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SOLDIERS AND BUILDERS:

ENGINEERING A MORE SELF-RELIANT

AFGHAN NATIONAL ARMY

by

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14. ABSTRACT

The purpose of this paper is to examine how a corps of engineers can improve the self sufficiency of the Afghan National Army (ANA) in counterinsurgency and reconstruction operations. In constituting the ANA, the United States and coalition forces have focused on combat units at the expense of other capabilities. Consequently, the ANA is not structurally prepared to independently prosecute a prolonged counterinsurgency campaign. The lack of engineering capabilities is particularly telling. Currently, the ANA engineer units suffer from deficiencies in force structure, training, equipment, and resources. This paper employs the problem/solution methodology. Research for this paper focuses on current deficiencies and ways to address them. The sources for the research range from Combined Security Transition Command -Afghanistan (CSTC-A) planning documents, interviews with military personnel who served in Afghanistan, new articles, books, and numerous other secondary sources. In formulating probable solutions, I draw on lessons learned from other nations, both ancient and recent, including the Roman Empire, The United States, China, and Pakistan. Properly structured, an expanded corps of engineers is a cost effective way to improve the self sufficiency of the Afghan National Army (ANA) along with its ability to conduct counterinsurgency and reconstruction operations. It is instrumental in building indigenous capacity, government legitimacy, and social capital. The ANA corps of engineers requires improvements in force structure, training, and personnel. To address these issues, the United States and NATO must allocate adequate resources to the CSTC-A. It is a mission we cannot allow to fail if we were to bring lasting stability to Afghanistan.

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Preface

During my research, I noticed a large amount of media coverage in the Afghanistan reconstruction projects conducted by the United States and other coalition partners. In contrast, there is very little press coverage of any *indigenous* effort by the Afghanistan government in Kabul or the newly formed Afghan National Army (ANA). As I explored further into the issue, I realized that the reason is the lack of indigenous engineering capability in the national government as a whole and in the nascent military establishment. This deficiency has clearly handicapped the ability of Kabul to win over the countryside with reconstruction projects that provide tangible benefits to the population.

Reconstruction projects conducted by the Afghanistan national government and its army will enhance their image in the eyes of the people. Currently, many projects are done in the name of the Kabul government without meaningful Afghan leadership. I would argue that foreign reconstruction effort is not as effective as indigenous reconstruction effort in fostering government legitimacy and national reconciliation. Given the progress already made in the ANA, it would seem an ideal candidate for undertaking this effort.

I would like to offer special thanks to LtCol Andrew Neilson, USAF, and MAJ James X. Francis, USA, who provided valuable current information on the status of the Afghan National Army and its engineering units. Thanks are also due to LtCol Barry Carlson and Dr. Jonathon Zartman, who tirelessly offered their advice and insight during my research. Lastly, thanks go out to my classmates in the Air Command and Staff College, which include sixty-nine international officers and many U.S. officers who deployed to the region. Their critiques and comments injected useful operational and cultural experience into my policy recommendations.

Abstract

The purpose of this paper is to examine how a corps of engineers can improve the self sufficiency of the Afghan National Army (ANA) in counterinsurgency and reconstruction operations. In constituting the ANA, the United States and coalition forces have focused on combat units at the expense of other capabilities. Consequently, the ANA is not structurally prepared to independently prosecute a prolonged counterinsurgency campaign. The lack of engineering capabilities is particularly telling. Currently, the ANA engineer units suffer from deficiencies in force structure, training, equipment, and resources.

This paper employs the problem/solution methodology. Research for this paper focuses on current deficiencies and ways to address them. The sources for the research range from Combined Security Transition Command -Afghanistan (CSTC-A) planning documents, interviews with military personnel who served in Afghanistan, new articles, books, and numerous other secondary sources. In formulating probable solutions, I draw on lessons learned from other nations, both ancient and recent, including the Roman Empire, The United States, China, and Pakistan.

Properly structured, an expanded corps of engineers is a cost effective way to improve the self sufficiency of the Afghan National Army (ANA) along with its ability to conduct counterinsurgency and reconstruction operations. It is instrumental in building indigenous capacity, government legitimacy, and social capital. The ANA corps of engineers requires improvements in force structure, training, and personnel. To address these issues, the United States and NATO must allocate adequate resources to the CSTC-A. It is a mission we cannot allow to fail if we were to bring lasting stability to Afghanistan.

INTRODUCTION

> *American counterinsurgency practice rests on a number of assumptions: that the decisive effort is rarely military (although security is the essential prerequisite for success); that our effort must be directed to the creation of local and national governmental structures that will serve their population, and, over time, replace the efforts of foreign partners; that superior knowledge, and in particular, understanding of the "human terrain" is essential; and that we must have the patience to persevere in what will necessarily prove long struggles.*
>
> *- U.S. Government Counterinsurgency Guide*[1]

A modern insurgency is not defeated solely through the application of firepower.[2] This can be amply demonstrated by historical examples such as the U.S. involvement in Vietnam and Soviet intervention in Afghanistan. Military force is definitely necessary, but it is only one tool among many in the fight over the hearts and minds of a population. A more effective approach is to address the root causes of the insurgency and "defeat" it through political settlement and accommodation. In this paper, I assert that a robust corps of engineers is a cost effective way to improve the self sufficiency of the Afghan National Army (ANA) along with its ability to conduct counterinsurgency and reconstruction operations. Currently, the preponderance of ANA consists of infantry, and combat support units, including engineers, are woefully underrepresented[3]. The existing engineer units within ANA are ill trained and woefully inadequate to meet current and future requirements.[4] I will argue for a more robust engineer force structure in the ANA on the ground of cost effectiveness, capabilities, and societal impacts. I will support my assertion using historical examples including the Roman legions, the United States Military Academy at West Point, the Chinese People's Liberation Army, and the Pakistan Army Frontier Works Organization. Lastly, I will provide some recommendations on how to

implement my proposals including changes to the ANA engineer force structure, training pipeline, and personnel policies.

BACKGROUND TO THE NEW AFGHAN NATIONAL ARMY

The U.S. invasion of Afghanistan in 2001 expeditiously removed the Taliban regime from Kabul, but the victory was far from complete. Muslim extremists, former Taliban members, local warlords, and other criminal groups continued to wage a guerilla war against the U.S. Forces, International Security Assistance Force (ISAF), and the new Afghanistan government in Kabul headed by Hamid Karzai.[5] While the Karzai government has international support, its control over the provinces outside Kabul is tenuous. To defeat the insurgency and extend the rule of the central government, the ANA was formed on 1 December 2002 under a degree issued by Karzai.[6] It is an all-volunteer force composed of Afghans of all ethnic and social origins.

The nascent ANA faces daunting challenges. The ANA did not absorb local militia and warlord forces. Instead, with the help of the international community in the form of Combined Security Transition Command-Afghanistan (CSTC-A), the ANA was created from scratch, one kandak, or battalion, at a time.[7] Creation of a new force in Afghanistan is particularly challenging. Devastated by years of war and neglect, Afghanistan has been a failing state with crumbling infrastructure, a largely illiterate population, rampant narcotics problems, and a population unfamiliar with good governance and rules of law. Recruitment, retention, and training of a proficient army proved extremely difficult.[8] According to Radin, 50 percent of officers and 80 percent of enlisted soldiers in the ANA are functionally illiterate.[9] According to

several senior US officers who served in Afghanistan, literacy is a quick ticket to become a non-commissioned officer or an officer in the ANA.

By 2009, the ANA has grown to a force of over 68,000 personnel assigned to five infantry corps and an air corps. However, it is not a balanced force. Due to the ongoing counterinsurgency campaign, training and supply efforts emphasize combat units are at the expense of combat support and service support units. Currently, the only engineer units in existence are engineer companies subordinate to the combat support kandak of an infantry brigade.[10] There is no corps or national level engineer unit. The existing engineer companies suffer from the lack of training and misuse.[11] Anecdotal evidence indicates existing engineer companies are primarily used as infantry, and engineer soldiers lack the necessarily skills to complete even rudimentary construction projects. Additionally, there are large predictable shortfalls in equipment and logistics.

In order for the ANA to extend the control of the government, it must establish a presence in all thirty-four provinces. Engineers can provide critical support in constructing base camps, roads, and civil-military projects. Without this necessary capability, the ANA will be doomed to rely on donor support for the most basic construction and infrastructure needs. Given the conditions in Afghanistan, engineer skills are critical to the development of a professional military force. In essence, the ANA must consist of builders as well as soldiers. A corps of engineers is critical to support the counterinsurgency campaign as well as to consolidate gains achieved by combat units. Through civil military projects, engineers can bring tangible benefits to both the military garrison and surrounding civilian communities. This capability is especially important because there are few reliable Afghan construction companies with the capability to undertake vertical and horizontal construction projects.[12] If structured properly, an ANA corps

of engineers can play a decisive role in extending government control to all thirty-four provinces. Additionally, it will benefit the entire ANA by instilling a sense of professionalism and an ethos of service to the local civilian communities.

THE CURRENT STRATEGY OF BUILDING ANA AND ITS DEFICIENCIES

In many ways, the establishment of the ANA in 2002 represents a success story after the defeat of the Taliban regime. The ANA is truly a national army, with representation from Pashtun, Tajik, Uzbek, Hazara, and Turkmen, balanced according to percentage of population.[13] Unlike the Afghan National Police (ANP), the ANA was formed one kandak at a time. As envisioned, this force will provide for national defense against external enemies and internal insurgents. Despite significant progress made in the last six years, the ANA is still heavily reliant on coalition forces in areas of finance, technical support, engineering, and logistics. Without some fundamental structure changes, the ANA is unlikely to emerge as a self-reliant force capable of counterinsurgency and reconstruction.

Currently, ANA consists of five infantry corps, one air corps, an independent capital division, direct reporting units to the ministry of defense, and a training command.[14] The infantry corps headquarters are located as follow: 201st Corps in Kabul, 203rd Corps in Gardiz, 205th Corps in Kandahar, 207th Corps in Herat, and 209th Corps in Mazar-e Sharif.[15] (Appendix B) An infantry corps commands three to four subordinate infantry brigades, even though the 207th Corps and 209th Corps currently only have two subordinate brigades.[16] An infantry brigade is the basic combined arms unit in the ANA, consisting of three to four infantry kandaks, one combat support kandak, and one combat service support kandak. The air corps represents the only air power available within the Afghanistan military structure. It is not an independent

service as in most nations. The air corps possesses mostly rotary aircraft, and they are organized into air wings. A capital division was wisely added in FY 2009 and will eventually possess two subordinate infantry brigades.[17] In essence, the capital division functions as a mini corps responsible for the security of Kabul. This arrangement will allow the 201st Corps to concentrate on provinces outside of Kabul and prevent one corps commander from having undue political influence in the capital city. The direct reporting units to the defense ministry include a headquarters and service support brigade and one commando brigade. A training command, currently centered on the Kabul Military Academy and ANA Training Center (ANATC), conducts all institutional training vital for providing ANA with trained personnel in all functional areas.[18]

The development of various ANA components did not occur at the same pace. Due to the dire needs to fight against insurgents, emphases were placed on 201st, 203rd, and 205th Corps as evident by the number of units assigned. All three corps have areas of operations along the Pakistan border, and they have seen most of the insurgent activities. Support elements are significantly less developed. This is particularly true for ANATC, which is vital for generating and maintaining the expanding force structure.

The target end strength of the ANA at the end of 2013 is 134,000, which will include 122,000 in the operational force and 12,000 in the training pipeline.[19] This may seem a modest goal considering Afghanistan has an estimated population of 34 million. Together, the ANA and ANP consist of less than one percent of the population after the latest round of expansion. The reality is quite different. The target end strength has been increased twice since the 2006 Afghanistan Compact, first from 70,000 to 80,000[20] and then to 134,000. Unit formation in ANA has been progressing at a brisk and unsustainable pace. Two factors contribute to this

shortcoming. First, the international community has not increased the size of ISAF to cope with the increasing training demands. Secondly, newly trained ANA personnel and units are rushed to fill immediate needs in the fields. Little was retained at the ANATC.

The current ANA force structure suffers from deficiencies in doctrinal development, training, sustainment, and engineering capabilities. The ANA was created in 2002 to meet the immediate needs of a fledging government for a loyal military force. Thus, it is not surprising that the US Army, as the leading contributor to ISAF, created the ANA in its image. The US Army model, optimized to conduct maneuver warfare in an increasingly expeditionary manner, is not necessarily the best military structure for Afghanistan. Because the ANA was build from the tactical level, higher echelons were simply created to exercise command over subordinate units. Little thought went into what unique capabilities should be present at higher echelons in order to facilitate tactical units in achieving their missions. The fundamental building block of the ANA is the infantry brigade, which is a derivative of the US Army brigade combat team modified to suit conditions in Afghanistan. While this provides a sound organizational structure at the tactical level for conducting basic combat operations, it does not include all the capabilities necessary for conducting a prolonged counterinsurgency campaign.

There is no coherent doctrine in the ANA on how it intends to fight and achieve national objectives. According to MG Robert Cone, former commander of CSTC-A, "fifty-one percent of ANA doctrine is what they are doing in the field now." Similarly, a senior NCO serving in the ANA Training Command remarked, "in writing of Afghan doctrine we failed to account for Afghanistan's history, technology, social constructs, and the nature of the threat that its armed forces face."[21] Until fairly recently, ANA serves mostly as an auxiliary to the international and US forces in the fight against insurgents. As ANA matures, it will be necessary to establish a

common doctrine. The American model of separation between military and civilian leaders may not be the optimal solution in Afghanistan. Since ANA will likely be the most cohesive force representing the central government in many provinces, its mid-level and senior commanders may have to take on a level of civil responsibilities unfamiliar to most U.S. and European military commanders. It is interesting to note that the separation between civil and military authorities has never been as clear in Afghanistan as in western democracies. Thus, the measure of success for ANA is not only limited to combat prowess.

The ANA training infrastructure is undermanned and under resourced to support the needs of a growing force. The Government Accountability Office reported that the US Department of Defense only filled 46 percent of embedded trainers for the ANA as of April 2008, a situation characterized by John Nagl as "under-resourced and manned in makeshift fashion."[22] According to the CSTC-A planning document, only 1,072 personnel are assigned to the ANA training center as of FY 2008, and 745 of them are in the Afghan Defense University.[23] In short, less than two percent of the ANA personnel are allocated to support the training pipeline. Before FY 2009, the only specialist fields represented were aviation, medical, and logistics. This is a deficiency that the ISAF will address starting FY 2009. In additional to aviation, medical, and logistics, twenty-five Afghan training cadres will be assigned to cover functional areas such as maneuver, fire support, engineering, signal, administration and finance, military intelligence, and religious issues.[24] This is a step in the right direction, but the allocation of only 25 persons in each discipline may not be optimal. While this may be sufficient for some branches, engineer specialists require more staff due to the scope of the skills covered. Engineer soldiers must master combat skills as well as specific engineering tasks including demolition,

breaching, and construction. NCOs and officers require an even higher level of expertise, covering route reconnaissance, surveying, and bridging.

The ANA lacks sustainment capability above the brigade level. Typical force sustainment requirements include supply, transportation, medical, maintenance, and physical infrastructure. For the purpose of this paper, I will focus on the engineering aspects of sustainment. Without engineer units to construct base camps and roads, ANA must rely on foreign troops, donor nations, and contractors. Given the expenses involved, none of them are cost effective in the long run. Dobbins estimated that one US or NATO peacekeeper would cost $200,000 a year.[25] Additionally, without sufficient engineer personnel to oversee construction and maintenance of physical infrastructure, the ANA will have difficulties keeping the existing facilities in good working order. The first engineer kandak is not projected to be formed until FY 2011.[26] Given the long lead time required to train a proficient engineer unit, such a delay will inevitably handicap ANA's ability to operate without substantial foreign assistance in day to day operations.

The current ANA structure does not allow for a full spectrum of engineering capabilities. Engineer missions include both combat and non-combat tasks. Combats tasks, primarily conducted at the tactical level, include mobility, counter mobility, and survivability. Non-combat engineer tasks, which are conducted mostly at operational levels and above, include surveying, construction, and mapping. An engineer force structure at the national level is completely absent. The only engineer units in existence as of March 2009 are the engineer companies subordinate to the combat support kandaks of infantry brigades.[27] There are significant and predictable discrepancies between requirements and capabilities. For example, the engineer company of an infantry brigade should be primarily equipped for tactical missions

such as mobility, counter mobility, and survivability. Instead, anecdotal evidence indicates that these units are equipped primarily with construction equipment.[28] The route clearing companies, planned for May 2009 at each corps and the capital division, should clearly support tactical units.[29] It begs the question: why create these new units instead of training and equipped existing units to perform the same function?

THE IMPERATIVE FOR EXPANSION OF THE ANA CORPS OF ENGINEERS

All nations must balance the needs of security forces with other competing priorities. This is especially true in a nation devastated by decades of war. Thus, a larger security force is not the panacea for the problems of Afghanistan. A key constraint is the availability of funding to sustain the projected force structure. Deriving an accurate financial assessment of the Government of Islamic Republic of Afghanistan (GoIRA) is difficult, since the budget consists of a core budget, which the government controls, and an external budget, which is administered by donor nations.[30] The lack of coordination between these two different budgets leads to imprecise and often conflicting data. In 2008, the CIA estimated that the GoIRA had 890 million in revenue while the expenditure was 2.7 billion, a deficit of over 1.8 billion.[31] Stated in a different manner, the revenue was only able to cover less than a third of expenses. Thus, from a fiscal perspective, the GoIRA has an imperative to "do more with less."

The Afghan national security forces (ANSF) are responsible for significant percentage of the government expenditure. The CIA estimated that the military expenditure of Afghanistan is 1.9 percentage of GDP in 2006, roughly $500 million.[32] According to a RAND study, the cost of operating a defense ministry can be approximated by the numbers of soldiers multiplied by the per capita income multiplied by a factor of seven.[33] The factor of seven is derived by analyzing

the cost of fielding soldiers for fourteen countries from 2004 to 2005 including Argentina, Colombia, Costa Rica, El Salvador, Georgia, Jordan, Kazakhstan, Kyrgyzstan, Namibia, South Africa, Thailand, Turkey, Ukraine, and Zimbabwe.[34] Currently, the ANSF consists of 146,000 personnel with 68,000 in the ANA and 78,000 personnel in ANP. By this methodology, the military cost of maintaining the ANSF in 2008 would exceed $817 million using per capita income of $500. Due to emerging signs of donor fatigue and the current economic recession, it is unlikely that GoIRA will receive additional financial support from the international community beyond the current level.[35] A large standing army not only burdens the treasury, but it siphons manpower away from other productive economic activities. For most of the military, the only output for the enormous labor and material input is security. The engineers and medical personnel are arguably the only exceptions to the norm. Engineers, if used properly, can produce tangible economic output for the benefit of the military and the society at large. Therefore, the benefits of ANA engineers should not be strictly measured from their combat values.

A sound force structure creates the framework for successful operations. In conventional conflicts where maneuver and fire power are the decisive factors, the commonly accepted ratio between maneuver force and artillery is three to one, where one brigade with three maneuver battalions is supported by at least one battalion of artillery. Additional artillery units exist at higher echelons so that an operational commander can gain further increase in support of the primary effort. In counterinsurgency and reconstruction operations, the engineer is the new artillery. An engineer unit can become the force multiplier that will increase the effectiveness of an infantry brigade.

First, engineer units can perform traditional mobility, counter mobility, and survivability missions during a tactical operation. Secondly, engineer units can construct temporary and

permanent infrastructure in support of a force in the field. While not in combat, a garrison unit can utilize its manpower to construct new facilities and improve existing ones if adequate engineering support is available. Lastly, engineer units can undertake civil-military projects to win the hearts and minds of the people. This is facilitated by the fact many engineer projects benefit the military and civilians alike. For example, a paved road to the provincial or district capital facilitates troop movement as well as economic development.

No engineer unit should be idle, especially in a nation devastated by years of civil war. Many basic engineering tasks are equally useful during a conflict as well as post-conflict reconstruction. Thus, a three to one force ratio between maneuver units to engineers should be appropriate at the corps level. The current ratio is approximately nine to one and will be expanded to six to one in 2013 under current proposal.[36] An engineer brigade per corps was planned in the initial ANA force structure but was not implemented.[37] Also, an engineering command should be established at the national level.

The establishment of a corps of engineers would improve professionalism within the ANA officer corps. Engineers, due to training and nature of the job, must focus on a scientific and methodical approach to problem solving. This is very similar to the military decision making process taught at U.S. professional military education institutions. It is also not surprising that engineering courses are required in most military academies throughout the developed world. Currently, very few of the serving Afghan officers have this type of education. As a byproduct of decades of war, most Afghan field grade and junior officers rose through the ranks through battlefield valor, tribal ties, and/or political connections. The expansion of the engineers would infuse much needed technical competency to the officer corps. Giving preference in promotion and assignment to officers with technical training would gradually

improve serving officers' tactical and technical proficiencies, especially in light of the new equipment being fielded in the ANA. In the long term, it may slowly change the image of a military officer from that of a traditional tribal fighter to a "nation-builder." This would be very beneficially to the civil-military relationship as well as increasing the prestige of the ANA as an institution.

Engineers, as well as other "technical" branches, produce long term benefits to a society. Stated simply, engineers have skills that are easily transferrable to the civilian world. After World War II, many Americans have experienced success in various civilian sectors using skills acquired during their military service. This can be duplicated on a smaller scale in Afghanistan. Afghanistan, as a nation devastated by decades of conflict, is desperately in need of skilled labor and managers. Assuming military engineers are properly trained and employed, these same people can continue to contribute to national reconstruction long after they leave the military service. Former enlisted personnel who gain construction experience can be employed as carpenters, masons, handymen, and other skilled professions. Engineer officers can find employment as foreman, managers, and civil servants. Indeed, many experienced engineer officers may be quite competent in running civil administration on the district and provincial level. Currently, there is no military retirement system in Afghanistan. Therefore, giving military personnel marketable skills while in active duty would alleviate financial problems of veterans when they are discharged from military service. Fewer disgruntled former soldiers means a more stable society. While the corps of engineers is certainly not the only branch of service that fits this description, it is certain one with the greatest potential. This is a considerable long term benefit at a time when we are increasing the size of the ANA from

70,000, as envisioned in the Afghan Compact, to a stabilized force of 134,000 to be complete in 2013.

HISTORICAL LESSONS:

In the following pages, I intend to use various examples from past and present to illustrate how the ANA can benefit from the expansion of military engineers. While Afghanistan faces daunting challenges, this proposal remains plausible. I will attempt to demonstrate how these successes may be duplicated in Afghanistan.

Clear, Hold, and Build from a Roman Perspective

The concept of "clear, hold, and build" did not start in the twentieth century. The Romans had successfully practiced this strategy in their expansion from the Apennine Peninsula. The success of Roman Empire owned much to the engineering feats of its soldiers. The Roman legionnaires were exceptional engineers as well as fighting men[38]. The forts and military roads constructed in conquered territories were instrumental to consolidating their military gains. Together, these structures helped to maintain an empire that stretched from the Atlantic Ocean to Palestine. Domitius Corbulo, a renowned Roman general, stated "that the pick was the weapon, with which to beat the enemy."[39] He was referring to the ability of a legion to construct forts wherever it marched. Roman forts were generally constructed on strategic terrain, giving the garrison a decisive advantage against potential attackers. They were used to observe the approaching enemy, receive deserters from the enemy, hold back fugitives from their own side, and facilitate the assembly of raids against enemy territory.[40] In fact, Roman forts were very similar to modern day base camps and patrol bases with the same functions. The larger Roman

forts became small cities. In addition to protecting the legionnaires, they facilitated economic development and commerce by providing a secure environment.

Roman legions maintained roads between forts and cities. In many cases, these roads were also *limes,* or border of the empire. These roads became the key lines of communication. Modern scholars such as Antonio Santosuosso have argued that "…Roman troops exercised not just military control but also social and economic functions crucial to the safety and efficiency of the limes and adjacent territories."[41] Since antiquity, roads have facilitated government control. First, roads allow rapid movement of troops to put down an insurrection. Secondly, roads form natural nodes and choke points. Since it is impractical to occupy every square kilometer of sovereign territory, roads allow for economy of force. Military units can influence large segment of a territory by controlling the keys nodes and conducting operations from these nodes. Lastly, roads facilitate economic development and commerce. A considerable benefit of the roads to the government is that they facilitate efficient collection of taxes and tariffs.

Afghanistan can benefit from the Roman experience of maintaining government control at the frontiers. Engineers can construct outposts and base camps in district capitals to facilitate counterinsurgency operations. ANA engineers may construct them initially when ANA units enter an area. When the area is sufficiently clearly of insurgents, these facilities can be turned over to the district government, Afghan National Police, or local militia. These outpost and base camps do not have to be continuously garrisoned by ANA troops. Instead, they will function as "winter camps" supporting periodic deployment of ANA or national level ANP units. These facilities can be used for other civic and commercial activities when not occupied by ANA or ANP.

The Afghanistan ring road and roads connecting to Pakistan and Iran are critical to the Kabul government. Kabul cannot achieve effective government control without securing them. In additional to the obvious military benefits, these roads are the economic arteries of Afghanistan, allowing for domestic commerce and the flow of international aids. Insurgents have targeted the roads both to inflict casualties and to undermine the legitimacy of the central government. In response, CSTC-A had planned for six route clearance companies to be formed in FY 2009. While a good first step, these six route clearance companies alone will be insufficient to solve the problem. Route clearing is an engineering function, incorporating tasks such as demolition, ordnance disposal, construction, and bridging. The success would depend on integrating appropriate level of engineering support to each echelon. Instead of dealing with the problem piecemeal, there should be an overall strategy to build an engineer force to tackle all engineer related issues in Afghanistan.

Leadership from U.S. Military Academy at West Point

Leadership has a decisive impact on the effectiveness of a military organization. This is especially true in a new struggling military lacking personnel, resources, doctrine, and institutional tradition. In this sense, the ANA resembles the United States Army, circa 1800. The founding fathers of the United States recognized the need of a military academy to address the deficiencies in military knowledge and training.[42] Following numerous delays, the United States Congress in 1802 finally authorized "a Corps of Engineers, which shall be stationed at West Point… and shall constitute a military academy."[43] The Unites States Military Academy at West Point was born, and it remained a key source of Army officers today. Since its inception, West Point curriculum placed heavy emphasis on mathematics and engineering. While lacking

exposure to other academic disciplines during the early decades, West Point graduates nevertheless addressed the critical shortages of technically proficient military officers at the time.[44] In spite of a lackluster beginning, West Point had served as the keeper of the military arts during peace and war. The emphasis on engineering served the nation well. In the early days of the United States, engineering skills were needed for military as well as civil projects. By the 1830s, West Point was widely recognized as the finest technical school in the United States, and it had imparted lasting influence in many other technical schools.[45]

Afghanistan faces similar challenges in a building a self-reliant, proficient army. An academy with emphasis on engineering can go a long way to address the current deficiencies. The new National Military Academy of Afghanistan (NMAA) is in fact modeled after West Point, offering four-year engineering degree with emphasis on civil, mechanic, systems, and electrical engineering.[46] NMAA graduates will be commissioned as second lieutenants in ANA and incur a twenty-five-year service obligation. The first class of 120 cadets reported for duty on Feb 2005, and the eighty-four among them graduated in Jan 24, 2009.[47] The NMAA is not without challenges, many of them similar to the early days of West Point. Engineers of all types are in high demand in a nation devastated by decades of war and plagued by ongoing insurgency. According to a March 2007 letter published by COL Ressler in the online edition of *American Society of Civil Engineers*, the tasks of training engineers are complicated by the lack of qualified Afghan military instructors and the reluctance of the Afghan authorities to hire civilian instructors.[48] Civilian adjunct faculties had to be hired from Kabul University because no minimally qualified ANA officer was available.

The success of NMAA is vital to the expansion of the ANA corps of engineers, and the success of the NMAA civil department hinges in several factors. First, adequate personnel and

resources must be made available. Due to the long training period required to produce competent engineering officers, sustained commitment is essential. At a minimum, the GoIRA and CTSC-A should continue to make the investment at the current level. Secondly, due to critical shortages of Afghan military officers with engineering skills, NMAA should leverage qualified civilian engineers. NMAA should seriously consider hiring full-time, tenured civilian faculties for NMAA. It may be appropriate to offer direct commission for them as well. Lastly and probably most importantly, there should a balance between satisfying current requirements and building future capacity. In early days of West Point, some graduates were retained at the academy as teaching staff. The same can be done at NMAA. A rotational system can be put in place where graduates would rotate through command, staff, and teaching positions.

The Civil Affairs Lesson from Chinese People's Liberation Army

Western China shares many similar geographic and cultural characteristics with Afghanistan. The Xinjiang Autonomous Region and Xizang Autonomous Region in western China are isolated by inhospitable mountains, plateaus, and deserts. The major cities are mostly located along highways and rail lines. Xinjiang and Xizang are the poorest and most underdeveloped regions in China. Demographically, they have large ethnic and religious minority groups that are traditionally hostile to the central government. The People's Liberation Army (PLA) engineers are instrumental in maintaining government control and increasing government legitimacy through a combination of civil-military projects and humanitarian relief operations after natural disasters.[49]

Chinese military doctrine emphasizes close cooperation between civilian and military authorities. It is quite common for an engineer unit, especially in western China, to render

assistance to local government in the construction of roads of other public infrastructure. Military engineers possess the technical knowledge and construction equipment that are lacking in many localities.[50] Additionally, the PLA engineer units may be the only ones capable of operating in these remote and austere locations, given the government restrictions on access by most non-governmental organizations. These construction projects not only benefit the local population but also sharpen engineer proficiency. Similar to the case in Pakistan, the PLA also operates in the commercial sector, competing for large construction and infrastructure projects. Consequently, even by today's standards, the PLA engineers are some of the best in the country. The PLA engineer force structure used to be significantly larger than the one existing today. However, very few engineer units were eliminated. Instead, they are realigned under civilian ministries when these functions no longer require military oversight.

PLA engineer units are routinely used to support humanitarian relief operations. The latest example is the May 12, 2008 earthquake in Sichuan Province.[51] PLA engineers provided extensively support in rescuing and recovering victims as well as clearing debris in the aftermath of the earthquake.[52] Rapid response by the PLA had garnered domestic applause and dampened international criticism resulting from a violent PLA crackdown of Tibetan protesters that occurred two months earlier.[53] Due to the harsh environment and inadequate infrastructure, seasonal natural disasters are common in western China. The timely and well publicized response from the PLA helps to generate popular support for the government, especially in western China. Even a relatively small humanitarian relief effort, such as clearing of the roads after a snow storm, has significant impact in reinforcing government legitimacy.

The GoIRA and ANA can certainly learn from the PLA in using military engineers to conduct civil-military operations. Likely the Chinese central government, Kabul must win over

the population in remote provinces in order of to maintain its legitimacy. This is particularly important with an ongoing insurgency, where military operations inevitably cause civilian hardship and suffering. Civil-military projects bring visible benefits to the people and may foster a positive image of the military and the central government. Engineer units are among the best candidates for these tasks. Additionally, civil-military projects undertaken by the ANA will be more effective in generating popular support for Kabul then similar projects undertaken by US or coalition forces.

Frontier Works Organization: a Pakistan Model for Efficient Use of a Peacetime Army

Pakistan Army Frontier Works Organization (FWO) is another good example of how a large standing Army can be used to serve peacetime national construction. The FWO can trace its origin to the requirement to construct the Indus Valley Road from Korara to Chilas. This construction project was assigned to the Pakistan Army corps of engineers in 1959, and the Pakistan Army engineers completed it in 1966. A year later, Pakistan decided to upgrade the Indus Valley Road to an international highway connecting Pakistan with Western China. This highway is now known as the Karakoram Highway, a notable achievement in engineering through some of the most difficult terrain in the world. While the FWO started as a temporary agency, it became a permanent establishment within the Pakistan Army upon completion of the Karakorum Highway. In late 2007, the FWO employed 12,000 personnel and had sixty-six ongoing projects with an estimated value of approximately $1.5 billion using the currency conversion rate as of 14 September 2007.[54]

According to the official FWO website, the FWO is tasked to undertake large national level construction projects beyond the capabilities of other civil agencies.[55] In 2006, the FWO

completed a 75-kilometer highway connecting the border town of Torkam, Pakistan to Jalalabad, Afghanistan. It is the first road project undertaken by FWO in a foreign nation. The FWO also engages in national disaster reliefs. A recent example includes road repairs in Baluchistan after a major flood caused landslides in June 2006.[56]

There are some controversies in Pakistan involving military business entities, including the FWO, receiving preferential treatment in government contracts to the detriment of private sector corporations. Indeed, the official FWO website confirmed that it competes with private companies for large infrastructure projects. It is worth noting that the FWO had contributed to the development of Pakistan during a time when the private sector had limited capability to undertaken those large scale projects. The FWO was effective in channeling the technical and labor resources of military for peacetime national construction. Additionally, it provides job opportunities for veterans with technical skills.

Presently, the ANA does not have any national level engineering organization. The government contracts with the United States Corps of Engineers, U.S. Agency for International Development, and other foreign entities to complete major infrastructure projects. Given the level of technical expertise and organizational development, an Afghanistan version of the FWO may not be achievable in the short term. However, the ANA can draw inspirations from the Pakistan FWO in what a corps of engineers can potentially become. In an ideal world, large national level projects, such as the Afghanistan ring road and hydroelectric dams, can be better managed under a single authority. At a minimum, the ANA should establish a national level engineering command to centrally coordinate, if not to implement, key engineering projects. Afghanistan most likely will have to rely on foreign engineer expertise in the short term, but it should not neglect planning and management responsibilities. A national level engineering

command will serve as a national level proponent for engineering related issues. As suitable engineer units become operational, they can be placed under this headquarters.

The FWO is an innovative way to mitigate the cost of maintaining a large standing army. Large construction projects are manpower intensive and require many unskilled and semi-skilled laborers. When soldiers are not training or engaging in operations, they can provide labor for these construction projects. In a counterinsurgency environment, the military enjoy several advantages compared to other agencies. First, tactical military units, regardless of type, can generally provide for their own security. Other construction companies or agencies would have to incur the additional cost of security guards. Secondly, military units are more capable of operating in a harsh and austere environment. The need to overcome difficult weather and terrain are the same for operating in combat or in more peaceful endeavors. Lastly, military organization, discipline, and many other soldierly skills are conducive to large scale construction projects.

RECOMMENDATIONS FOR IMPLEMENTATION

In the following pages, I will outline measures that will facilitate the expansion of the ANA engineers. A corps of engineers is critical to transform the ANA into a capable, self-sustaining organization. The key to success is building indigenous military capacity. Unless the ANA develops an appropriate force structure and training pipeline, the demand for US and coalitions forces will continue to rise. In the short term, the united States need to increase the staffing of embedded trainers in order to help the ANA achieving a minimum level of self sufficiency.[57] I will first propose a modified engineer force structure. Then, I will discuss some

of the ways to staff the engineer units via the ANA training pipeline. Lastly, I will recommend some personnel policies that will aid to sustain the ANA corps of engineers.

Due to their importance in counterinsurgency and reconstruction, every echelon should have its own engineer assets. At the national level, there should be an engineering command directly subordinate to the ministry of defense commanded by a general officer. This new organization can have a similar hierarchy to the ANA headquarters and service support brigade. The national level engineer command will serve as the proponent for planning, organizing, training, and equipping of the ANA engineer force. Additionally, it will track and coordinate all major reconstruction projects in Afghanistan undertaken by Afghan government and by US and coalition forces. Due to resource constraints and the initial lack of qualified personnel, this engineering command initially may not have any subordinate units and will function more like a staff organization. In the future, when the ANA acquires additionally capability, specialized engineers assets may be directly assigned to this engineering command. This structure will allow for growth and unity of effort. The national level engineering command should not be limited to a fixed organizational structure. Instead, it will be an evolving organization tailored to meet the needs of ANA through different stages of development.

At the operational level, the ratio between maneuver forces and engineers should be approximately three to one. Under this guideline, a corps should have a subordinate engineer brigade. For maximum effectiveness, the engineer brigade of a corps will pool all specialized engineer assets not routinely required by infantry brigades. An engineer brigade should have a "vertical" construction kandak for buildings, a "horizontal" construction kandak for roads, and other subordinate units such as the route clearing company, a bridging company, an ordnance disposal company, and a construction supply depot. Under the current CSTC-A plan, a corps

will only have a route clearing company, to be formed in 2009, and generic engineer kandaks, to be formed after June 2011. This structure is clearly inadequate to meet the requirement of a corps. The proposed engineering brigade will construct and maintain permanent bases and military infrastructure within the corps area of operations. Unlikely the national level engineer command, the overall table of organization and equipment for an engineer brigade should be fixed. At the corps commander's discretion, the engineer brigade may be task-organized to support tactical operations. The engineer brigade helps to achieve economy of force and unity of command. Instead of having one engineer kandak at each infantry brigade, the corps can concentrate the proper mix of engineer assets with the primary effort. Each infantry brigade will always have minimal engineer support from the engineer company subordinate to its combat support kandak.

The engineer company under combat support kandak will provide the basic engineering support at the tactical level. The current organization is sound, but improvement should be made in equipment and training. A company should have a mix of combat and non-combat capabilities including demolition, breaching, and construction of temporary patrol bases. The engineer company commander, as the senior engineering officer of the infantry brigade, should also function as the brigade staff engineer officer. In this capacity, he will advise the brigade commander as to the proper employment of organic and attached engineer assets. This will prevent misuse of valuable engineer assets. Combat engineers may be used as infantry in an emergency, but this should the exception rather than the norm.

Current engineer training at ANATC is at best woefully inadequate and at worst non-existent. The CSTC-A plan to create an engineer branch in the ANATC is a good first step in address this deficiency. In addition, I propose the creation of an engineer training and

evaluation company (ETEC) within the ANATC. The company, composed of fully trained ANA engineers, will serve to demonstrate how an engineer company should function in a tactical environment. Although fully manned and equipped as a tactical engineer company, this company will always remain in the ANATC. Other engineer companies in the force will periodically rotate through the ANATC to receive one-on-one training with the instructors in the ETEC. If the ETEC trains ten companies a year, all the tactical engineer companies of infantry brigade can rotate through at a two-year cycle. This scheme will allow for continuous unit improvement. It is also a sound method for establishing standardization and for all tactical engineer companies. Due to the low literacy rate and limited education, one-on-one, hands-on training will be the primary method of instruction, especially for lower enlisted soldiers and non-commissioned officers. Language barrier will be significantly reduced with the ETEC. Afghan trainers are more effective than foreign trainers instructing via interpreters. As ETEC matures, it will serve as the center of excellence for doctrinal development and engineer field craft.

The ANA is desperately in need of qualified engineers, and NMAA and ANATC alone are insufficient to produce enough graduates to fill the needs. To the maximum extent possible, promising junior officers with appropriate foreign language proficiency should be sent to US and NATO engineer officer basic course. This approach has several benefits. First, many NATO nations are reluctant to send troops to Afghanistan but may be willing to underwrite the cost of training Afghan engineer officer in their own country. Secondly, this will increase the number of trained officers without putting additional stress on the NMAA and ANATC, both already at full capacity due to the expanding force structure. Lastly, foreign training likely will increase appeal for educated Afghan to join the ANA, thus contributing to professionalization of the officer corps.

The ANA must invest in its future by allocating sufficient resources and qualified personnel to training institutions. Seniors Afghan leaders and CSTC-A must resist the temptation of satisfying immediate needs at the expense of future force development. A portion of the graduates should be retained at NMAA and ANATC to increase the throughput of the training pipeline. A rotation system should be put in place allowing engineer officers to rotate through command and training assignments. Training must be made a priority equal to field assignment.

Sound personnel policies are essential to recruitment and retention of qualified personnel. Qualified personnel in term increase the professionalism and prestige of the force. Every effort should be made to recruit young, college educated Afghans into the officer corps. It is far easier to impart a college graduate with military training than to make an uneducated soldier a college graduate. Qualified candidate should be commissioned upon completion of officer training course. An engineer officer does not necessarily require a technical degree. Thus, one way to attract college graduates is to offer the chance for technical training into a marketable field. Education must be made an important factor in promotion and assignment, especially in the technical fields.

Due to the critical shortage of civil engineers in Afghanistan, the ANA will have to compete with the private sector to retain experienced engineer officers beyond their service obligation. Incentive pay must be provided for engineer officers, similar to the benefits offered to aviators. The retention strategy must offer the best officers career progression and job satisfaction. In the long term, a properly designed organizational structure will allow junior officers a career pathway to the senior leadership of the ANA. Engineers must be perceived as a field with promotion potential comparable to other branches of the service.

Lastly, one way to encourage engineer officers to stay in the force is to offer guaranteed placement into the civil service at the appropriate grade upon retirement. This will allow retention of their skills in the government. The placement of retired engineer officers into civil administration will have a positive impact on civil-military relations. Their technical knowledge, leadership skills, and intimate knowledge of military engineering capabilities will bring closer level of cooperation between the ANA and provincial and district governments.

CONCLUSION

A robust corps of engineers is a cost effective way to improve the self sufficiency of the Afghan National Army in conducting counterinsurgency and reconstruction operations. This is especially true considering the total cost of maintaining a single western peacekeeper is approximately $200,000 per year. A corps of engineers is particularly relevant in the current environment due to its cost effectiveness, capabilities, and societal impacts. Unlike the majority of the ground forces, engineers can produce tangible economic gains by contributing to infrastructure construction and improvement, which benefit military and civilians alike. They can support both combat and civil-military operations. Additionally, engineers contribute to the professionalization of the ANA by changing its image to that of a "nation-builder." The existing ANA engineer force structure is woefully inadequate to support current and future requirements. In order to reduce long term dependency on the United States and ISAF, the ANA must expand its engineer force structure to include a national level engineer command, an engineer brigade at every corps, and a more robust training institution. Personnel policies must likewise be altered to recruit and retain the technical personnel in the expanding force. These measures are

important to expand ANA capabilities so that it can taking on a more independent, decisive role in bringing stability to Afghanistan.

Bibliography

Afghanistan Ministry of Defense. "The Official Website of the Afghan National Army." http://www.mod.gov.af/ (accessed on 30 Jan 2002).

Ambrose, Stephen E. *Duty, Honor, Country: A History of West Point.* Baltimore, MD: John Hopkins Press, 1966.

Associated Press of Pakistan. "Pakistan Army Continues Relief Operation for Flood Victim." Islamabad APP in English, 2 Aug 07. In *Open Source Center*. IAP20070803950004, 3 August 2007.

"Aziz return after highway inauguration in Afghanistan." Karachi Geo TV (Internet Version-www) in English, 13 Sep 2006. In *Open Source Center PM Aziz Returns After Opening Pakistan-Built Highway in Afghanistan*. SAP200609139033001, 13 September 2006.

Babar, Farhatullah. "The Armed Forces and the Corporate Sector." *The News (Internet version-www)* in English, 30 April 07. In *Open Source Center*. SAP20070430005020, 30 April 2007.

Afghanistan Study Group Report: Revitalizing Our Efforts Rethinking Our Strategies. Washington, DC: Center for the Study of the Presidency, 2008

Central Intelligence Agency. "The World Factbook." https://www.cia.gov/library/publications/the-world-factbook/geos/af.html (accessed on 10 Dec 2008).

Cordesman, Anthony, H. *The Lessons of Afghanistan: War Fighting, Intelligence, and Force Transformation.* Washington, D.C.: Center for Strategic and International Studies, 2006.

Combined Security Transition Command-Afghanistan. "ANA: Training a fighting army." *The Enduring Ledger*, January 2009.

Combined Security Transition Command-Afghanistan official website. http://www.cstc-a.com/index.html.

Crane, John, and James F. Kieley. *West Point "Key to America."* New York, NY: McGraw-Hill Book Company, Inc., 1947.

Davies, Roy W. *Service in the Roman Army.* Edited by David Breeze and Valerie A.Maxfield. New York, NY: Columbia University Press, 1989.

Department of Defense. *Progress toward Security and Stability in Afghanistan.* Washington, DC: Office of Secretary of Defense, January, 2009.

Dobbins, James, Seth G. Jones, Keith Crane, and Beth Cole Degrasse. *Beginner's Guide to Nation-Building.* Santa Monica, CA: Rand Corporation, 2007.

Elton, Hugh. *Warfare in Roman Europe AD 350-425.* New York, NY: Oxford University Press, 1996.

Field Manual 3-34 (FM 3-24). *Counterinsurgency,* Washington, DC: Headquarters Department of the Army, December 2006.

Francis, MAJ, James X., Embedded Training Team Engineer Company Mentor, Kandahar, Afghanistan. To the author. E-mail, 13 October 2008.

Frontier Works Organization (FWO). "Introduction." Http://www.fwo.com.pk/index.php?page=2&type=intro. (accessed on 14 November 2008)

Fullerton, Daryl, L. "Back to Basics: Training Army Artilleryman to Grow Afghan National Army Artillerymen." *Fires,* Issue No. 2008-3 (September 2008): 4-7.

Hackett, John, ed. *Warfare in the Ancient World.* New York, NY: Facts on File, Inc., 1989.

Havedal, Anja, ed. *A to Z Guide to Afghanistan Assistance Edition Six.* Kabul, Afghanistan: Afghanistan Research and Evaluation Unit, 2008.

Helmer, Daniel. "Twelve Urgent Steps for the Advisor Mission in Afghanistan." *Military Review,* (July-August 2008): 73-81.

Hicks, Micala. "Developing an Afghan Construction Workforce." *The Military Engineer*, Volume 100, Number 653 (May-June 2008): 57-58.

Hoh, Anthony. "The Problems with Afghan Army Doctrine." *Small Wars Journal,* 17 June 2008. Smallwarsjournal.com (accessed 20 March 2009).

Jones, Seth. *Counterinsurgency in Afghanistan.* Santa Monica, CA: RAND, 2008.

Khan, Sher Baz. "Punjab's Dominance in Army Being Reduced." *Karachi Dawn* (Internet Version- www) in English, 14 Sep 2007. In *Open Source Center Pakistan: ISPR Says Plan Ready to Reduce Punjab's Dominance in Army.* SAP20070914099019, 14 SEP 2007.

Lichtenstein Institute on Self-Determination at Princeton University, Woodrow Wilson School of Publics and International Affairs. "Creating Security and Stability in Afghanistan and the Region." http://www.princeton.edu/lisd/publication/Afgh_2006.pdf (accessed on 25 March 2009).

Misra, Amalendu. *Afghanistan: The Labyrinth of Violence.* Malden, MA: Polity Press, 2004.

Meisner, Susan, H. "Afghanistan national Military Academy Welcomes First Cadets." American Forces Press Service, 8 Feb 2005. http://www.defenselink.mil/news/newsarticle.aspx?id=25953

Nagl, John, A. *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam.* Chicago, IL: University of Chicago Press, 2002.

Nagl, John, A. "Let's Win the Wars We're In." *Joint Forces Quarterly*, Issue 52 (1st Quarter, 2009): 20-26.

Neilson, LtCol, Andrew, CSTC-A. To the author. E-mail, 13 October 2008.

"Pakistan-Funded Afghan Highway Nears Completion." Kabual Pajhwok News (Internet version- www) in English, 6 Jul 2006. *In Open Source Center*. IAP20060707950021, 7 JUL 2006.

Petal, Nirav. "Chinese Disaster Relief Operations: Identifying Critical Capability Gaps." *Joint Forces Quarterly*, Issue 52 (1st Quarter, 2009): 111-117.

Ressler, Stephen, J. "Letter from Afghanistan." *American Society of Civil Engineers News,* March 2007. http://pubs.asce.org/magazines/ascenews/2007/Issue_03-07/news10.htm (accessed 2 Feb 2009).

Siddiqui, Wajih Ahmad [interview with retired Generals Hamid Gul, Mirza Aslam Beg, and Uzma Gul on Dr. Ayesha Siddiqua's book: Military Inc.]. *Karachi Ummat* in Urdu, 10 Jun 2007. In *Open Source Center*. SAP20070614094001, 14 June 2007.

Radin, C.R. "Afghan National Security Forces Order of Battle." *The Long War Journal. http://www.longwarjournal.org/oob/afghanistan/index.php* (accessed 14 November 2008)

Saikal, Amin. *Modern Afghanistan: A History of Struggle and Survival.* New York, NY: I. B. Tauris & Co Ltd, 2004.

Santosuosso, Antonio. *Storming the Heavens: Soldiers Emperors, and Civilians in the Roman Empire.* Boulder, CO: Westview Press, 2001.

Official website for United States Army Corps of Engineers Afghanistan Engineer District, http://www.aed.usace.army.mil/

Official website for U.S. Agency for International Development –Afghanistan, http://afghanistan.usaid.gov/en/index.aspx

Unattributed. "100,000 Military Personnel Taking Part in Quake Relief as of 14 May." *Xinhua Asia-Pacific Service,* in Chinese, 14 May 2008. In *Open Source Center*. CCP20080514354004, 14 May 2008.

Unattributed. “Combat Readiness Building Should Eye On Raising Capability in Meeting Emergencies.” *Jinfangjun Bao* in English, 16 June 2008. In *Open Source Center*. CCP20080617702001, 17 June 2008.

United States Government. *United States Government Counterinsurgency Guide.* Washington, DC: United States Government Interagency Counterinsurgency Initiative, January 2009.

Wallace, David. “Coalition helps build Afghanistan’s ‘West Point.’” ARNews, 6 September 2006. http://www4.army.mil/ocpa/read.php?story_id_key=6331

Yang, Biao and Jiang Xinghua. “Chengdu MAC Sends 6,100 troops to Quake Hit Areas for Rescue Relief.” *Jinfangjun Bao* in English, 13 May 2008. In *Open Source Center*. CCP20080514705004, 14 May 2008.

Zhang, Huajun. “Survey and Mapping Information Center Supports Earthquake Relief.” *Chengdu Zhanqi Bao* in Chinese, 2 June 2008. In *Open Source Center*. CCP20080710436005, 10 July 2008.

Note

[1] U.S. Government, *Counterinsurgency Guide*, Preface.
[2] U.S. Government, *Counterinsurgency Guide*, 15.
[3] Afghan Ministry of Defense, Official Website of the Afghan National Army under Current status.
[4] Francis, E-mail.
[5] Seth, *Counterinsurgency in Afghanistan*, 1.
[6] Havedal, *A to Z Guide to Afghanistan Assistance*, 4.
[7] Afghan Ministry of Defense, Official Website of the Afghan National Army under History.
[8] Afghan Ministry of Defense, Official Website of the Afghan National Army under Current status.
[9] Radin, *The Long War*, 10.
[10] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[11] Francis, E-mail.
[12] Hicks, *Developing an Afghan Construction Workforce*, 57.
[13] CSTC-A website, Fact Sheet Afghan National Army.
[14] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[15] Afghan Ministry of Defense, Official Website of the Afghan National Army under Current status.
[16] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[17] CSTC-A, *The Enduring Ledger*, 9.
[18] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[19] CSTC-A, *The Enduring Ledger*, 9.
[20] Havedal, *A to Z Guide to Afghanistan Assistance*, 4.
[21] Hoh, *The Problems with Afghan Army Doctrine*.
[22] Nagl, *Let's Win the Wars*, 23.
[23] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[24] Ibid.
[25] Dobbins, *Beginner's Guide to Nation-Building*, 42.
[26] Ibid.
[27] Francis, E-mail.
[28] Ibid.
[29] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[30] Havedal, *A to Z Guide to Afghanistan Assistance*, 45.
[31] CIA, *World Factbook*, Afghanistan.
[32] Ibid.
[33] Dobbins, *Beginner's Guide to Nation-Building*, 43.
[34]Ibid, 44.
[35] Lichtenstein Institute, *Creating Security and Stability in Afghanistan and the Region.*
[36] Neilson, E-mail attachment named 122K Update with FY 09 Acceleration in PowerPoint.
[37] Radin, *the Long War*, 12.
[38] Hackett, *Warfare in the Ancient World*, 179.
[39] Davies, *Service in the Roman Army*, 126.
[40] Elton, *Warfare in Roman Europe*, 157.
[41] Santosuosso, *Storming the Heavens*, 124.
[42] Ambrose, *Duty, Honor, Country*, 7.
[43] Ambrose, *Duty, Honor, Country*, 22.
[44] Crane, *West Point*, 85.
[45] Crane, *West Point*, 83.

[46] Meisner, *Afghan National Military Academy*.
[47] Newborne, CSTC-A News, 25 Jan 08.
[48] Ressler, *Letter from Afghanistan.*
[49] Unattributed, *Combat Readiness Building.*
[50] Zhang, *Survey and Mapping*.
[51] Unattributed, *100,000Military Personnel in Quake Relief.*
[52] Yang, *Chengdu Mac Sends 6,100 Troops to Quake-hit Area.*
[53] Patel, *Chinese Disaster Relief Operations*, 112.
[54] Khan, *Punjab's Dominance Reduced*.
[55] Official FWO website, Title page.
[56] Associated Press of Pakistan, *Pakistan army continues relief operation for flood victims.*
[57] Nagl, *Let's Win the Wars*, 23.

APPENDIX A: Map of Afghanistan

APPENDIX B: ANA Corps Boundaries

APPENDIX C: Acronyms

ANA	Afghanistan National Army
ANAAC	Afghanistan National Army Air Corps
ANATC	Afghanistan National Army Training Center
ANSF	Afghanistan National Security Forces
CSTC-A	Combined Security Transition Command- Afghanistan
ETEC	Engineer Training and Evaluation Company
FOB	Forward Operating Bases
FWO	Frontier Works Organization (Pakistan)
GIRoA	Government of Islamic Republic of Afghanistan
ISAF	International Security Assistance Force
NATO	North Atlantic Treaty Organization
NMAA	National Military Academy of Afghanistan
Kandak	Afghan battalion
PLA	People's Liberation Army (China)
PRT	Provincial Reconstruction Team