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BACK TO THE BASICS: AN AVIATION SOLUTION TO  
COUNTER-INSURGENT WARFARE

by

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*Abstract*

This study focuses on the current War on Terror as a conflict against insurgents attacking US power wherever it shows itself through asymmetric means. The primary target of late has been military and civilian convoy operations in Iraq and, to some extent, Afghanistan. By examining past examples of the use of airpower in counterinsurgent warfare, this study will shed light on current failings in both equipment and doctrine on behalf of the US in waging this type of war. The French used low technology aircraft in Algeria to attack insurgent forces and defend ground troops. The aircraft that were employed were WWII vintage T-6 and A-1 fighters that proved well adapted to the environment and this reason, coupled with the manner in which they were deployed and employed made the difference in containing and defeating the insurgents. In Vietnam, the US employed T-28 and A-1 aircraft as they were ideally suited to training the South Vietnamese Air Force and had a proven track record in this type of war. The US should re-think its inventory of aircraft devoted to counterinsurgent war by looking at possible replacements for the A-1. Coupled with this should be a re-evaluation of the manner in which these assets are employed by having them located with the ground forces they are meant to support.

## Introduction

*“If there is one attitude more dangerous than to assume that a future war will be just like the last one, it is to assume that it will be so utterly different that we can ignore all of the lessons of the last one.”<sup>1</sup>*

– RAF Marshal Sir John Slessor

As the leading crusader in a Global War on Terrorism (GWOT), the US finds itself fighting an enemy seeking to fight on his own terms using asymmetric means, that of the insurgent. At his disposal are weapons and tactics that have changed little in the past fifty years. While the current emphasis within the US Department of Defense (DoD) is to transform the armed forces into a lighter, leaner force capable of fighting the enemy on any terrain with 21<sup>st</sup> century technology, we cannot fail to use history as a guide for this transformation. For, as John F. Kennedy stated in 1962, “this is another type of war, new in its intensity, ancient is its origins—war by guerrillas, subversives, insurgents, assassins...war by ambush instead of combat...seeking victory by eroding and exhausting the enemy instead of engaging him.”<sup>2</sup>

In Iraq today, the nature of the conflict has shifted from a mobile, force on force campaign to an active insurgency. In fighting an enemy who relies on the tactics of the insurgent, mobility is a crucial element of success. As demonstrated time and time again, the protection of lines of communication and advance is an absolute when dealing with an enemy who chooses not to engage in face to face action, but who instead will harass and ambush. The majority of air support missions in Iraq today involve convoy protection and supply-route/pipeline combat reconnaissance.<sup>3</sup> The assets in the Air Force inventory today lack the ability to adequately support ground forces in the prosecution of a counterinsurgent campaign. This study will discuss the nature of this type of fight both



past and present and then demonstrate, through an analysis of two historical case studies, that while this problem is not a new one, it has been successfully countered before using airpower of a distinct type. The type of aircraft necessary to fight the insurgent is not a fast, expensive turbojet, but a reliable, propeller-driven aircraft designed to work in the environment favored by the insurgent.

# **The Nature of the Fight: An Analysis of Guerrilla War**

*“Guerrilla warfare is a form of operations above all things to be avoided.”<sup>4</sup>*

– Colonel C. E. Callwell

## **Small Wars—A Definition**

In the quest for the decisive battle that defeats the enemy on the field using the strategy of annihilation, commanders have always been wary of that most deplorable form of combat, the “small war” against the insurgent army. Theorists from Sun Tzu to Clausewitz have recognized that this is a real concern for the general and should not be discounted. For the purposes of this study, Small Wars, Insurgencies, Low-Intensity Conflict, and Guerrilla Warfare will be treated as a common theme, similar in tactics though, at times, ideologically different in goals and final outcomes. Often, politics cannot be separated from the nature of the small war as they are the reason for the fight or is the force which drives the insurgent to resist. This study will attempt to divorce political or ideological motives from the technical aspect of these wars for as these may be different throughout history, the manner in which these wars are fought remains the same.

Small wars, throughout history, have been fought by an insurgent army using guerrilla tactics on their own terms and turf. The writings of N. I. Klonis provide a useful definition:

It is a method by which one of the adversaries avoids direct confrontation with the enemy main forces...where operations are conducted in enemy controlled territory by relatively small forces which strike the enemy where he may be relatively weak or where the guerrillas can obtain a temporary superiority over a localized enemy force.<sup>5</sup>

Put simply, the guerrilla or insurgent army avoids direct confrontation by attacking the opposing force on his flanks or through his long lines of communication. The Mujahideen fighting the Soviet Army in Afghanistan serve as a model example for this principle. During the campaign against the Soviets, the Afghan fighters could not compete with the overwhelming Soviet arsenal and resorted to attacks against the supply lines using the few passable roads in the country. As a result, much effort was put into convoy protection by air as these supply convoys were primary targets for Mujahideen attack.<sup>6</sup>

### **The Insurgent, Past and Present**

Throughout history, insurgency and small wars have existed as background noise to competition or conflict between great powers.<sup>7</sup> The Soviets in the Afghanistan War used technology, specifically airpower in the form of helicopter gunships, to battle insurgent forces bent on attacking their bases and supply lines. This strategy was largely successful until the United States “donated” advanced surface to air missiles to the Mujahideen effectively negating this Soviet advantage.<sup>8</sup> But before this, the guerrilla fighters of the Viet Cong were the recipients of much assistance from the Soviets, both in weapons and training, in their fight against the US in South Vietnam. Both of these conflicts saw the insurgent using a strategy that the greater powers had to adapt to—that of avoiding direct confrontation. As military theorist Carl von Clausewitz put it: “they [insurgents] are meant to operate just outside the theater of war—where the invader will not appear in strength—in order to deny him these areas altogether.”<sup>9</sup> The link between past examples of small wars and today is in the details.

Insurgents, regardless of ideological or political aims, function similarly and require the same resources to continue their struggles. Each tries to postpone decisive action until they have a decided advantage or until the opponent become exhausted by the effort. Each requires a safe location from which to train and project power as well as logistic or financial support. Also, each must have the ability to melt into the terrain or population to effect their disengagement from the enemy so that their fight can continue another day. Insurgents also benefit from their greater flexibility both in the form of tactics and the absence of ethical or legal restraints.<sup>10</sup> The “War on Terror” today has been likened to a counterinsurgency based on these grounds as “contemporary terrorism is a lineal descendant of the type of low-intensity conflict seen in the Third World over the past 50 years.”<sup>11</sup>

### **Enduring Principles for Fighting Small Wars**

With operations in both Afghanistan and Iraq shifting from major combat operations to stabilization of the country and transition to democratic rule, the US again finds itself facing an insurgent force that relies on terror tactics and a strategy of exhaustion to further its’ goal of thwarting western influence in the region. This situation is not unlike the US experience in Vietnam. And, as in 1962, following major combat operations in both these countries, the US was “organizationally, doctrinally, conceptually, and psychologically unprepared for [this type of] war.”<sup>12</sup> At the operational and tactical level, counterinsurgency has changed little in the past 50 years. We still find that “tactics favor the regular troops, while strategy favors the enemy.”<sup>13</sup>

As the British and French colonial armies, US expeditionary forces, and a host of others learned the hard way, an army facing guerrilla forces must maintain a presence in

terrain foreign to them and against an enemy that will fight when it chooses and against your weak points. The regular army must maintain bases of operation and lines of communication that are vulnerable to attack from bands of insurgents who specialize in this type of work and who can disappear at will. An answer to this dilemma can be found within Clausewitz's work: "the [army's] only answer to military actions is the sending out of frequent escorts as protection for his convoys, and as guards on all of his stopping places, bridges, defiles, and rest." And, just as Callwell, Lawrence, and a host of other military writers have stated, the counterinsurgent force is extremely hampered by its supply lines and fights an enemy that has little need for such lines, and often supplies itself from what it can take from both regular forces and the population.

In all cases of this type of war, the regular army is victorious when it can pursue relentlessly and deny the insurgent rest, recuperation, and supply. The "tradition within the US military has been to develop an impressive understanding and the skills at counterinsurgency when engaged in such an operation, and then let the expertise atrophy afterwards..."<sup>14</sup> The war on terror has all of the classic indications of an insurgency. The US military must face asymmetric violence, ambiguity, and an enemy with no ethical or moral constraint. In both theaters, the insurgents use improvised explosives to attack convoys and demoralize the regular army with hit-and-run rocket or mortar attacks. Not unlike T. E. Lawrence's indirect approach to insurgent warfare, the goal is to cut lines of supply and demoralize rather than attack him directly.<sup>15</sup> To combat this, the US must look to past examples of the use of tactics and technology to re-learn what has been forgotten. Airpower is a powerful tool, but technology is not a panacea in the arena of

the small war. Linking the past with the present in this regard will only help the future and the US' ability to capitalize on airpower in fighting these "small wars."

## **The Iraqi Insurgency: Implications for Airpower**

*“To attempt to restrain such a mob by a foreign force is to attempt to restrain the explosion of a mine when the powder has already been ignited: it is far better to await the explosion and afterward fill up the crater than to try to prevent it and perish in the attempt...”<sup>16</sup>*

– Henri Jomini

### **Background**

Since the end of major combat operations in May of 2003, the US has been combating an insurgent force within Iraq. Of the 120,000 troops that remain within the country helping to rebuild and pave the way for democracy, many are dedicated to the security concerns that come with an active insurgency. Both in rural and urban settings, the insurgent force fights much like past guerrillas have done through asymmetric tactics that emphasize a strategy of exhaustion. Today, this campaign continues with enemies that are non-traditional in their tactics and resort to asymmetric and asynchronous strategies designed to inflict damage on both the fielded forces and the national will of the counterinsurgent by exploiting ethical constraints and an obsession with a declared endstate and a “better state of peace.”<sup>17</sup>

The asymmetric means most favored by the insurgent force today in Iraq is convoy attack. Not unlike the Mujahideen in Afghanistan, US troops are finding greater dangers on the roads of Iraq from ambush than in direct confrontation with insurgents. In fact, John Pike, executive director for GlobalSecurity.org summed it up best in an interview with *The Atlantic Monthly* when he said: “this is a war of convoy ambushes and car bombs.”<sup>18</sup> More than 20,000 soldiers and private contractors are operating convoys bringing fuel, food, and water into Iraq from Kuwait and this has become a primary target

for the insurgent. And though exact numbers of US troop casualties is classified, more than 65 private contractors have been killed in convoy ambushes since July 2003 leading the Army and Air Force to train more than 1000 soldiers to perform convoy security.<sup>19</sup> This reality has led US military leadership to shift emphasis from overland supply efforts to an aviation solution to cope with this situation. And while 85% of troop supplies still travel around Iraq by road, USTRANSCOM has tried to pick up the remaining 15% by using intra-theater airlift assets. This increase is meant to take Army truck “off the roads in the deadly Sunni Triangle section of Iraq.”<sup>20</sup> Convoy security, not unlike the Russian experience in Afghanistan, is of primary concern for the US Armed Forces.

### **Air Support for the Counterinsurgent Army**

Even as far back as the late 19<sup>th</sup> century, the security of troops on the march was recognized as a priority when fighting guerrillas. Colonel C. E. Callwell’s work entitled *Small Wars: Their Principles and Practice* discussed the reality of the insurgent attack on a column of troops in that “the tendency of the enemy in these campaigns even in the heat of action [is] to avoid decisive collision with the front of the regular troops but to work against the flanks and rear.”<sup>21</sup> Today, in Iraq for instance, this observation still holds true with the insurgents using asymmetric means, explosive devices or concealed rocket attack, to engage and harass columns of men on the move. As stated in Army Field Manual 3-90, the purpose of a convoy is to reach destination, not to engage the enemy in a movement to contact.<sup>22</sup> This is echoed in the Marine Corp Small Wars Manual to include the sentiment that the flanks and rear of a convoy are especially vulnerable to irregular forces and must “ensure itself from an attack from every direction.”<sup>23</sup> Examples



of types of support required by the convoy include reconnaissance patrols and air cover to free/prevent the convoy from contact so that it can continue its mission.

### **Aircraft in Use Today**

Various aircraft are employed by US and Coalition forces in Iraq today. From high-tech, multi-role jet aircraft such as the F-16, F-15C/E, and F/A-18 to the venerable A-10 and Vietnam-era AC-130 these aircraft provide close air support (CAS) and a host of other air support functions to the troops on the ground. Alongside these platforms, helicopter gunships play an important role in providing security for the movement of men and material within the country. However, each weapon system has its drawbacks.

Few of the high-speed fighters are forward deployed and must orbit in pre-planned locations (CAS Stack) awaiting missions from ground commanders. While the A-10s and F/A-18s are forward deployed to Iraq at several locations, their Capability to loiter over a convoy or fixed location is short and many are required to provide necessary coverage during refueling. The AC-130 is designed to provide CAS and convoy escort, but its' slow speed, vulnerability to ground fire, and few numbers limit them to nighttime-only missions of high priority. Helicopter gunships provide much of the work covering troop or supply movement, but again, their few numbers and slow speed and vulnerability to ground fire do not make them ideal platforms in this environment. All of the aircraft mentioned share a common characteristic. They are multi-role platforms that are being used for a variety of missions. One study produced during the Vietnam era coined it accurately when it stated that "the Close Air Support/Interdiction mission has become so specialized that the all purpose approach leaves much to be desired, producing instead the jack-of-all-trades, master-of-none machine."<sup>24</sup>

## **A New Direction is Needed**

Both the Army and the Marines recognize that air support plays a valuable role in convoy protection and force movement in the counterinsurgent's home terrain. In Iraq today, most of the requests from the ground force commanders for air support is for preplanned raids, reconnaissance of pipelines and suspected enemy safe houses, and truck convoys.<sup>25</sup> The latter of these type of air support requests has been greater of late as in one 30-day period in Iraq, more than 2300 insurgent attacks on military and civilian targets was recorded.<sup>26</sup> For the 3d Armored Cavalry Regiment (ACR), more than one in five of the ACR's 32 deaths during their last deployment were caused by convoy attacks and was the second leading cause of death in the regiment.<sup>27</sup> Such violence on the part of the insurgents has prompted the Army to reduce the number of convoys within the country as the attacks have been on the increase. This move has the Air Force carrying a larger portion of the logistics re-supply load on tactical and strategic airlift within the country as the roads are still quite dangerous for military and civilian convoy activity.<sup>28</sup> None of this activity on the part of the insurgents is new or unique in this type of war. Past examples of the use of airpower have yielded good results in supporting ground forces.

This new direction needed to combat the problem of troop and convoy security can only be answered by an air assets designed to support such an operation. While the A-10, AC-130, and even helicopter gunship provides much needed assistance, their own operational flaws leave a gap within the mission: to be on-hand when needed. Past examples of this type of conflict have shown that matching the weapon with the task proves successful. The US is fighting an enemy that seeks to avoid their foes strengths

by utilizing lesser-technology and asymmetric tactics. Only by adapting our own weapons to favor a propeller-driven CAS platform that can support the Army in its current mission can the US gain the upper hand. This has been a proven solution in the history of this type of war and should be re-engaged today.

# Case Studies in Counterinsurgency

*“To learn something new, read an old book!”*

—Anonymous

## Introduction

It has been said, time and time again, that to forget history is to doom men to repeat it. To frame the argument of this paper, that of re-applying past technology and thought to the application of airpower in fighting insurgents, we must look to two past examples of the use of low-tech aircraft in small wars and their outcomes. In both cases, politics and world opinion defined the eventual outcome of each war. As stated earlier, while politics cannot be separated from the insurgency as it is a primary motivating factor for both sides and often defines the war, the manner in which these wars were fought holds valuable lessons for the student of airpower application in conflicts such as these.

The first analysis will come from a look to the French experience in Algeria from 1958 to 1962. The French were extremely successful militarily thanks to the application of airpower. Though the Algerians still won independence, it can be argued that this was a foregone conclusion at the outset of the war and it was not through military defeat, but through political factors that forced the French government to acquiesce to the Algerian Nationalist movement. The second case study is that of the US in Vietnam from 1962 to 1966. Here, we will see that the initial insurgency was managed through a successful application of airpower and it was only when the North Vietnamese gained sponsorship from larger powers in terms of weapons and training and sought conventional war that forced the US to re-evaluate their involvement and pull out of the war.

# **The French in Algeria**

## **Historical Background**

Algeria has been a part of Metropolitan France since the mid-1800s. By the end of the Second World War, there were over one million European settlers, Colons, in Algeria<sup>29</sup> amongst a population of over nine million Arabs. In the aftermath of the war, nationalistic fervor led to the creation of the Front de la Libération Nationale (FLN) in 1954 and its armed wing the Armée de Libération Nationale (ALN). It was in 1958 that tensions between the French Government, the Colons, and the FLN reached a head placing the military squarely in the middle. With a rising insurgency, and a need by military professionals to redeem themselves from their recent defeat in Indochina, DeGaulle was brought into power with the understanding that Algeria was to be kept French.<sup>30</sup> To defeat this insurgency, French Air Force General Maurice Challe was placed in command of French forces in Algeria. His goal was a mobile campaign to purge the Wilayas (ALN territorial segments) by destroying ALN forces, not occupying territory.<sup>31</sup> General Challe's vision was a ground campaign with airpower used extensively to provide mobility and fire support.

## **Aircraft Types and Tactics**

The end of World War II saw a French Air Force strapped for manning, funds, and airframes. In 1946, France did not have the means to create a conventional, strategic Air Force and had to rely on equipment "donated" by the US or left over from the German occupiers.<sup>32</sup> This led to a force that was heavily linked to its ground component brethren with significant joint arms doctrine and few assets outside of propeller-driven aircraft and first generation helicopters. As one study written by the Aerospace Studies

Institute apply put it, “without the benefit of exotic hardware, or perhaps because of a lack of it, an effective counter-guerrilla Air Force was in being by 1959.”<sup>33</sup>

French Air Force strategy in supporting counterinsurgency operations revolved around four major systems: command and control; reconnaissance, intelligence, and surveillance; logistics support and troop delivery; firepower in direct support of ground operations with each of these interdependent systems based on the utilization of whatever assets were available.<sup>34</sup> By 1959, the T-6G Harvard was the workhorse for the French Air Force in Algeria with over 240 of them conducting operations in the country. These aircraft were given to the French by the US as surplus and were equipped with three .30 caliber guns and had pylons to carry a variety of weapons. The primary missions conducted by these converted trainers were air cover for convoy operations and armed reconnaissance of roads and railways.<sup>35</sup> By 1960, these aircraft were reaching the end of their life span and that, coupled with increasing ALN capabilities in the arena of anti-aircraft artillery (AAA), forced the French to transition to the A-4D Skyraider. In addition to a heavy reliance on propeller-driven aircraft in support of ground operations, the helicopter was used extensively in Algeria with the first time employment of helicopters as fire support platforms.<sup>36</sup>

### **Employment and Doctrine**

As stated previously in this study, the nature of the war in Algeria was entirely different from previous French experiences in World War II requiring a different approach to the use of airpower. Following on the heels of a bitter defeat in Indochina, the French sought to put those lessons good use. As French Air Force Lt. General Enzanno of the 2<sup>nd</sup> Tactical Air Command put it:

“Obviously, the role of the Air Force in Algeria was very different from its traditional role in conventional warfare, instead of powerful concentrations of force and maneuvers conducted at very high levels of command, the Algerian War called for dispersion of forces at low levels of command...”<sup>37</sup>

To accomplish this feat, operational control of the armed forces was exercised through three unified commands consisting of three Army Corps and three Tactical Air Commands (GATAC). Each of these commands was controlled through a Joint Operations Center (JOC) that controlled a specific zone within Algeria.<sup>38</sup> The overall commander was informed of operations within each of these zones, but the day to day operational mission of each force was managed through the JOCs allowing for a decentralized execution of operations in a fluid battlespace.

Of primary concern to the ground force was air cover for convoy operations and force movement and fire support. Convoy escort aircraft would often stage from rough, forward operating fields, or even roadways, to support the column or provide reconnaissance ahead of the force and provide firepower as necessary.<sup>39</sup> Helicopter assets would provide logistics and fire support using slow-moving T-6 or A-4 aircraft as cover. Close coordination between Army and Air Force during planned or contingency operations was facilitated through mobile command posts that reported back to the area JOC to keep the overall command structure informed and “lease” additional assets as required.<sup>40</sup> Thanks to the particular organizational structure of the armed forces, the Air Force could react quickly, often within 30 minutes or less, to support the Army against an enemy that was highly mobile familiar with the terrain.

### **Summary of Operations**

Though the French were to give the Algerians their independence in 1962, the military side of the war was a success and validation of the French counterinsurgency

effort with respect to air integration. The use of “low technology” aircraft coupled with the first use of helicopter gunships gave the French Army a decided advantage against the ALN. Through the adaptation of new technology in helicopter gunships, the use of rugged fixed wing aircraft, and close coordination with the ground component, the French proved that airpower can be key to counterinsurgent operations. In the words of a study conducted soon after the war by the Aerospace Studies Institute, “counterinsurgency is by nature a ground effort...but in this instance it was a ground effort in which airpower was the equalizer.”<sup>41</sup>

## **The US Experience in Vietnam**

### **Historical Background**

Following the French defeat at Dienbienphu in 1954, the nation of Vietnam was split into a Communist North and non-Communist state in the south. By 1959, the Communist leader of the north, Ho Chi Minh, was ready to “liberate the south and reunify the country.”<sup>42</sup> This campaign took the form of an armed struggle between insurgent Communist forces, the Viet Cong, and the fledgling military of the south. Though a US presence in the country had been established as early as 1950 aiding the French during their struggle, President Kennedy came to office in 1960 pledging to aid any nation in a struggle against Communist aggression by providing aid and, in South Vietnam as in other places, military advisors.

The insurgency in the south was getting worse by late 1960 with assassinations and terror campaigns conducted by the Viet Cong de-stabilizing the already weak, and corrupt, US-sponsored government. Though military advisors had been in the country providing training, and some aircraft (initial deliveries of Navy AD6 aircraft beginning in



1958), the main challenge to Saigon would not come from regular armies, but from guerrillas.<sup>43</sup> President Kennedy's counterinsurgency plan for Vietnam, developed in late 1960, recognized this and pledged to increase US involvement with more troops and airmen to perform such missions as aerial reconnaissance and airlift, both missions that the South Vietnamese Air Force (VNAF) could not do.<sup>44</sup> This move, part of the President's overall counterinsurgency (COIN) strategy led to the introduction of the FARMGATE group.

### **The Guerrilla War and Airpower**

As part of the COIN strategy sponsored by the Kennedy administration, the FARMGATE project was stood-up at Eglin AFB, FL to "train the Vietnamese in counterinsurgency and develop/confirm tactics and techniques for counterinsurgency operations" using primarily aircraft.<sup>45</sup> The training advisors from FARMGATE deployed to Southeast Asia with a contingent of T-28's and B-26's to conduct CAS and armed reconnaissance operations. The existing inventory of the VNAF in 1961 consisted of Navy AD6 (re-designated A-1s) and F-8Fs with a small contingent of L-19 spotter aircraft and helicopters all of which were in fair to poor condition.<sup>46</sup> FARMGATE's goal was to develop this force into one capable of defeating the insurgents within the confines South Vietnam by training pilots and flying operational missions with them.

Many of the missions conducted by the US advisors alongside their VNAF brethren ranged from CAS missions supporting US "irregular forces and advisors and their indigenous South Vietnamese forces" to aerial re-supply and convoy or helicopter escort. A periodical of the day stated that:

"Their tactics call for operations from simple airstrips in remote areas with low and slow flying aircraft. They train to perform low-level bombing and

reconnaissance missions to flush out fleeing and concealed targets in the jungle, to air drop or land troops, and conduct psychological warfare.”<sup>47</sup>

With the rough terrain and limited forces involved at the outset of the war, the aircraft in use proved themselves quite capable for the counterinsurgent mission. While the remainder of the conventional US Air Force was developing new jet aircraft and focusing on a nuclear-delivery mission, the FARMGATE advisors and the VNAF were continuing a campaign of aerial counterinsurgency against an enemy that was becoming more and more adept at their craft and increasing their competency at defeating aerial threats.

### **Aircraft and Outcomes of the Vietnam War**

The T-28 and A-1 aircraft were found to be reliable machines in this environment with excellent rough-field capabilities and ease of flight. Long loiter times and the ability to carry a variety of stores and .30 caliber guns made these tough aircraft indispensable in the close-in fighting that characterized this war. Though the North Vietnamese had respectable anti-aircraft capability as early as 1953, it was not until 1963 that the US and VNAF became concerned with losses inflicted by the north on their aircraft leading to the withdrawal of the T-28 from service.<sup>48</sup> This move left the VNAF with the A-1 as its primary fighter performing a multitude of roles in a rapidly escalating conflict. Attacks by the insurgents against US forces in 1963 led now President Johnson to authorize direct attacks against the north ushering-in a new phase of the war.<sup>49</sup>

In January of 1964, the Joint Chiefs of Staff issue “bolder actions” against the deteriorating political and military state of affairs in South Vietnam effectively taking the war away from the South Vietnamese. In August of 1964, following the attacks against the USS Turner Joy and the USS Maddox in the Gulf of Tonkin, Johnson signs a resolution to move additional Army and Air Force personnel and equipment into

Southeast Asia including frontline fighter like the F-102, F-100, and F-105.<sup>50</sup> This was seen as a relief to the FARMGATE crews as their equipment was wearing out and the time spent in the air by each pilot had more than doubled from the year previous. From that point on, the A-1 was used in a support role as an excellent escort asset for search and recovery missions and to provide CAS in areas of South Vietnam where the threat was not so high. The political situation became dire in 1965 prompting Johnson to again increase US commitment in South Vietnam and he orders a massive bombing campaign (ROLLING THUNDER) to “stave off communist victory” effectively ending the counterinsurgency effort and the airpower role in it.<sup>51</sup>

### **Summary of Two Wars**

The historical studies presented in this paper have similarities that make them invaluable for analysis in the context of small wars and airpower. The French in Algeria developed their tactics from experiences in Indochina and used aircraft that were readily available as they were limited in strategic (high-tech) aircraft. The US also had the benefit of previous experience in Indochina aiding the French to prepare them for counterinsurgent operations against the communists and also favored lower tech aircraft leaving the jets at home until 1964-65 when escalation turned the war more conventional. Both France and the US entered these wars fighting a guerrilla army and modified their approach to warfare accordingly. The US and French both realized early on that airpower in support of ground operations was to be a decisive factor in this type of war. Examining the types and roles of the aircraft used will present us with a wealth of knowledge that may prove invaluable in the counterinsurgencies of today.

# **Airpower and Fighting a Modern Counterinsurgency**

*“He who understands how to use both large and small forces will be victorious.”<sup>52</sup>*

- Sun Tzu

## **Introduction**

Modern warfare, both conventional and irregular, has featured the aircraft as a primary tool for the ground force. From aerial reconnaissance to logistics support to fire support, the aircraft has often made the difference between military defeat and victory. The advances in engines, avionics, and firepower made on the airplanes of today have revolutionized the way in which a nation conducts war. Yet through all of this, the ground commander still must move his forces from one point on the battlefield to another. Both rotary and fixed-wing aircraft are often used to aid the ground forces commander in protecting his convoys and providing fire support and reconnaissance when needed.

Both of the historical examples used in this study illustrate the necessity of air support in defeating insurgent factions. In each case, the types of support and aircraft used were very similar and with good reason. These tough, reciprocating engine-driven aircraft were able to provide support to the force on the move with economy, durability, and skill. This section will examine the specific missions required of these aircraft and what technology and doctrine makes a viable counterinsurgent air platform. While the US Air Force awaits its' new, expensive, multi-role fighters, the F-22A Raptor and F-35 Joint Strike Fighter, operations today and for the foreseeable future call for a different approach...an aircraft designed to fight the small war. For as professor and former

Secretary of Defense staff officer Frank Jones has stated “even superpowers can lose asymmetric wars...the ideal response to such conflicts requires preparing for engagements despite technological advantages.”<sup>53</sup>

### **The Low-Tech Aviation Solution**

The aviation solution to counterinsurgent warfare has been sought for decades. The US Marines used air cover and escort extensively in Nicaragua in the 1920's and 30's and the basic concept has remained...”flying overhead, covering aircraft reconnoiter ahead of the ground forces and prevent ambushes as well as provide air-delivered ordinance on short notice.”<sup>54</sup> Stepping forward to Algeria and Indochina, the roles of airpower have not changed. Both the French in Algeria and the US in Vietnam used similar types and make of aircraft as they were cheap, available, and well suited to these tasks. Authors Corum and Johnson have pointed out in discussions on the role of low-tech aircraft in small wars: “in many cases a low-tech approach has proven to be a highly useful and cost-effective means of employing airpower in counterinsurgency and counterterrorism operations.”<sup>55</sup> The aircraft that figured most prominently in both conflicts, among others, was the A-1 Skyraider.

Many studies were devoted to the type of aircraft that should replace the A-1 during and after the Vietnam War. As this “vintage” airplane had rolled off of the assembly lines as WWII fighters, the airframes were aging and seen as out of place in the new “jet-age” Air Force.<sup>56</sup> The mission that the A-1 had in both Vietnam and Algeria was of interdiction and close air support with one writer stating that:

“The A-1 had by far its greatest value in the unconventional warfare being conducted in Vietnam. It was the large load carrying capability together with its

unique loiter capability that could be best utilized in the relatively safe anti-aircraft environment.”<sup>57</sup>

Other factors that made this aircraft popular to the US and French in small wars was its cheapness of manufacture and the questionable economy of using a jet aircraft to attack low value ground targets.<sup>58</sup> The A-1 was a tough aircraft able to absorb ground fire and continue on mission as well as land in outlying, rough airstrips as the French did time and time again during their campaign. And finally, the relatively low speed, when compared to jet aircraft, gave the A-1 excellent observation characteristics and the ability to not “outrun” their charges be they helicopter or ground convoy. Along these same lines, the aircraft required for this type of mission should be able to fly low and slow as “aerial reconnaissance and surveillance of the guerrilla operating area is most effective when conducted at low altitude (below 1500’) and at low speed (under 125 knots).”<sup>59</sup> With these features and unique employment concepts the A-1 and its low-technology brethren made a name for themselves in the Small War arena.

### **The New Skyraider**

The French and US used low-tech aircraft out of necessity in the small war arena. Both nations realized that the answer to this type of conflict was not in expensive jet aircraft but in easy to operate, maintain, and replace “vintage” airframes that served multiple roles on and off the battlefield. For the French, the T-6 and A4D (A-1) were a plentiful and economically sound choice to outfit their post-WWII Air Force whose jet aircraft were to be used for defense against possible Soviet advances in Europe. And, the French were very in-tune to the type of conflict they were engaged in and used these assets very effectively. The US espoused the T-28 and A-1 over newer, frontline jet fighters as both effective, and cheap, fire support platforms as well as a method to train

an indigenous South Vietnamese Air Force to defend themselves. One study stated succinctly that “the A-1 is sophisticated in another way; it is designed to match its operating environment as a classroom for pilots of friendly, underdeveloped nations, could carry lots of different bombs, and had a short take-off and landing capability.”<sup>60</sup>

Much was written following the Vietnam War with regard to potential replacements of the A-1 (and aircraft like it) for use in counterinsurgent operations. From the Philippines, to Malaya, the Algeria, to Vietnam, low technology-based aircraft proved their worth in conflicts where the counterinsurgent engaged a guerrilla enemy with less than a total military or political effort. Today, the US has high stakes, politically and militarily, in the War on Terror and the protection of its troops is a priority. And yet, the assets to protect them from the air are not designed to do so in this type of environment

Many studies were produced in the late 1960’s and early 1970’s as the A-1 was being removed from Southeast Asia in an attempt to find a replacement. One list of qualities that bears discussion is located in Table 1. The qualities of note are that the aircraft should be inexpensive and suited to the type of support it is expected to give. A corollary to this is that such an aircraft would be suited to training pilots from these “lesser-developed” nations that will eventually assume responsibility for internal security against insurgent factions once the US ends their involvement and transitions to self-government. A bottom-line argument encountered during this time period was that “more and more emphasis [was being] placed on massive, complex weapon systems, leaving much to be desired in the aircraft especially designed to meet the needs of future limited conflicts.”<sup>61</sup>

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Off the Shelf</li><li>• Long range and loiter capability</li><li>• Diverse weapons carrying capability</li><li>• Ability absorb ground fire with a high degree of survivability</li><li>• Speed and maneuverability at low to medium altitudes</li><li>• Good pilot visibility</li><li>• Good navigation and fire control systems</li><li>• Short take-off and landing (STOL)</li><li>• Ability to operate from austere airfields</li></ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 1: Consideration for a Counterinsurgency Aircraft

**Off the Shelf.** The French and US experiences in Algeria and Vietnam demonstrated that an aircraft possessing the characteristics listed in Table 1 can have an impact on operations. With regard to off the shelf technology, the French went to war in Algeria using aircraft that were readily available as their limited jet inventory was engaged in Europe. For a nation trying to come out from under the financial effects of a major war, these cheap, platforms more than suited their purpose. The US had similar justifications as well in supplying FARMGATE with surplus machinery that suited the nature of the war both militarily and politically. Today, the costs of developing and producing high-tech aircraft with stealth and speed have become onerous to the US treasury. Small wars are often fought with a need to keep costs low both in life and treasure for the US public to support them. By adapting an aircraft already in production or by making them specifically suited to the intended low-tech task, an aviation solution will find its way to the battlefield quickly and in suitable numbers.

**Range, Loiter, and STOL.** The need for long rang/loiter capability, STOL, and rough-field operating characteristics were also important factors when looking at the



terrain and nature of both conflicts. The desert and jungle environments coupled with a need for immediate support to troops on the move required that these aircraft be readily available to the ground commander and have a rugged nature to handle the environment. These aircraft would often stage at forward locations bereft of the high-tech support equipment needed by newer, jet aircraft with much shorter, rougher “runways.” Not unlike the French Air Force in Algeria, these aircraft will be required to stage close to the convoy or force they are to protect to provide rapid response and continuous cover.

**Navigation and Fire Control.** The aircraft used in both case studies presented in this paper was a legacy of WWII design. However, as the conflict in Southeast Asia became more intense, greater weapons carrying and delivery systems were added to the airframe. Rocket pods, bomb racks, and infrared tracking devices were added to improve the CAS capability of the A-1 as the war progressed. Today, an aircraft with good performance taken from a commercial or military design can be modified with sophisticated navigation and fire control to give it the capability to deliver anything from GPS-guided munitions to heavy cannon fire or cluster munitions with relative ease. In this sense, low-tech does not have to mean lower technology in the arena of avionics and weapons.

**Speed, Maneuverability, and Visibility.** The necessity to respond to an insurgent attack in a timely manner is tied to the aircraft’s ability to maneuver away from threats and still keep the pilot’s eyes on the often small, fleeting insurgent target. Faster, jet aircraft can respond to any situation quickly, but often lack the ability to “see” the target in jungle or restrictive terrain. One study stated that though the threat environment of Vietnam was too high for aircraft like the A-1 to operate close to regular units, its ability

to escort rescue forces was immeasurable as it was faster than helicopters, but not so fast as to outrun the forces it was meant to escort or see enemy forces in the jungle.<sup>62</sup> Speed and maneuverability can only aid a propeller-driven aircraft in defense as well.

**Survivability.** As the counterinsurgent theater of operations has matured since the end of the Vietnam War, so must the aircraft using current defensive technology. As former Secretary of the Air Force Gen. E. M. Zuchert stated with regard to the A-1, its “effectiveness was apparent in the counterinsurgent environment while the problem was not air superiority but an elusive enemy.”<sup>63</sup> Unlike the latter half of the Vietnam War, the US usually enjoys air superiority in the areas where insurgents operate. The problem lay in the proliferation of man-portable missiles and light arms. Today’s defensive measures are more than up to the challenge presented by this threat and, in fact, propeller-driven aircraft are smaller heat signatures for the type of infra-red homing missiles that the insurgent might employ. In addition, avionics solutions can update the natural defenses of such aircraft to allow them to become more survivable in this type of environment. Hence, an aircraft such as the newly fielded T-6 Texan II, or something similar, might be a good start.

Raytheon Aircraft Corporation has rejuvenated the T-6 heritage in its latest aircraft design for the US Undergraduate Pilot Training program. While a detailed analysis of aircraft performance and design is outside the scope of this study, this aircraft is a good example of the type of off-the-shelf platform that could be modified to perform the counterinsurgent mission today. Its performance is similar to the A-1 in both speed (320 mph max speed for both the A-1 and T-6 II) and maneuverability and both have a 900 mile range without external tanks.<sup>64</sup> They both share excellent pilot visibility and

ease of handling characteristics. Figures 1 and 2 give basic aircraft data and illustrations. While modifications would be required to make it a combat aircraft, the basic performance and idea behind the aircraft make this a viable alternative to the fast-moving, expensive jet aircraft that dominate the inventory today. For the “A-1s adaptability to operations in underdeveloped areas was the primary reason it was used rather than faster, more modern jet aircraft.”<sup>65</sup>

### **Doctrine for Employment**

Aviation support in small wars can be likened to artillery in Callwell’s era as its “primary duty...in warfare is to ensure that it is on hand and well to the front.”<sup>66</sup> For propeller-driven aircraft, or any aircraft capable of providing a slow, stable fire support or reconnaissance platform, to be of any use in guerrilla engagements, it must be available when the action happens as it is usually violent but short-lived. The French in Algeria made use of forward operating locations, often along the route of march, to re-arm and re-fuel their aircraft so that a convoy was never without some form of on-hand air support.<sup>67</sup>

The tactical air control system employed by the French assured that these air assets were located and worked closely with the units they were supporting. Centralized control was maintained to some extent through the GATAC, but the execution was extremely de-centralized allowing the ground commander to adjust to mission needs and keep aviation support on hand. The US experience in Vietnam was similar with the VNAF and US JOC maintaining overall situational awareness of the battlespace. However, their primitive system combined with the slow cruising speed of the T-28 and A-1 forced them to adopt more proactive air cover schemes to be immediately responsive

to the needs of the ground force commander.”<sup>68</sup> The US built a system that was too unwieldy to handle a rapidly changing environment and as the air war got larger and more and more air assets were poured into the theater, the system broke down.

### **Putting It All Together**

As we have previously seen, it was not just the aircraft type itself that dictates the successful use of airpower in counterinsurgencies. The ground commander must have access to the asset where and when he needs it. Author Jerome Klingman stated it best when he said:

The history of aircraft operations in counter guerrilla warfare, however, suggests the following considerations and recommendations...given a reasonable STOL capability, light armed surveillance aircraft should be attached to and deploy with small ground combat units. Fixed-base operations from large built-up facilities outside the combat area should be avoided. Aircraft should be immediately available to the ground force commander as assigned or attached resources of the counter guerrilla attack or reconnaissance unit. When the unit moves, the aircraft moves with it.<sup>69</sup>

Though this passage refers to reconnaissance aircraft, the principle holds true for close support aircraft as well. Just as the French tied air operations directly to the ground commander by working fire support issues directly through a joint operations center they went one step further by placing those assets directly with the units they supported allowing for close coordination of movement and fires.

The struggle to stabilize nations riddled with insurgent or terrorist factions will be a mission that occupies the US armed forces for the foreseeable future. The need to protect our ground forces on the move, either in convoys or direct attack, will require a return to simpler times with regard to aviation support assets. Fast moving jet aircraft operating at high altitudes awaiting support requests lack the ability to be as immediately responsive to the ground commander as a relatively slow, lower altitude propeller aircraft

working immediately over the column ready to provide intelligence or fires on command. The missions that take up so much of the air components' time today in Iraq involve reconnaissance and surveillance of thoroughfares and pipelines and spending time in the "CAS Stack" waiting for on-call fire missions.<sup>70</sup> For the ground commander to use these assets, he must call back to a centralized control center to obtain them.

The focus on centralized control of air assets must be loosened with regard to operations against insurgents. Having stacks of jet aircraft orbiting in a central location offers some form of flexibility. However, this solution is an expensive way to utilize front-line aircraft that may or may not have the loiter time and responsiveness to press the attack when a convoy is ambushed. Regular face-to-face contact between the pilot and the troop he is to support is invaluable and can only be accomplished when the two are co-located and part of the same "fight." When fighting an enemy that "prowls about waiting for their opportunity to pounce upon small parties"<sup>71</sup> it is necessary to have the right type of aircraft on the prowl waiting for them.

## Summary

*“The employment of aviation in small wars is characterized by the operation of many small units, two or three plane patrols, over a wide area.”*

—US Marine Corps *Small Wars Manual*, 1940

Support for the ground force in a dangerous, guerrilla environment is not a new concept. Much has been written on the subject and continues today as we face a greater likelihood of facing insurgents in light of the War on Terror. The insurgent fights with asymmetric weapons and in small numbers. Often, this type of fight is a nuisance to a larger, more heavily armed force, but against a convoy, whose job is to get to its destination and avoid enemy contact; this nuisance can be something entirely different. And like the 3d ACR learned in Iraq, “much of the combat [now] hits rear-echelon soldiers rather than front-line troops...supply experts and truck drivers, who expected to be comparably safe, [are] more likely to face attack than more heavily armored soldiers in tanks and trenches.”<sup>72</sup>

Air support from a force that is tailored in both equipment type and doctrine will be the decisive factor in this type of fight. As illustrated in both present and past insurgencies, using expensive, multi-role fighter platforms are not often the most cost-effective or appropriate tool for the job. It should be noted, however, that while a low-tech aircraft may be the right solution, this does not mean that this is a low technology aircraft. By fusing high technology avionics to aid in navigation, threat mitigation, and fire control with a rugged propeller-driven aircraft, the Air Force can provide the ground commander with a reliable counterinsurgent air platform.

## Figure 1. A-1 Skyraider

### Specifications (AD-7 / A-1J):

Engine: 2800hp Wright R-3350-26B radial piston engine

Weight: Empty 10,550 lbs., Max Takeoff 25,000 lbs.

Wing Span: 50ft. 9in.

Length: 38ft. 10in.

Height: 15ft. 8.25in.

### Performance:

Maximum Speed at 18,000ft: 320mph

Cruising Speed at 6,000ft: 190mph

Ceiling: 25,500ft

Range: 900 miles

### Armament:

Four 20mm cannon

8,000lbs of hardpoint-mounted freefall and/or forward-firing weapons

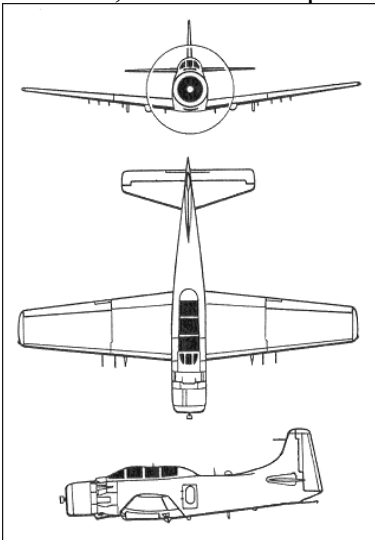


Figure 2. A-1 Skyraider

## Figure 1. T-6 Texan II

### General Characteristics

**Primary Function:** Entry-level trainer in joint primary pilot training

**Builder:** Raytheon Aircraft Co.

**Powerplant:** 1,100 horsepower Pratt & Whitney Canada PT6A-68 turbo-prop engine

**Wingspan:** 33.5 feet (10.19 meters)

**Length:** 33.4 feet (10.16 meters)

**Height:** 10.7 feet (3.23 meters)

**Speed:** 320 miles per hour

**Standard Basic Empty Weight:** 6,500 pounds (2,955 kilograms)

**Ceiling:** 31,000 feet (9448.8 meters)

**Range:** 900 nautical miles (1,667 kilometers)

**Crew:** Two, student pilot and instructor pilot

**Armament:** None

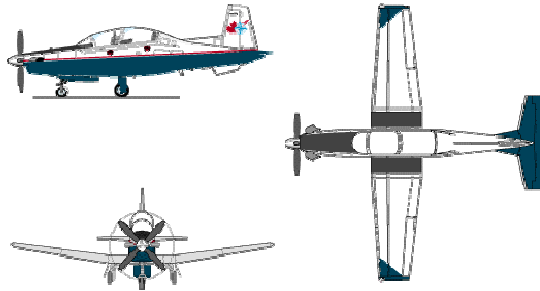


Figure 3. T-6 Texan II



## Notes

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- <sup>1</sup> Marshal Sir John Slessor. *Airpower and Armies* (London: Oxford University Press, 1936), x.
- <sup>2</sup> William P. Yarborough, “Counterinsurgency: The US Role—Past, Present, and Future”, in *Guerrilla Warfare and Counterinsurgency*, ed. Richard H. Shultz, Jr., et al (Lexington, MA: Lexington Books, 1989), 103-104.
- <sup>3</sup> Maj Gen Bob Elder in an address to Air Command and Staff College, 7 Apr, 2005. Gen Elder served as Deputy CFACC during Operation Iraqi Freedom and shared his observation on the transition from Phase III operations to Phase IV stabilization and dealing with insurgents in Iraq.
- <sup>4</sup> Colonel C. E. Callwell. *Small Wars: Their Principles and Practice*, (Lincoln, NE: University of Nebraska Press, 1996), 125.
- <sup>5</sup> N. I. Klonis, *Guerrilla Warfare: Analysis and Projections* (New York: Robert Speller & Sons, 1972), 5.
- <sup>6</sup> The Russian General Staff, *The Soviet-Afghan War: How a Superpower Fought and Lost*, translated and edited by Lester W. Grau and Michael A. Gress (Lawrence, KS: University Press of Kansas, 2002), 306-307. This war was fought between Soviet regulars aided by the Afghan National Army (DRA) and religiously and nationalistically-motivated rebels for nearly a decade. The terrain and nature of the type of war led the Soviets to adopt a garrison strategy and a departure from their traditional form of mobile combat. The principle forms of combat adopted by the Soviets were the raid, block and sweep, ambush, and actions connected with convoy escort or security as the Mujahideen did not engage in groups of more than 5-20 fighters and avoided direct confrontation.
- <sup>7</sup> Stephen Metz and Raymond Millen. “Insurgency and Counterinsurgency in the 21<sup>st</sup> Century,” (Washington, DC: Strategic Studies Institute, 2004), 1.
- <sup>8</sup> Mohammad Yousaf, *The Bear Trap* (London: Leo Cooper, 1990), 178-181.
- <sup>9</sup> Carl Von Clausewitz. *On War*, ed. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 481.
- <sup>10</sup> Metz and Millen, 6.
- <sup>11</sup> Jon F. Danilowicz. “Fish out of Water: Applying Counterinsurgency Doctrine in the War on Terrorism,” (Newport, RI: Naval War College, 2003), 5.
- <sup>12</sup> Metz and Millen, 10.
- <sup>13</sup> Callwell, 91.
- <sup>14</sup> Metz and Millen, 22.
- <sup>15</sup> T. E. Lawrence. “Guerrilla Warfare,” in *The Art of War in World History*, ed. Gerard Chaliand (Berkley, CA: University of California Press, 1994), 883.
- <sup>16</sup> Henri Jomini, in *The Art of War in World History*, ed. Gerard Chaliand (Berkley, CA: University of California Press, 1994), 731.
- <sup>17</sup> Frank L. Jones. “Army SOF in Afghanistan: Learning the Right Lessons,” (*Joint Force Quarterly*, Winter 2003-2003), 18.
- <sup>18</sup> Robert Bryce, “Gas Pains,” *The Atlantic Monthly* (May, 2005), 34-35.
- <sup>19</sup> Ibid, 35.
- <sup>20</sup> General John W. Handy as quoted in “Headwinds for the US Air Force,” *Air Force Magazine* (April, 2005), 53.
- <sup>21</sup> Callwell, 475.
- <sup>22</sup> Department of the Army Field Manual 3-90. *Tactics*, July 2001, E-38.
- <sup>23</sup> United States Marine Corps. *Small Wars Manual*, (reprint of 1940 edition), 228.
- <sup>24</sup> Arthur B. Bliesener, et al. “The New and Unique Demands of Protracted Limited Combat of Aircraft Design” (Maxwell AFB, AL: Air University Study No 3231, 1966), 29.
- <sup>25</sup> Bradley Graham. “Over Iraq, Pilots Fly Into Action When Troops Call for Help,” (Washington Post, 19 December, 2004)
- <sup>26</sup> James Glanz and Tom Shanker. “Iraq Study see Rebels’ Attacks as Widespread,” (New York Times, 29 September, 2004).
- <sup>27</sup> Tom Roeder. “US Soldiers, Iraqis Changed by Year of War, Occupation,” (*The Gazette*, 14 March 2004).
- <sup>28</sup> CNN. Report from Pentagon “Insurgent attacks on US Convoys in Iraq,” (15 December, 2004).

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- <sup>29</sup> Victor Flintham. *Air Wars and Aircraft*, (New York: Facts on File, 1990), 79.
- <sup>30</sup> Constantin Melnik. "The French Campaign against the FLN," (Santa Monica, CA: Rand Corporation Memorandum RM-5449-ISA, September, 1967), 8.
- <sup>31</sup> Flintham, 81.
- <sup>32</sup> Charles Christienne and Pierre Lissarague. *French Military Aviation*, translated by Francis Kianka, (Washington DC: Smithsonian Press, 1986), 428.
- <sup>33</sup> Concepts Division, Aerospace Studies Institute. "Guerrilla Warfare and Airpower in Algeria, 1954-1960." (Maxwell AFB, AL: Air University, March 1965), 39. Hereafter referred to as ASI.
- <sup>34</sup> Ibid, 40.
- <sup>35</sup> Ibid, 62.
- <sup>36</sup> Flintham, 81.
- <sup>37</sup> ASI, 40.
- <sup>38</sup> Ibid, 41.
- <sup>39</sup> Christienne and Lissarague, 430.
- <sup>40</sup> ASI, 43.
- <sup>41</sup> Ibid, 92.
- <sup>42</sup> Max Boot. *The Savage Wars of Peace*, (New York: Basic Books, 2002), 287.
- <sup>43</sup> Ibid, 288.
- <sup>44</sup> John Napier, "The Air Commandos in Vietnam," (Auburn, AL: Graduate Thesis, 1967), 67.
- <sup>45</sup> FARMGATE was a training cover for a covert mission supporting VNAF against the Viet Cong (Message, TSC-PFOCC-S 61-170, Commander, PACAF to Commander, 13<sup>th</sup> AF, 4 December, 1961).
- <sup>46</sup> John Doucette. "US Air Forces in Counterinsurgency: Exposing Voids in Doctrinal Guidance," (Maxwell AFB, AL: Air University School of Advanced Airpower Studies, June, 1999), 19.
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- <sup>48</sup> James S. Corum and Wray R. Johnson. *Airpower and Small Wars*, (Lawrence, KS: University of Kansas Press, 2003), 263.
- <sup>49</sup> Ibid, 265.
- <sup>50</sup> Ibid, 266.
- <sup>51</sup> Ibid, 267.
- <sup>52</sup> Sun Tzu. *The Art of War*, ed. by Samuel B. Griffith, (Oxford: Oxford University Press, 1963), 82.
- <sup>53</sup> Jones, 21.
- <sup>54</sup> Corum and Johnson, 261.
- <sup>55</sup> Ibid, 431.
- <sup>56</sup> Wayne Mutza. *The A-1 Skyraider in Vietnam: The Spad's Last War*, (Atglen, PA: Schiffer Military History, 2003), 16.
- <sup>57</sup> James S. Donovan. "The A-1 Aircraft in Southeast Asia," (Maxwell AFB, AL: Air University, November, 1970), 6.
- <sup>58</sup> Ibid, 10.
- <sup>59</sup> Dennis M. Drew. "Air Theory, Air Force, and Low Intensity Conflict: A Short Journey to Confusion," (In *The Paths of Heaven: The Evolution of Airpower Theory*, ed Phillip S. Melinger, Maxwell AFB, AL: School of Advanced Airpower Studies, 1997), 341. Dr Drew was quoting the observation of Jerome Klingman and other writers in discussion of types of airpower constructs for low intensity conflict to include the need for additional crew members to enhance observation in difficult terrain..
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- <sup>63</sup> Donovan, 6-7.
- <sup>64</sup> US Air Force Fact Sheet. "T-6A Texan II," [Online] Available <http://www.af.mil/factsheets/factsheet.asp?fsID=124>
- <sup>65</sup> Donovan, 7.
- <sup>66</sup> Callwell, 433.
- <sup>67</sup> Christienne and Lissarague, 464.
- <sup>68</sup> Corum and Johnson, 261.

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<sup>69</sup> Jerome Klingman. "Light Aircraft Technology for Small Wars," in *Low-Intensity Conflict and Modern Technology*, ed David J. Dean, (Maxwell AFB, AL: Air University Press, June, 1986), 129.

<sup>70</sup> Bradley Graham. "Over Iraq, Pilots Fly Into Action when Troops Call for Help," (*Washington Post*, December 19, 2004), 31.

<sup>71</sup> Callwell, 125.

<sup>71</sup> Roeder.

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