munitions & Expendable Stores	$991	$3,035	$4,132	$4,219
19	Ammunition	$597	$1,827	$2,488	$2,540
20	Bombs	$183	$559	$761	$777
21	Rockets	$90	$277	$377	$385
22	Training Missiles	No Analogy Costs reflected in AFTOC			
23	Sonobuoys	No Analogy Costs reflected in AFTOC			
24	Pyrotechnics	$122	$372	$507	$517
25	Other Operational Material	$895	$2,742	$3,733	$3,812
26	Support Services	$96	$294	$400	$409
27	Purchased Services	$86	$264	$359	$367
28	Transportation	$10	$30	$41	$42
29	Other	No Costs reflected in AFTOC database			
30	TDY	$303	$927	$1,262	$1,288
31	Maintenance	$2,697	$8,261	$11,246	$11,482
32	Organizational Maintenance & Support	$2,697	$8,261	$11,246	$11,482
33	Intermediate Maintenance	$0	$0	$0	$0
34	Depot Maintenance	No Costs reflected in AFTOC database			
35	Sustaining Support	$1,772	$5,426	$7,387	$7,542
36	System Specific Training	$1,742	$5,337	$7,265	$7,418
37	Support Equipment Replacement	No Costs reflected in AFTOC database			
38	Operating Equipment Replacement	No Costs reflected in AFTOC database			
39	Sustaining Engineering & Prog Mgmt	$29	$89	$121	$124
40	Other Sustaining Support	No Costs reflected in AFTOC database			
41	Continuing System Improvements	No Costs reflected in AFTOC database			
42	Hardware Modifications	No Costs reflected in AFTOC database			
43	Software Maintenance & Modifications	No Costs reflected in AFTOC database			
44	Indirect Support	$1,070	$3,278	$4,463	$4,557
45	Installation Support	$1,045	$3,202	$4,359	$4,450
46	Personnel Support	$23	$70	$95	$97
47	General Training & Education	$2	$7	$9	$10

Table B-2

	A	B	C	D	E
52	**Cost by CAIG Element ($K)**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
53					
54	**Machete Aircraft System (SM-27T)**	$210,093	$237,119	$71,050	$50,159
55	Machete EMD System	EMD costs embedded in purchase price.			
56					
57	Machete Production System	$198,782	$202,957	$24,379	
58	COTS Purchase Price	$198,782	$202,957	$24,379	
59					
60	Machete Operations & Support Phase	$11,311	$34,163	$46,671	$50,159
61	Unit Personnel	$1,579	$4,769	$6,515	$7,002
62	Operations Personnel	$1,459	$4,407	$6,020	$6,470
63	Maintenance Personnel	$72	$218	$298	$320
64	Other Direct Support Personnel	$48	$144	$197	$212
65	Unit Operations	$2,905	$8,775	$11,987	$12,883
66	Operating Material	$978	$2,953	$4,035	$4,336
67	Fuel	$978	$2,953	$4,035	$4,336
68	Training Munitions & Expendable Stores	$1,013	$3,058	$4,178	$4,490
69	Ammunition	$610	$1,841	$2,515	$2,703
70	Bombs	$187	$563	$770	$827
71	Rockets	$92	$279	$381	$409
72	Training Missiles	No Analogy Costs reflected in AFTOC			
73	Sonobuoys	No Analogy Costs reflected in AFTOC			
74	Pyrotechnics	$124	$375	$512	$550
75	Other Operational Material	$915	$2,763	$3,775	$4,057
76	Support Services	$98	$296	$405	$435
77	Purchased Services	$88	$266	$363	$391
78	Transportation	$10	$30	$41	$45
79	Other	No Costs reflected in AFTOC database			
80	TDY	$309	$934	$1,276	$1,371
81	Maintenance	$3,516	$10,619	$14,507	$15,591
82	Organizational Maintenance & Support	$2,756	$8,323	$11,371	$12,221
83	Intermediate Maintenance	$760	$2,295	$3,136	$3,370
84	Depot Maintenance	No Costs reflected in AFTOC database			
85	Sustaining Support	$1,810	$5,467	$7,469	$8,027
86	System Specific Training	$1,780	$5,377	$7,346	$7,895
87	Support Equipment Replacement	No Costs reflected in AFTOC database			
88	Operating Equipment Replacement	No Costs reflected in AFTOC database			
89	Sustaining Engineering & Prog Mgmt	$30	$90	$123	$132
90	Other Sustaining Support	No Costs reflected in AFTOC database			
91	Continuing System Improvements	No Costs reflected in AFTOC database			
92	Hardware Modifications	No Costs reflected in AFTOC database			
93	Software Maintenance & Modifications	No Costs reflected in AFTOC database			
94	Indirect Support	$1,094	$3,303	$4,513	$4,850
95	Installation Support	$1,068	$3,226	$4,407	$4,736
96	Personnel Support	$23	$70	$96	$103
97	General Training & Education	$2	$7	$9	$10

Table B-3

	A	B	C	D	E
102	**Cost by CAIG Element ($K)**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
103					
104	**Machete Aircraft System (SM-27S)**	$205,909	$234,292	$49,127	$50,159
105					
106	Machete EMD System	EMD costs embedded in purchase price.			
107					
108	Machete Production System	$194,128	$198,204		
109	COTS Purchase Price	$194,128	$198,204		
110					
111	Machete Operations & Support Phase	$11,782	$36,088	$49,127	$50,159
112	Unit Personnel	$1,645	$5,038	$6,858	$7,002
113	Operations Personnel	$1,520	$4,655	$6,337	$6,470
114	Maintenance Personnel	$75	$231	$314	$320
115	Other Direct Support Personnel	$50	$152	$207	$212
116	Unit Operations	$3,026	$9,269	$12,618	$12,883
117	Operating Material	$1,019	$3,120	$4,247	$4,336
118	Fuel	$1,019	$3,120	$4,247	$4,336
119	Training Munitions & Expendable Stores	$1,055	$3,231	$4,398	$4,490
120	Ammunition	$635	$1,945	$2,648	$2,703
121	Bombs	$194	$595	$810	$827
122	Rockets	$96	$295	$401	$409
123	Training Missiles	No Analogy Costs reflected in AFTOC			
124	Sonobuoys	No Analogy Costs reflected in AFTOC			
125	Pyrotechnics	$129	$396	$539	$550
126	Other Operational Material	$953	$2,919	$3,973	$4,057
127	Support Services	$102	$313	$426	$435
128	Purchased Services	$92	$281	$382	$391
129	Transportation	$10	$32	$44	$45
130	Other	No Analogy Costs reflected in AFTOC			
131	TDY	$322	$986	$1,343	$1,371
132	Maintenance	$3,662	$11,217	$15,270	$15,591
133	Organizational Maintenance & Support	$2,871	$8,792	$11,969	$12,221
134	Intermediate Maintenance	$792	$2,425	$3,301	$3,370
135	Depot Maintenance	No Analogy Costs reflected in AFTOC			
136	Sustaining Support	$1,886	$5,775	$7,862	$8,027
137	System Specific Training	$1,855	$5,680	$7,733	$7,895
138	Support Equipment Replacement	No Analogy Costs reflected in AFTOC			
139	Operating Equipment Replacement	No Analogy Costs reflected in AFTOC			
140	Sustaining Engineering & Prog Mgmt	$31	$95	$129	$132
141	Other Sustaining Support	No Analogy Costs reflected in AFTOC			
142	Continuing System Improvements	No Analogy Costs reflected in AFTOC			
143	Hardware Modifications	No Analogy Costs reflected in AFTOC			
144	Software Maintenance & Modifications	No Analogy Costs reflected in AFTOC			
145	Indirect Support	$1,139	$3,489	$4,750	$4,850
146	Installation Support	$1,113	$3,408	$4,639	$4,736
147	Personnel Support	$24	$74	$101	$103
148	General Training & Education	$2	$7	$10	$10

APPENDIX C – estimates

Table C-1

	A	B	C	D	E
1	**Cost by CAIG Element ($K)**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**
2					
3	**T-6A NTA Aircraft System**	$77,006	$98,470	$107,427	$41,376
4					
5	T-6 Texan II EMD System	No EMD. Aircraft already in production.			
6					
7	T-6 Texan II Production System	$70,398	$71,876	$73,385	
8	COTS Purchase Price	$70,398	$71,876	$73,385	
9					
10	T-6 Texan II Operations & Support Phase	$6,609	$26,594	$34,041	$41,376
11	Unit Personnel	$1,051	$4,228	$5,413	$6,579
12	Operations Personnel	$971	$3,907	$5,001	$6,079
13	Maintenance Personnel	$48	$194	$248	$301
14	Other Direct Support Personnel	$32	$128	$164	$199
15	Unit Operations	$1,521	$6,119	$7,832	$9,520
16	Operating Material	$238	$957	$1,225	$1,490
17	Fuel	$238	$957	$1,225	$1,490
18	Training Munitions & Expendable Stores	$674	$2,712	$3,471	$4,219
19	Ammunition	$406	$1,632	$2,090	$2,540
20	Bombs	$124	$500	$640	$777
21	Rockets	$61	$247	$316	$385
22	Training Missiles	No Analogy Costs reflected in AFTOC			
23	Sonobuoys	No Analogy Costs reflected in AFTOC			
24	Pyrotechnics	$83	$332	$426	$517
25	Other Operational Material	$609	$2,450	$3,136	$3,812
26	Support Services	$65	$263	$336	$409
27	Purchased Services	$59	$236	$302	$367
28	Transportation	$7	$27	$34	$42
29	Other	No Costs reflected in AFTOC database			
30	TDY	$206	$828	$1,060	$1,288
31	Maintenance	$1,834	$7,380	$9,447	$11,482
32	Organizational Maintenance & Support	$1,834	$7,380	$9,446	$11,482
33	Intermediate Maintenance	$0	$0	$0	$0
34	Depot Maintenance	No Costs reflected in AFTOC database			
35	Sustaining Support	$1,205	$4,847	$6,205	$7,542
36	System Specific Training	$1,185	$4,768	$6,103	$7,418
37	Support Equipment Replacement	No Costs reflected in AFTOC database			
38	Operating Equipment Replacement	No Costs reflected in AFTOC database			
39	Sustaining Engineering & Prog Mgmt	$20	$80	$102	$124
40	Other Sustaining Support	No Costs reflected in AFTOC database			
41	Continuing System Improvements	No Costs reflected in AFTOC database			
42	Hardware Modifications	No Costs reflected in AFTOC database			
43	Software Maintenance & Modifications	No Costs reflected in AFTOC database			
44	Indirect Support	$728	$2,929	$3,749	$4,557
45	Installation Support	$711	$2,860	$3,661	$4,450
46	Personnel Support	$16	$63	$80	$97
47	General Training & Education	$2	$6	$8	$10

Table C-2

	A	B	C	D	E
52	**Cost by CAIG Element ($K)**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
53					
54	**Machete Aircraft System (SM-27T)**	$148,328	$175,502	$187,539	$50,159
55					
56	Machete EMD System	EMD costs embedded in purchase price.			
57					
58	Machete Production System	$140,317	$143,264	$146,272	
59	COTS Purchase Price	$140,317	$143,264	$146,272	
60					
61	Machete Operations & Support Phase	$8,012	$32,238	$41,267	$50,159
62	Unit Personnel	$1,118	$4,501	$5,761	$7,002
63	Operations Personnel	$1,033	$4,159	$5,323	$6,470
64	Maintenance Personnel	$51	$206	$264	$320
65	Other Direct Support Personnel	$34	$136	$174	$212
66	Unit Operations	$2,058	$8,280	$10,599	$12,883
67	Operating Material	$693	$2,787	$3,567	$4,336
68	Fuel	$693	$2,787	$3,567	$4,336
69	Training Munitions & Expendable Stores	$717	$2,886	$3,694	$4,490
70	Ammunition	$432	$1,737	$2,224	$2,703
71	Bombs	$132	$532	$681	$827
72	Rockets	$65	$263	$337	$409
73	Training Missiles	No Analogy Costs reflected in AFTOC			
74	Sonobuoys	No Analogy Costs reflected in AFTOC			
75	Pyrotechnics	$88	$354	$453	$550
76	Other Operational Material	$648	$2,607	$3,338	$4,057
77	Support Services	$70	$280	$358	$435
78	Purchased Services	$62	$251	$321	$391
79	Transportation	$7	$29	$37	$45
80	Other	No Analogy Costs reflected in AFTOC			
81	TDY	$219	$881	$1,128	$1,371
82	Maintenance	$2,490	$10,021	$12,827	$15,591
83	Organizational Maintenance & Support	$1,952	$7,854	$10,054	$12,221
84	Intermediate Maintenance	$538	$2,166	$2,773	$3,370
85	Depot Maintenance	No Analogy Costs reflected in AFTOC			
86	Sustaining Support	$1,282	$5,159	$6,604	$8,027
87	System Specific Training	$1,261	$5,074	$6,496	$7,895
88	Support Equipment Replacement	No Analogy Costs reflected in AFTOC			
89	Operating Equipment Replacement	No Analogy Costs reflected in AFTOC			
90	Sustaining Engineering & Prog Mgmt	$21	$85	$109	$132
91	Other Sustaining Support	No Analogy Costs reflected in AFTOC			
92	Continuing System Improvements	No Analogy Costs reflected in AFTOC			
93	Hardware Modifications	No Analogy Costs reflected in AFTOC			
94	Software Maintenance & Modifications	No Analogy Costs reflected in AFTOC			
95	Indirect Support	$775	$3,117	$3,990	$4,850
96	Installation Support	$757	$3,044	$3,897	$4,736
97	Personnel Support	$17	$67	$85	$103
98	General Training & Education	$2	$7	$8	$10

Table C-3

	A	B	C	D	E
102	**Cost by CAIG Element ($K)**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
103					
104	**Machete Aircraft System (SM-27S)**	$137,430	$164,374	$176,178	$50,159
105					
106	Machete EMD System	EMD costs embedded in purchase price.			
107					
108	Machete Production System	$129,418	$132,136	$134,911	
109	COTS Purchase Price	$129,418	$132,136	$134,911	
110					
111	Machete Operations & Support Phase	$8,012	$32,238	$41,267	$50,159
112	Unit Personnel	$1,118	$4,501	$5,761	$7,002
113	Operations Personnel	$1,033	$4,159	$5,323	$6,470
114	Maintenance Personnel	$51	$206	$264	$320
115	Other Direct Support Personnel	$34	$136	$174	$212
116	Unit Operations	$2,058	$8,280	$10,599	$12,883
117	Operating Material	$693	$2,787	$3,567	$4,336
118	Fuel	$693	$2,787	$3,567	$4,336
119	Training Munitions & Expendable Stores	$717	$2,886	$3,694	$4,490
120	Ammunition	$432	$1,737	$2,224	$2,703
121	Bombs	$132	$532	$681	$827
122	Rockets	$65	$263	$337	$409
123	Training Missiles	No Analogy Costs reflected in AFTOC			
124	Sonobuoys	No Analogy Costs reflected in AFTOC			
125	Pyrotechnics	$88	$354	$453	$550
126	Other Operational Material	$648	$2,607	$3,338	$4,057
127	Support Services	$70	$280	$358	$435
128	Purchased Services	$62	$251	$321	$391
129	Transportation	$7	$29	$37	$45
130	Other	No Analogy Costs reflected in AFTOC			
131	TDY	$219	$881	$1,128	$1,371
132	Maintenance	$2,490	$10,021	$12,827	$15,591
133	Organizational Maintenance & Support	$1,952	$7,854	$10,054	$12,221
134	Intermediate Maintenance	$538	$2,166	$2,773	$3,370
135	Depot Maintenance	No Analogy Costs reflected in AFTOC			
136	Sustaining Support	$1,282	$5,159	$6,604	$8,027
137	System Specific Training	$1,261	$5,074	$6,496	$7,895
138	Support Equipment Replacement	No Analogy Costs reflected in AFTOC			
139	Operating Equipment Replacement	No Analogy Costs reflected in AFTOC			
140	Sustaining Engineering & Prog Mgmt	$21	$85	$109	$132
141	Other Sustaining Support	No Analogy Costs reflected in AFTOC			
142	Continuing System Improvements	No Analogy Costs reflected in AFTOC			
143	Hardware Modifications	No Analogy Costs reflected in AFTOC			
144	Software Maintenance & Modifications	No Analogy Costs reflected in AFTOC			
145	Indirect Support	$775	$3,117	$3,990	$4,850
146	Installation Support	$757	$3,044	$3,897	$4,736
147	Personnel Support	$17	$67	$85	$103
148	General Training & Education	$2	$7	$8	$10

APPENDIX D – 2005 actuals[63] adjusted for inflation[64]

Table D-1

	A	B	C	D	E
152	**Cost by CAIG Element ($K)**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**
153					
154	**A-10 Aircraft System (Pope AFB, ACC)**	$132,858	$135,648	$138,497	$141,405
155	**23 Fighter Group O&S Costs Only**				
156					
157	Unit Personnel	$70,096	$71,568	$73,071	$74,606
158	Operations Personnel	$18,122	$18,502	$18,891	$19,287
159	Maintenance Personnel	$48,490	$49,508	$50,548	$51,609
160	Other Direct Support Personnel	$3,485	$3,558	$3,633	$3,709
161	Unit Operations	$28,010	$28,598	$29,198	$29,812
162	Operating Material	$26,225	$26,775	$27,338	$27,912
163	Support Services	$390	$398	$407	$415
164	TDY	$1,395	$1,424	$1,454	$1,485
165	Maintenance	$22,343	$22,812	$23,291	$23,780
166	Organizational Maintenance & Support	$22,343	$22,812	$23,291	$23,780
167	Intermediate Maintenance	No Costs reflected in AFTOC database			
168	Depot Maintenance	No Costs reflected in AFTOC database			
169	Sustaining Support	$550	$561	$573	$585
170	System Specific Training	$537	$548	$559	$571
171	Support Equipment Replacement	$13	$14	$14	$14
172	Operating Equipment Replacement	No Costs reflected in AFTOC database			
173	Sustaining Engineering & Prog Mgmt	No Costs reflected in AFTOC database			
174	Other Sustaining Support	No Costs reflected in AFTOC database			
175	Continuing System Improvements	No Costs reflected in AFTOC database			
176	Hardware Modifications	No Costs reflected in AFTOC database			
177	Software Maintenance & Modifications	No Costs reflected in AFTOC database			
178	Indirect Support	$11,860	$12,109	$12,363	$12,623
179	Installation Support	$10,586	$10,809	$11,036	$11,267
180	Personnel Support	$1,274	$1,301	$1,328	$1,356
181	General Training & Education	$0	$0	$0	$0

[63] AFTOC database. This data was taken from end of year FY05 actuals, for the 23d Fighter Group at Pope AFB North Carolina, and inflated. This unit used for analogy purposes, as it best resembles what a stand alone squadron of COIN aircraft might look like stationed as a tenant on an installation.

[64] OSD approved inflation indices, 8 September 2005.

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A paper by one of last year's ACSC students, Arthur Davis, outlined the argument for buying a counterinsurgency aircraft. Advancing his study involved looking at a method to actually procure the type of aircraft Davis and others advocate. I have tried to do just that… provide an understanding of the processes involved; identify a purchase method; present detailed aircraft alternatives; and finally generate cost estimates for such a procurement.

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