Introduction

President Obama set 2014 as the deadline for the United States withdrawal from Afghanistan. The removal of U.S. forces from Afghanistan will give that country almost full responsibility for its own security. The departure of U.S. and NATO forces to assist in the security of Afghanistan will certainly challenge the Afghani military. One such challenge will be fielding and maintaining a strike aircraft to combat ongoing and future insurgency. The U.S. has foreseen this problem and has approved a contract for a Light Air Support (LAS) aircraft for the Afghan Air Force (AAF). Once this aircraft is selected, American advisors will conduct a foreign internal defense (FID) mission in Afghanistan to train the AAF in the maintenance and use of their new platform. In light of this future mission, the question necessarily follows: has the United States Air Force selected the most operationally capable strike aircraft for the future FID mission in Afghanistan?

Background and Significance

On 16 April 2012, the United States Air Force Material Command (AFMC) requested twenty Light Air Support (LAS) aircraft for the Afghan Air Force. The AFMC request specified a fixed-wing platform capable of advanced flight training, aerial reconnaissance, and light attack missions. Furthermore, the Air Force requested funding for the logistics and maintenance support required to maintain this aircraft. The specifications set forth for the LAS aircraft detail: a “single-engine, turbo-prop, tandem- and ejection-seat cockpit, pressurized aircraft with retractable, tricycle gear capable of operations from austere airfields with semi-improved (dirt, grass, gravel) landing surfaces.” In December of 2011 the Air Force selected the Sierra Nevada/Embraer A-29 Super Tucano as the winner of the LAS contract. Shortly after announcing this decision, the Air Force set aside its contract with Sierra Nevada/Embraer, citing concerns with the selection process.

Once an LAS aircraft is selected, the USAF will be prepared to conduct a FID mission in Afghanistan. According to the contract (FA8615-10-R-6048), either USAF or NATO air advisors will provide training to the AAF on the selected LAS airframe. Furthermore, as per AFDD 2-7.1 Foreign Internal Defense, the USAF’s mission will be to train the host nation (Afghanistan) on the operation and employment of this aircraft in the defense of their country. This assignment includes training the AAF on how to sustain maintenance and logistics for the provided aircraft. Therefore, airman from the U.S. and partner nations will be responsible for organizing, training, and equipping the AAF to operate the selected LAS
aircraft. The significance of this is that the U.S. will purchase a light air support platform for Afghanistan and then train their airmen on how to operate and maintain the aircraft. Therefore, it is crucial to establish that the most operationally capable aircraft for Afghanistan may be very different from what would be the most capable aircraft for the current U.S. mission in Afghanistan.

Concerning the most appropriate LAS aircraft, certain boundaries will be established for the purpose of this research. The AFMC contract specifies an aircraft built to some preconceived notion of what is the best aircraft (tandem ejections seats, tricycle gear, among other features). This research will go beyond those contractual specifications in order to answer the question of what actually is the most operationally capable light air support aircraft for Afghanistan. In order to make that judgment, the operational environment in Afghanistan will be closely examined. This will include an analysis of the terrain, the nature of the conflict, and the competence of the AAF in order to determine what capabilities are required of an LAS aircraft intended for employment in the Afghan environment. Thus, this paper will define measures of merit based on desired effects rather than focus merely on technology.

Limitations and Assumptions

As a result of the scope and length of this paper, certain limitations will be imposed to keep the study focused. The first is that the desired LAS aircraft must be a fixed wing propeller aircraft. This gives the study a manageable focus, and reflects the assumption that Afghanistan does not have the resources to operate a jet aircraft. Since this is an assessment of which aircraft is the most suitable, American and Afghani politics and acquisitions processes will not be considered. Furthermore, due to the wide variety of potential aircraft for this mission, only three will be analyzed. Each aircraft represents a different type airframe. The Airbus AC-295 will be the first to be analyzed and will represent gunship model. This aircraft is comparable to the Lockheed AC-130W the USAF currently operates. Next, the Embraer A-29 Super Tucano will represent the tandem seat, high performance turboprop that the USAF contract specified. Finally, the Cessna AC-208B will be analyzed as an example of an inexpensive and simple strike platform.

This paper will be further constrained by several assumptions. It will be assumed that the selected aircraft will be produced with the specification and at the price listed by its manufactures. The next assumption will be that the AAF will continue to fight a counterinsurgency (COIN) type war against either the Taliban or similarly equipped force. This means the LAS is not be intended for interstate conflict or for conflict with armed groups capable of fielding their own air-assets or advanced surface to air missile systems. Finally, it will be assumed that for the next decade the state of the AAF and Afghanistan as a whole will remain relatively stable; i.e., no disintegration of the country, no rapid increase/decrease in revenue, no large amounts of military aid from another country, and so forth.

Definitions

Close Air Support (CAS). “Air action by fixed- and rotary-winged aircraft against hostile targets that are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces.”[vi]

Counterinsurgency (COIN). “Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency.”[vii]

Foreign Internal Defense (FID). “Participation by civilian and military agencies of a government in any of the action programs taken by another government to free and protect its society from subversion, lawlessness, and insurgency.”[viii]
Information Surveillance and Reconnaissance (ISR). “This is the synchronization and integration of platforms and sensors with the planning and direction, collection, processing and exploitation, analysis, and production and dissemination processes. These activities provide actionable intelligence, weather, environmental awareness, and prediction across all SOF command echelons.”

Preview of the Argument

This paper will argue that the Cessna AC-208B is the most operationally capable strike aircraft for the FID mission in Afghanistan. In order to reach such a conclusion, the operational environment in Afghanistan will be analyzed. This includes an analysis of the terrain, conflict, and the capabilities of the AAF in order to determine what is needed in a strike aircraft. Next, each of the three aircraft selected for evaluation (AC-295, A-29, AC-208B) will be analyzed in terms of how well they likely would perform the AAF’s tactical mission in Afghanistan and how practical they would be for a FID mission in Afghanistan.

Body

To answer the question of whether the USAF has identified the most operationally capable light air support (LAS) aircraft for the future FID mission in Afghanistan, measures of merit for assessing such an aircraft will be established and those criteria will be used to evaluate the different platforms. While the previously mentioned contract has stringent criteria the aircraft must meet, this paper will take a more contextual approach by analyzing the battlespace in Afghanistan and the AAF itself in order to determine what capabilities LAS aircraft actually require. This will be followed by an analysis of how well the AC-208B, A-29, and AC-295 meet the established requirements. The analysis will show that the AC-208B is, in fact, the most operationally capable LAS aircraft for Afghanistan.

Defining Required Capabilities

In order to determine which aircraft is the most operationally capable for the LAS mission, the nature of the battlespace in Afghanistan must first be analyzed. Next, the nature of the FID mission itself and the state of the AAF will dictate further requirements for a LAS platform.

Afghanistan occupies over 650,000 miles of territory, roughly the size of Texas, with a terrain consisting mostly of rugged mountains. With only 42,000 kilometers of roads (eighty-fifth in the world), and only 12,000 km of those paved; airpower is imperative for efficient travel in Afghanistan. The air transportation infrastructure in Afghanistan is not much better with only twenty-three of a mere fifty-one airfields paved. Of these airfields the majority are under 2,500 feet in length, making the ability to take-off and land on short runways a necessity for any future aircraft acquisitions. Thus, the first measure of merit for a LAS aircraft is the ability to land on short and unpaved runways in order to maximize the number of airfields from which it can operate.

Concerning the next required operational capability, the context of the war in Afghanistan will be analyzed. Current fighting in Afghanistan is not characterized by the clash of large armies; rather, it has all the attributes of a classic insurgency. The enemy is comprised of “a disparate assortment of tribal clans prone to waging a disparate assortment of warfare…” Furthermore, the nature of the insurgency itself further incites and complicates the inter-tribal animosity. An example is the Pashtuns, who share the closest ties with the Taliban. The Duran Line artificially separates the Afghan Pashtuns from their brethren in Pakistan, thereby creating safe havens for rebel fighters. This, coupled with the myriad of other races and religions scattered throughout the rugged terrain of Afghanistan, makes combating an insurgency in this country an especially arduous task. The difficult terrain, coupled with the fact that the
only 138,200 men compose the Afghan National Army, explains the need for a LAS aircraft as a force multiplier. 

The nature of the combat and the terrain in Afghanistan dictate how military operations are conducted. For the most part, a light air support aircraft can be used in three ways: close air support (CAS), intelligence surveillance and reconnaissance (ISR), and precision strike of high value targets. For each of these mission sets, the capabilities that are required in a LAS aircraft will be defined.

One important strategy in fighting an insurgency involves maintaining a military/police presence close to the population. With relatively small military and civilian police forces at hand, forward operating bases should be constructed in close proximity to villages and other population clusters. Such small and scattered bases, however, can easily be overrun. That, in turn, makes on the spot close air support an essential capability. An example is the Wanat outpost built by the U.S. 173rd Airborne Brigade in the Korengal Valley. On 13 July 2008, the Taliban massed and attempted to overrun the outpost, killing or wounding almost half of the base’s defenders. Only when an Apache gunship arrived, more than an hour into the battle, was the Taliban’s offensive finally broken. The Apaches conducted strafing runs as close as thirty yards outside the perimeter of the base in order to push the opposing force back.

This demonstrates the value of a strike aircraft in a COIN environment.

The Battle of Wanat exemplifies how insurgents fight. With the exception of harassing fire (snipers, mortars, and so forth) and improvised explosive devices, insurgents prefer to mass their forces and attack smaller outposts. Their basic approach is to attack and then withdraw as quickly as possible. Since the Taliban has a fluid force and does not need to hold ground in the conventional sense, they will almost always practice the principle of economy of force when attacking. As defined by Carl von Clausewitz, “economy of force,” involves massing only as much force as required against main efforts. A strike aircraft can help the defending forces seize the initiative and make up for any numerical disadvantage. Such was the case during the Greek civil war and the Huk insurgency in the Philippines in which airpower inflicted heavy casualties on insurgents whenever they attempted to mass forces.

The above observations raise the question of what capabilities are required in a CAS platform intended for employment in a COIN environment. According to COIN theorist David Galula, a light attack aircraft needs to have great firepower and high endurance. A long loiter time and high weapons payload will allow the aircraft to provide more sustained combat support for fielded forces in contact. Thus for the CAS mission, operational effectiveness of the LAS will be judged in terms of the loiter time and payload of the aircraft.

Another important mission for a LAS aircraft in Afghanistan involves ISR. Since insurgents rely on stealth to survive, timely identification of the current position of insurgents is a center of gravity in a COIN fight. ISR provides a multitude of applications to the counterinsurgent. Intelligence gathered can help find high value targets, supply routes, and serve as a reconnaissance element for ground forces. Finally, a LAS aircraft with ISR capability can be employed to locate massing enemy forces so they can be displaced before they become a problem. Therefore, ISR capability constitutes another requirement for a LAS platform.

A common mistake among COIN commanders is assuming their main objective should be a reflection of the conventional Clausewitzian strategy that war is won through the destruction of the enemy’s fielded forces. This, however, is not the way insurgencies are usually won. Since the insurgent’s “fielded forces” often are composed of the ordinary civilians disenchanted with the established government, attacking them indiscriminately can cause collateral damage and thereby alienate their friends and family members who previously may not have been actively involved in the insurgency.
instead is attacking key nodes in the leadership structure of the insurgency. This includes the selective targeting of “leadership and critical operatives.” [xxiii] Precision weapons, such as the Lockheed Martin HELLFIRE II missile, can be utilized to surgically neutralize targeted individuals, and limit collateral damage in the process. [xxiv] Thus, the final functional requirement of the LAS aircraft is the capability to perform precision strike.

Now that the requirements for a LAS aircraft in Afghan environment have been specified, it is important to examine how the nature of the foreign internal defense mission and the state of the AAF impose constraints on possible platforms. First, it is necessary to establish that the FID mission focuses on training the host nation for internal security missions, not for state-on-state conflicts. [xxv] Aircraft with air-to-air, stealth, or other advanced technologies are simply “overkill” for the AAF and are not relevant to the FID mission. As a result, any overly sophisticated aircraft for the LAS mission should not be pursued.

Afghanistan spends about 2 percent of its gross domestic product (GDP), or $640 million, on its military. [xxvi] This does not leave much money for buying new aircraft, maintaining airplanes or training aircrews. Furthermore, the state of the Afghan Air Force still leaves much to be desired. As of November 2011, in an evaluation of 2,800 airmen (roughly half of the force), 1,918 were cited as undertrained. [xxvii] This demonstrates the lack of proficiency in training in the AAF. Though aviation advisors could indeed raise the competence of the AAF, the general lack of training limits the kinds of aircraft the Afghans can operate and maintain. Therefore, since Afghanistan’s economy and human infrastructure limit what can be operated and sustained, the AAF would best be served by an inexpensive and simple platform for the LAS mission.

The final limitation on an effective AAF LAS platform involves Afghanistan’s ability to acquire nonstandard items and parts. [xxviii] When looking at aircraft for a country like Afghanistan, sustainability is extremely important, and the more complex and hi-tech the aircraft is, the more difficult it is to maintain. Thus, ease of maintenance and operation is the final criteria for the proposed LAS aircraft.

The preceding analysis has considered the battlespace in Afghanistan, the state of the AAF, and criteria for determining the most operationally capable LAS aircraft for AAF use. To recapitulate: the ideal light air support platform will be able to take-off from short, unimproved runways, loiter for extended periods of time, carry a large payload for extended support, contain an ISR suite, and be capable of precision strike. Furthermore, this aircraft must be inexpensive and easy to maintain in order for it to be sustainable.

*Airbus C-295*

Source: AirbusMilitary.com
The first aircraft that will be analyzed for the LAS mission is the Airbus AC-295. The proposed AC-295 Gunship is an armed variant of the Airbus C-295, a proven twin engine tactical airlift with ninety-five already in service worldwide. The gunship variant will include both side and forward firing weapons. Once completed, the AC-295 will be similar to the Lockheed AC-130W gunships currently employed by American forces in Afghanistan.

In order to analyze the AC-295’s effectiveness as a LAS platform for Afghanistan, use will be made of the measures of merit discussed in the preceding Defining Required Capabilities section. First, the performance and operational characteristics of the C-295 will be considered, followed by an analysis of how practical the aircraft is for the AAF to own and operate. The C-295 has a length of 80ft 3in, and a wing span of 84ft 8in. It has a maximum takeoff weight of 51,000 pounds and a max payload of 20,400 lbs. Two Pratt & Whitney PW-127G engines give this aircraft 2,645 sheer horse power (shp) and a max cruise speed of 260 knots. The AC-295 also has one of the longest cabins for its class at an impressive 41ft. Furthermore, the cabin of this aircraft is modular, allowing the gunship upgrade to be “rolled off” to allow the AC-295 to be used for other missions. These additional missions could include airlift given the AC-295’s ability to carry seventy-one infantry troops, fifty paratroopers, or five 88x108in pallets. Finally, it could be used as a medical evacuation platform carrying twenty-four stretchers.

The ability of this impressive aircraft to execute a variety of missions makes it a smart investment for a smaller air force. This is because it would allow a financially-constrained government to purchase and maintain fewer aircraft.

As for the operational effectiveness of the AC-295 in Afghanistan, the performance characteristics and capabilities will be analyzed in light of the operational conditions prevailing there. The first measure for the LAS mission is the ability of the aircraft to take-off and land on short runways (under 2,500ft). The AC-295 can take-off from fields as short as 2,200ft and land at fields as short as 1,050ft. Furthermore, the landing gear are especially designed for operations on short, unpaved, and sometimes soft runways. Thus, the AC-295 is designed for landing in austere conditions and has the short take-off and landing abilities required in Afghanistan.

The next measures of merit are payload and loiter time. An ATK Mk 44 30mm cannon could be mounted on the side of the aircraft, allowing it to give sustained fire to ground forces. This could be augmented by a payload of 800 kg of bombs and missiles that can be mounted on hardpoints on the wings. These can be equipped with weapons such as the HELLFIRE missile and 70 mm rockets. This payload would complement the precision strike role, especially the 30mm cannon and HELLFIRE missiles. Thus, the AC-295 could meet the previous stated criteria for payload and precision strike.

When it comes to loiter time, the AC-295 clearly excels. This aircraft has an endurance of eight hours at 15,000ft and two hours with a 600 nautical mile combat radius. This loiter time and range allows the aircraft to project sustained power across the country. The long loiter time and ability of this aircraft to land at short, unimproved runways to refuel make this aircraft very suitable for the CAS mission.

The next requirement for an operationally capable LAS platform is ISR capability. The AC-295 has a day/night ISR suite that can provide full motion video to ground stations and other aircraft. In addition, the impressive ISR capability and communications systems allow this aircraft to also be utilized as a command and control platform for other assets, as well as for communications relay. This is an important feature because it allows the aircraft to be self-sufficient in many of its operations. An example of this is the precision strike mission. Here a single aircraft can seek out a high valued target, confirm a decision to strike, and then employ its own munitions to destroy the target.

The weakness of this aircraft, ironically, comes as a result of its strengths. Because of its size and
capabilities, this is an expensive aircraft. The average cost of an AC-295 is between $24 and $35 million, depending on the specific features of the aircraft. Furthermore, this is without the ISR suite and armaments. Though it meets all of the performance capabilities, the AC-295 severely fails the cost test. This is because a single aircraft costs more than the entire annual Afghan military budget.

Unlike its cost, the price of maintenance for the AC-295 seems rather affordable. The Airbus C-295 platform has the lowest operating and maintenance costs in its category of aircraft, in part because it has been in service since 2001 and has performed well in a variety of climates conducting civil and military operations. Since there are already aircraft in service with foreign nations, acquiring spare parts should not be too difficult and thus it could be practical for the Afghans to maintain this aircraft.

In summary, the AC-295 meets and exceeds all of the requirements for a LAS aircraft for the AAF with the exception of cost. Unfortunately, this is the most important requirement for the aircraft. Though failure to meet performance characteristics will limit an LAS aircraft to certain missions, failure to meet cost limits likely means the aircraft is incapable of being procured. Thus, this aircraft is impractical from a financial standpoint to perform the LAS mission for the AAF.

Embeyaer A-29 Super Tucano

The second aircraft to be analyzed for the LAS role in Afghanistan is the Embeyaer A-29 Super Tucano. This aircraft is a single engine, low-winged, tandem seat aircraft. The A-29 is 37ft 4in length with a wingspan of 36ft 6in. It is powered by a Pratt & Whitney PT6-68C turboprop engine providing 1600 shp. The Super Tucano has a max takeoff weight of 11,905 lbs, and is equipped with two ejection seats, an impressive safety feature that sets it apart from the other two aircraft being analyzed.

One large selling point of the Super Tucano is its human interface systems. The A-29 has an all glass cockpit (computer displays instead of round gauges) to help reduce the workload on the pilot. Furthermore, the Super Tucano boasts a full Hands-On Throttle and Stick (HOTAS) system which allow the pilot to manipulate the aircraft’s systems in combat without letting go of either the throttle or the stick. This feature enhances the pilot’s ability to control the aircraft and employ its systems in a dynamic environment.

The A-29, unlike the AC-295 has already been employed in combat. To this day, over 170 Super Tucano’s have been built. This aircraft is used by nine nations for which it performs missions ranging from ISR to border security. This gives Embeyaer credibility in claiming their product is capable of fulfilling the LAS mission. To quantify the A-29’s impressive track record, its fleet has logged 180,000 hours plus
28,000 combat hours with zero combat losses. Thus, the Super Tucano has proved itself as an effective aircraft for the LAS mission.

In order to assess the operational effectiveness of the Embraer A-29 for the AAF’s LAS mission, the measures of merit discussed earlier in the paper will be used. The first aspect of the Super Tucano that needs to be analyzed is its ability to operate out of Afghanistan’s current airfields. The A-29 is equipped with heavy duty gear/tires made to provide capability on unimproved runways. This will allow the aircraft to access many of the unpaved runways in Afghanistan. The next element of this requirement is the required take-off/landing distance of the aircraft. The A-29 requires 2,950ft to take-off and 2,820ft to land. This severely limits the aircraft by making it unable to land at 39 of the 52 airfields in Afghanistan. Thus, the Super Tucano’s ability to fulfill the LAS mission in Afghanistan is severely limited by its need for long runways.

The next aspect to be analyzed is the payload and loiter time of the Super Tucano. The A-29 can carry a 3,420lb payload in over 130 configurations and has two internal .50 caliber machine guns. This gives it the ability to provide sustained firepower to ground forces. The large payload also means that the aircraft can attack multiple targets per sortie. Furthermore, the ability of it to carry HELLFIRE and other precision munitions fulfills the requirement for an LAS aircraft to have precision strike capabilities. As for the requirement for a reasonable loiter time, the A-29 has an endurance of up to 8.4 hours with external tanks. Therefore, the heavy payload and long endurance time of the Super Tucano make it optimal for an LAS aircraft in Afghanistan.

Another crucial requirement of an LAS platform is its ability to conduct ISR missions. The super Tucano is equipped with an FLIR Brite Star II ISR sensor bulb. This advanced sensor platform gives the A-29 the capability to conduct advanced ISR missions. The limited number of runways it can use, however, limits the effect of this high tech equipment. Having to use a longer runway farther away burns more fuel in transit, meaning less loiter time for the ISR mission.

The final measure of merit for a LAS aircraft for Afghanistan is its cost of acquisition and maintenance. The A-29 is not a cheap aircraft at almost $18 million per unit. This limits the ability of the AAF to acquire this aircraft in a sizable quantity. The cost to maintain the Super Tucano, on the other hand, is more feasible for the AAF. The Super Tucano is rather cheap to fly at $500 per flying hour compared to the $6,500 per hour for an F-16C. This reduced operating cost makes it more affordable for the AAF. Next, since the aircraft is already in service in nine countries and still in production; parts and technical support will remain available and affordable. Furthermore, Embraer has a computer-based system set up to quickly connect the customer with distributors for spare parts. Furthermore, the Tucano can be utilized as a “Basic Trainer, Advanced Trainer, or Weapons Trainer.” This allows this aircraft to serve the Afghan Air Force in multiple roles, thereby consolidating its fleet and saving money. Thus, although not the cheapest aircraft to acquire, the Super Tucano is affordable to operate and maintain once acquired.

The Embraer A-29 exceeds many of the requirements for Afghanistan’s LAS program; however, it fails the requirement for take-off/landing distance and is still an expensive aircraft for the AAF. Compensating for its failure to meet the take-off/landing distance requirement is its 8.4 hour endurance with external fuel tanks. This, however, means that the A-29 would have to trade some of its bombs for extra fuel, and ground forces may need to wait longer for air support. Furthermore, the cost of the aircraft also limits its practicality as a LAS contender. Though cheaper than the AC-295, the Super Tucano is still an expensive aircraft and could very well be out of the price range of the AAF.

Cessna AC-208B Armed Caravan
The Cessna AC-208B Armed Caravan is the final aircraft to be analyzed. It was designed as low cost aircraft specifically for the FID mission. The intent was that the United States could help poor countries develop their CAS and ISR mission with an inexpensive and easy to use platform.[lxviii] The Armed Caravan is a high-wing, single engine aircraft. It is 41.6ft in length and has a wingspan of 52.1ft. The Armed Caravan is powered by a single Honeywell TPE331-12JR engine giving the aircraft 900 shp.[lxix] It also has a three bladed, constant speed propeller with full feathering.[lx] This aircraft can take-off with a max weight of 8,750 lbs and cruise at a speed of 190 kts.[lxi] Similar to the Super Tucano, the AC-208B is already in production. The Armed Caravan is currently operated by both the Iraqi and Lebanese air forces.[lxii] There the aircraft is already being employed in a counterinsurgency role.[lxiii] Thus, similar to the A-29, the AC-208B holds the advantage of being a combat proven, production aircraft.

The Armed Caravan will now be analyzed for its operational effectiveness as an LAS platform in Afghanistan. The first requirement for this mission is the ability to take-off under 2,500ft. The AC-208B requires 1,037ft to take-off (1,621ft to clear a 50ft obstacle on take-off) and an even more impressive ground roll of only 884ft, far exceeding the requirements for take-off and landing distances.[lxiv] This allows the aircraft to exploit Afghanistan’s existing airfields more effectively than the previously mentioned aircraft, a definite advantage in a COIN environment.

The next requirement for the LAS mission is payload and loiter time. The AC-208B has a modest weapons payload of only two HELLFIRE missiles mounted on hardpoints on the wings.[lxv] Though this does allow the aircraft to carryout precision strike missions, the Armed Caravan is severely limited by its small payload in its ability to provide sustained fire to ground forces. The aircraft can, however, loiter for almost 7 hours at 5000ft.[lxvi] This gives the aircraft the ability to provide armed overwatch missions to the ground force as well as to conduct long ISR missions. Though it may not have the firepower of other attack aircraft, the AC-208’s HELLFIRE missiles are still deadly, and unlike the Airbus and Super Tucano, the Armed Caravan can better exploit Afghanistan’s primitive airfields to refuel and rearm.

The next measure of merit to be analyzed is the ability to conduct ISR mission. The AC-208B has an L3 Wescam MX-15 EO/IR sensor. This sensor package includes features such as infrared sensing, color daylight camera, and a laser illuminator and rangefinder.[lxvii] The Armed Caravan can use its capable ISR suite to effectively hunt targets crucial to the COIN mission in Afghanistan.

The AC-208B distinguishes itself from its two competing aircraft by its ease of operation and maintenance. To put it frankly, aircraft is easy to fly. Because of its affordability and ease of operation, the
The civilian version of the Cessna 208 is widely used as a bush plane, for skydiving, and other light roles. Ease of employment is important for a third world country like Afghanistan, where training pilots to operate advanced aircraft is difficult and expensive. Furthermore, Afghanistan already has eighteen (plus eight on order) unarmed Cessna 208’s in service. Purchasing the AC-208 would benefit Afghanistan since much of the training and maintenance costs could be rolled in with the existing C-208’s. The final and most important measure of merit for an Afghan LAS aircraft is cost. The Armed Caravan costs only $7.5 million per unit with an estimated operating cost of $412.27 per hour including maintenance. This is a fraction of the cost of the AC-295 and less than half that of the Super Tucano.

The AC-208B meets all of the previously laid out requirements for a LAS aircraft. Though it may struggle with its small payload of weapons, the Armed Caravan excels in all other categories, including cost. The AC-208B is the most operationally capable LAS aircraft for the future FID mission in Afghanistan. This is not just because it meets the functional requirements; it is also the most practical choice. Unlike the other more high-tech aircraft analyzed, the Armed Caravan is inexpensive and simple to operate. This makes it the most practical for the Afghan’s to actually procure and maintain. Furthermore, since the AAF already has a fleet of Cessna 208’s, the addition of an armed variant should be relatively easy to accommodate.

**Conclusion**

The United States Air Force currently seeks a light air support aircraft for the Afghan Air Force. As U.S. combat forces withdraw from Afghanistan, American and allied forces will conduct a FID mission to organize, train, and equip the AAF to operate the selected LAS aircraft. The question remains whether the Air Force has identified the most operationally capable LAS aircraft for the future FID mission in Afghanistan.

This study has found that the answer to that question is “no.” The most operationally capable LAS aircraft for Afghanistan, the Cessna AC-208B Armed Caravan, does not even meet the criteria for the AFMC contract. Though the Armed Caravan most fully meets the needs of the AAF, this aircraft can never win under the existing Air Force Light Air Support program. This is because the Air Force’s contract is too narrowly conceived and is based on a preconceived notion of what a LAS aircraft should look like (tricycle landing gear, tandem seat, and so forth). This paper offers an analysis of the battlespace in Afghanistan in order to define a new set of requiremets for a LAS aircraft. Based on this analysis it was determined that a light air support aircraft needed five functional capabilities. These include the ability to land on short, unimproved runways; loiter and provide firepower to ground forces in contact; and perform ISR and precision strike missions. These functional requirements were also augmented by practical requirements that focused on the kind of aircraft the AAF can actually operate and sustain. The associated measures of merit included the affordability of the candidate aircraft, as well as their operating and maintenance costs. Furthermore, the ability of the AAF to actually employ the aircraft was taken into consideration.

Using the above measures of merit, all three aircraft were evaluated for their suitability as an LAS aircraft for Afghanistan. The Airbus AC-295 was found to be very capable in terms of all the functional requirements. It could take-off and land well within 2,500ft, had impressive firepower and loiter time, and could serve a multitude of different missions. The trade-off, however, was that this aircraft was by far the most expensive, and thus not practical for the AAF from an acquisition standpoint. The next aircraft analyzed, the Embraer A-29 Super Tucano, did well in meeting some, but not all of the functional requirements. This aircraft stood above the rest in regard to its human interface and firepower. On top of that, its impressive combat record and multitude of customers around the world spoke well of the Super Tucano. But this aircraft did not meet the requirements set for take-off and landing, and was still very
costly for the Afghan Air Force. The final aircraft to be analyzed, and the most operationally capable, was the Cessna AC-208B Armed Caravan. This aircraft met all of the functional requirements, though it was lacking a little on the firepower side. Unlike the other aircraft, however, this airplane was by far the least expensive at $7.5 million per unit. Its comparatively low cost, coupled with its ease of operation and maintenance, makes the Armed Caravan the most operationally capable LAS aircraft for Afghanistan.

Summing up, in order to find the most operationally capable LAS aircraft in Afghanistan it is necessary to first define what is required of such a platform. Using the metrics defined in Defining Required Capabilities, it was possible to find the most suitable aircraft for the AAF’s LAS mission. The AC-208B Armed Caravan was found to be the most operationally capable of the three aircraft considered. This was not necessarily because of its capabilities or performance exceeded those of its competitors. A common mistake, especially in the thinking of a first world country, is prefer inordinately advanced aircraft for the third world nations they are trying to assist. When the host nation is actually analyzed for what it can sustain, new measures of merit emerge. These include cost and sustainability. This study found that although the AC-295 and the A-29 may have exceeded the AC-208B in some functional capabilities, they were not feasible for the AAF. These aircraft were simply just too expensive for the AAF to purchase or to sustain. In contrast, the AC-208B was a relatively simple platform the AAF could afford to purchase, operate, and maintain. This becomes extremely important on the day the FID mission ends. Thus, the USAF has failed to identify the most operationally capable LAS aircraft for the future FID mission in Afghanistan.

Future Research

This paper gives insight into the flawed metrics in the US’s system of selecting FID aircraft. Further research could branch in two distinct ways. First, one could look deeper into the LAS mission in Afghanistan. Better metrics for what Afghanistan needs in a LAS aircraft may be found, or certain ones weighed more or less. Furthermore, one could select for analysis a different category of aircraft. In the case of strike aircraft, the examination should consider both fixed-wing platforms and attack helicopters.

This topic also opens up the question of whether the USAF is currently selecting the correct aircraft for its FID missions elsewhere. Future researchers could look into FID mission across the globe and see if the Air Force is in fact organizing, training, and equipping host nations with the right equipment and training for a given country and its particular security needs. Regardless of whether the most suitable equipment is selected, the USAF’s air commandos can be expected to continue to execute the FID mission and faithfully fulfill their motto of Any Time, Any Place.[lxxi]

Bibliography


(accessed March 12, 2013).

End Notes


[ii] Ibid.


[viii] Ibid., 88.

[ix] AFDD-1, 50.


[xi] Ibid.

[xii] Ibid.


[xiv] Ibid.

[xvi] Ibid., 259.


[xxx] Ibid.

[xxxii] Ibid., 32.
[xxxiii] Ibid., 29.
[xxxiv] Ibid., 16.
[xxxv] Ibid., 21.
[xliv] ______________________, Spec card.
[xlvii] Ibid.
[xlix] ______________________, Spec card.


[VII] Ibid., 7.


[X] Ibid., 2-4.

[XI] Ibid.


[lxvii] Ibid., 2-8.


About the Author

Kenn Boechler
Second Lieutenant Kenn Boechler, U.S. Air Force, majored in Military and Strategic Studies at the USAF Academy.

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