

**TANKS: FULFILLING A ROLE IN
MILITARY OPERATIONS IN URBAN
TERRAIN (MOUT)**

**A MONOGRAPH
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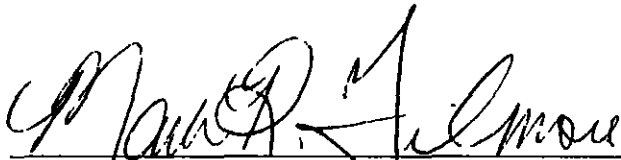
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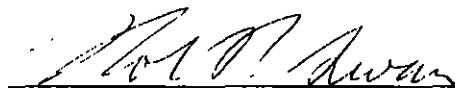
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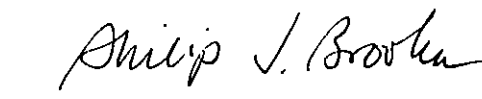
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ABSTRACT

TANKS: FULFILLING A ROLE IN MILITARY OPERATIONS IN URBAN TERRAIN (MOUT) by MAJ Michael J. Harris, USA, 56 pages.

With the role of the US Army changing from exclusively fighting and winning the nation's wars to becoming more involved in support and stability operations, the potential to become entangled in urban combat has increased tremendously. Consequently, conducting Military Operations in Urban Terrain (MOUT) has developed into a serious issue that the United States military must confront. Taking into account the nature of MOUT and the effects it has on armored fighting vehicles (AFVs), a concern has surfaced over the utility of AFVs in a MOUT situation. Specifically, does the United States main battle tank (M1A2) possess the necessary characteristics required to successfully accomplish tasks in MOUT operations?

The monograph reviews the evolution of the tank beginning in W.W.I to the present to establish that the current U.S. main battle tank was designed to defeat a Soviet structured heavy force on the open European terrain as opposed to operating in an urban environment. The nature of MOUT is then presented to identify the unique and complex factors that characterize military operations in an urban environment and how the nature of MOUT degrades the tank's effectiveness and increases its vulnerability.

This is followed by an examination of three case studies of urban combat involving the use of tanks and other AFVs. These studies include Hue City, Vietnam in 1968; Mogadishu, Somalia in 1993; and Grozny, Chechnya in 1994 - 1995. The purpose of looking at these case studies is to determine what tasks tanks performed during the operations, whether the tanks contributed to the staying power of the force and to the success of the operations, and finally, if the tanks were effectively employed to conduct successful combined arms operations. A comparative analysis of these three battles provides evidence regarding the effective utilization of tanks in MOUT.

This monograph concludes that the M1A2 does possess the necessary characteristics required to successfully conduct MOUT operations. However, this success is directly related to the level of training of the forces that make up the combined arms team conducting the MOUT operation.

TABLE OF CONTENTS

	Page
I. INTRODUCTION.....	1
II. BACKGROUND	6
Evolution of the Role of the Tank.....	6
Nature of MOUT.....	12
III. CASE STUDIES.....	17
The Battle of Hue	17
Somalia.....	23
Chechnya.....	27
IV. ANALYSIS	35
V. CONCLUSION.....	42
END NOTES	45
BIBLIOGRAPHY	51

CHAPTER 1

INTRODUCTION

MOUT will consume a greater place in future military operations . . . as early as the next century . . . A military unprepared for urban operations across a broad spectrum is unprepared for tomorrow.¹

With the role of the US Army changing from exclusively fighting and winning the nation's wars to becoming more involved in support and stability operations, the possibility of becoming entangled in urban combat has increased tremendously. Consequently, conducting Military Operations in Urban Terrain (MOUT) has developed into a serious issue that the United States military must confront.

Because of the increased likelihood of being involved in MOUT operations, the US Army faces a number of challenges in the future to prepare for urban combat. One challenge is to determine what role armored fighting vehicles (AFVs) can perform in MOUT operations. A second challenge is to determine what changes, if any, must be made so that AFVs can more effectively perform their role in a MOUT environment.

Taking into account the nature of MOUT and the effect it has on armored fighting vehicles (AFVs) attempting to operate in that environment, a concern has surfaced over the utility of AFVs in a MOUT situation. Specifically, does the United States main battle tank (M1A2) possess the necessary characteristics required to successfully accomplish tasks in MOUT operations?

The US Army's main battle tank is perhaps the best armored fighting vehicle in the world. Its design was predicated on meeting and defeating a Cold-War enemy mechanized force on the European battlefield. Relying on its heavy armament and its hi-tech weapon system, the tank was intended to close with and destroy the enemy using fire, maneuver and shock effect.²

Although the US main battle tank has recently been involved with Peace Operations in Bosnia, it has not yet been challenged in a combat situation that required it to fight its way through a city. Therefore, it is necessary to draw upon similarities of other tanks utilized in MOUT operations to identify whether the M1A2 has the capabilities required to successfully accomplish tasks in this type of environment.

History has shown that armored fighting vehicles, when properly employed, can play an effective role in MOUT. However, history has also provided evidence that the improper employment of AFVs in an urban environment can result in disaster. There is abundant data on MOUT operations since 1939. The difficulty lies in selecting the historical cases that are most like the conditions that the US will face in future contingencies. In this regard, examples from World War II and the Korean War are of limited use because most future US military operations will involve major constraints on the use of force.

This monograph looks at the role tanks have fulfilled in previous MOUT operations, what impact the nature of MOUT has had on the tank's performance, and how the tactical employment of tanks in MOUT has effected their success in

accomplishing the mission. Also examined are the battles of Hue, Somalia, and Chechnya as three separate and distinct examples of MOUT operations involving tanks. Hue illustrates a scenario where extensive use of tanks and other AFVs encountered a formidable enemy force. Somalia illustrates a scenario that involved limited use of tanks and armored personnel carriers (APCs) against a determined enemy force. Chechnya illustrates a scenario that involved a mixed configuration of AFVs that resulted in failure. From these battles it is possible to identify what tasks tanks performed in both offensive and defensive operations as well as how those systems contributed to force protection. It is also possible to assess whether the presence of tanks contributed to the staying power of the force and contributed to the success of the operation. Lastly, it can be determined if the tanks were effectively employed to conduct successful combined arms operations.

A comparative analysis of these three battles provides evidence regarding the effective utilization of tanks in MOUT. This monograph utilizes three evaluation criteria. First, were the tasks required of the tank standard tasks that a tank or tank section should expect to perform in any military operation? Second, did the presence of the tank contribute to the staying power of the force and the success of the operation? Third, was the tank effectively employed with other combat elements to effectively operate as a combined arms team? These criteria have been selected because they permit the tank to perform its intended purpose of closing with and destroying the enemy using fire, maneuver and

shock effect.

Standard tasks are defined as those that appear in Army Training and Evaluation Program (ARTEP) 71-1-MTP, Mission Training Plan for the Tank and Mechanized Infantry Company and Company Team.³ The tasks that appear in this manual are those tasks and supporting tasks that individual U.S. crews, vehicles (tanks), sections, and company teams must master to perform critical wartime missions. These tasks are therefore referred to as standard tasks. Tasks that do not appear in ARTEP 71-1-MTP will be referred to as non-standard tasks.

Staying power refers to the ability of the force to accomplish the mission as a result of the presence of tanks during the operation; would the absence of the tank have resulted in mission failure or a higher level of casualties?

This monograph discusses the evolution of the role of the tank to establish the environment and type of warfare the current US main battle tank was designed to operate, and why US forces can now anticipate operating in an urban environment. Next, a discussion about the nature of MOUT is presented to identify factors that characterize military operations specific to an urban environment, followed by a presentation of the aforementioned case studies.

Each case study consists of a brief overview of the battle followed by an analysis of the critical events that occurred during the battle involving tanks. The significance of these critical events is then discussed to determine what tasks were required of the tanks. Recommendations regarding how to improve the

tank's ability to effectively operate in a MOUT environment are then presented. Lastly, this monograph presents a concluding argument that the United States main battle tank (M1A2) possesses the necessary characteristics required to successfully accomplish tasks in MOUT operations if properly integrated into the combined arms team, assuming that adequate combined arms training has occurred.

CHAPTER 2

BACKGROUND

Evolution of the Role of the Tank

One of the words most commonly associated with the First World War is stalemate. The word conjures up images of tactical deadlock, of endless, muddy trenches, shell craters, barbed wire, absence of assailable flanks, and futile, bloody attacks.⁴ Desperate attempts to break the stalemate dilemma proved futile until 1915 when a British officer, observing gasoline-powered tractors towing heavy artillery across the battlefield, conceived of a machine capable of solving the dilemma. He imagined a machine with treads, protected by armor thick enough to deflect small-arms fire and shell fragments, which could negotiate broken ground, smash through barbed wire, and roll over trenches.⁵ This imaginary machine, when supported by artillery and well-trained infantry, could potentially break the stalemate and restore maneuver to the tactical battlefield. Less than two years later the first tanks were produced, deployed to the Western Front and integrated into a British offensive operation.⁶

During the initial attack the appearance of tanks was enough to cause panic in the defending soldiers, thereby allowing British forces to penetrate the German defense. This initial application of armor supported a new theory that soldiers no longer needed to expend themselves in frontal assaults against the enemy's strongest defense. Tanks could now maneuver through the enemy positions and

attack vulnerable lines of communications.⁷ As the number of tanks increased, military leaders gave more thought to devising a doctrine for their most effective employment. Some officers considered making greater use of the tank's potential in weapon power and mobility. "With greater speed and endurance, tanks themselves might assume the task of exploitation which horse cavalry was no longer able to manage."⁸ Though the tank proved its role on the battlefield, it would require another two decades of development before it came into its own.⁹

Realizing the significant contribution that tanks could produce on the battlefield, the German military invested heavily in designing and constructing a modern mechanized force during the inter-war years. "The best of the German tanks were good compromises of speed, range, protection, fire-power, and versatility, as suited their roles and missions."¹⁰ On the eve of World War II, new technology and an improved theory of mechanized warfare, together with the fielding of several tank and mechanized (Panzer) divisions, provided the German military the capability to conduct quick and decisive combat operations. Mechanized warfare from now on would assume a dominant role in the conduct in maneuver warfare.

The British, French and American high commands paid little attention to developing a force centered on armored, motorized warfare.¹¹ However, once it was seen how quickly the German mechanized forces defeated the Polish ground forces, a new interest in mechanized vehicles materialized. Fortunately for the Americans it was not too late to design and mass produce the M4

Sherman. Like the best of the German designs, the M4 Sherman was "a good compromise on speed, range, protection, firepower, and versatility."¹²

After W.W.II the US military anticipated that the next war would be fought against Warsaw Pact countries in Europe. Furthermore, it was anticipated that it would be fought similarly to the previous war with large formations of mechanized forces attacking over vast distances to defeat their enemy and seize terrain. Therefore, the major powers focused on maintaining large, heavy forces prepared to execute conventional warfare. The US responded by developing a force structure that consisted of heavy tank and mechanized divisions with the M1 main battle tank as the centerpiece of its armored formations.

In order to destroy tanks and other mechanized vehicles at extended ranges, the M1 was developed to engage targets beyond 3,500 meters. It was constructed with a large caliber main gun designed to defeat Soviet main battle tanks, and constructed with sufficient armored protection to survive a frontal engagement from another tank. Its turbine engine provided the speed and quickness to bound from one covered position to the next and to exploit a penetration. To maximize its effects, the M1 was intended to fight as part of a combined arms team at company through brigade level. Fighting as part of a team would not only maximize the capabilities of the tank, but would also provide added security for its survival against other tank-killing weapon systems. However, the collapse of the Soviet Union in 1991 ended the threat that the American military had been tailored to fight, and with it the need for America to

maintain the large, heavy division structure.

In 1991 the US and other NATO forces employed their heavy divisions against Iraq and won a decisive victory, during which the M1A1 tank performed magnificently. The tank was able to maneuver over vast distances to close with and destroy enemy forces using fire, maneuver, and shock effect. All the features that the tank was designed to capitalize on in the European theater were directly applicable to the desert environment of Southwest Asia. This victory immediately sent a clear message to our potential enemies, and consequently may have contributed to altering the environment in which the tank may be required to operate during future military conflicts.

America's future adversaries have clearly learned one key lesson from Operation Desert Storm. Namely, facing the United States military in conventional warfare equates to playing into the US strengths and will result in defeat. Additionally, these same adversaries have clearly learned another key lesson from the example of the United States experience in Somalia. Specifically, the US military is not prepared to conduct MOUT operations.

The US military, otherwise magnificently capable, is an extremely inefficient tool for combat in urban environments. We are not . . . properly trained or equipped for a serious urban battle . . .¹³

Therefore, any future adversary will choose not to face the US military in conventional warfare on open terrain, but instead will attempt to draw the United States military forces into the urban terrain environment where current US hi-tech capabilities and its ability to mass fires are degraded. "Any officer who

states categorically that the US Army will never let itself be drawn into urban warfare is indulging in wishful thinking.”¹⁴

The enemy will understand the benefits of enticing a better and more technological equipped adversary into the jungle of an urban area where he will utilize his knowledge of the terrain to lessen his enemy’s capability.¹⁵

Increasing urbanization, and the fact that urban areas exist along lines of communications, enhance the significance of urban operations and is therefore a second viable reason why US forces are more likely to become involved in MOUT. Additionally, certain conditions will make urban combat unavoidable. Among these are populated areas located on key terrain and cities in which major bridges or other vital crossings are located. Also, requirements to protect an exposed flank, to stage diversionary operations, to tie down enemy forces, and expanded urbanization preventing bypassing will also force our armored forces to conduct operations in an urban environment.¹⁶

As stated previously, the purpose of the tank is to close with and destroy the enemy using fire, maneuver and shock effect. Since the tank’s 1916 debut during World War I this purpose has changed little. What has evolved over the succeeding 80 years is the method by which the tank has been employed in pursuit of achieving success on the battlefield. What has remained similar is the assumption that the tank will operate in an open environment.

America’s military must now determine if the urban environment is where future conflicts will occur. If this is in fact so, then it must be understood that conducting operations in an urban environment will produce new challenges for

our military's main battle tank. A combat vehicle that was designed primarily to operate on the open plains of Europe must now be expected to cope with the vastly different environment created by urban terrain.

The Nature of MOUT

The nature of MOUT presents unique and complex challenges to army forces. It presents both the attacker and defender with numerous engagement conditions.¹⁷ The nature of MOUT refers to those factors that characterize military operations in an urban environment. These factors have a significant impact upon the performance capabilities of the force and the methods by which the force is employed. While the specific characteristics of an urban operation cannot be predicted, certain generalizations can be made.

One advantage that tanks frequently bring to any operation is their ability to engage and destroy targets at extended ranges. The M1A2 tank is capable of acquiring and engaging targets out to and beyond 4,000 meters. Unfortunately, when operating in a MOUT environment the ability to engage targets at extended ranges is often forfeited. Buildings and other man-made structures that make up the urban environment restrict the tank's ability to acquire and engage targets at long distances. Therefore, the extended line-of-sight capability that frequently exists in open terrain does not exist in the urban environment. In a MOUT environment line-of-sight varies from a few feet to several thousands of meters.

However, acquisition and engagement of the enemy are far more likely to be at the lower end of this spectrum. Only 5% of the targets in urban operations appear at ranges over 100 meters, with 90% of targets engaged at ranges of 50 meters or less.¹⁸

Weapon systems can still be effective at these limited ranges, but given these short engagement ranges soldiers often have only a brief amount of time to acquire and engage targets before being engaged themselves.¹⁹ These short engagement ranges can negate the M1A2's range advantage over a potential adversary's systems. Furthermore, these limited engagement ranges can have a detrimental effect on such weapon systems as the TOW and Dragon that require a minimum arming range.²⁰ This is important to note because these weapon systems are those that friendly dismounted infantry will be using to destroy enemy forces attempting to engage the tanks or other AFVs.

In addition to diminishing the tanks standoff range, the nature of MOUT provides the enemy force with shorter engagement ranges in which to fire upon friendly armored vehicles. These shorter engagement ranges offer a marked advantage to an enemy using low-tech, anti-tank weapon systems such as the RPG-7s that has a maximum effective range of 500 meters. Consequently, RPG-7s and other shoulder-fired anti-tank systems that have limited effectiveness against armored vehicles in open terrain become potent weapons against armored vehicles maneuvering within the city.

Many third-world urban areas are characterized by streets that are too narrow for large armored vehicles, as well as having bridges that do not possess the load bearing capability to support heavy armored vehicles. These characteristics limit the tank's freedom of movement by restricting its ability to bound forward to support the infantry. Should a tank become immobilized, the ability for another tank to maneuver around the immobile tank or maneuver across a low-capacity bridge becomes impossible. Consequently, tanks can have a difficult time supporting one another, the dismounted infantry operating forward of the tanks, or other forces operating along an adjacent street. Moreover, if buildings are constructed along these narrow streets the tank will be unable to traverse its gun tube over the flanks.

Urban areas consisting of multi-story structures with basements present unique advantages to a defending force. "Subterranean and multi-story structures provide numerous locations for ground forces to fight below, on, and above the earth's surface. Not only snipers use the high or low ground, entire units make use of these terrain features."²¹ Every street lined with buildings become a potential enemy engagement area. Friendly forces are unable to safely bypass an enemy position for fear the enemy may acquire an angle to engage tanks or other AFVs from the rear or top where they are most vulnerable. Also, enemy forces occupying fighting positions in basements or along the upper floors of buildings are difficult targets for tanks to engage. Due to the depression and elevation limitations of armored fighting vehicles, some of these weapon

systems may “have dead-space within which an operator cannot engage a target.”²²

Many third-world urban areas consist of structures constructed out of light building material that tanks can readily drive a path through or, by utilizing its main gun, create a hole in. On the other hand, some of these urban areas will be characterized by structures constructed out of heavy building materials such as reinforced concrete. These structures can present a formidable obstacle for tanks. Tanks will be unable to create paths through these structures, forcing the armored vehicles to maneuvering along streets. The ability to create a hole in the side of one of these building is greatly reduced by the fact that firing main gun rounds into the side of a concrete building will cause the sabot round to ricochet, possibly causing injury to non-combatants or to friendly forces. Also, many such structures have basements that will present significant mobility problems for tanks attempting to create a path through those structures.

Urban operations create difficult moral dilemmas due to the proximity of large numbers of civilians.²³ If the city’s civilian population elects to remain in the urban area throughout the hostilities, then military forces will be required to operate amongst them. Presuming that civilian non-combatants will not become directly involved with the fighting can be extremely naive. Additionally, it is highly unlikely that enemy soldiers will wear distinctive military uniforms identifying them from non-combatants.

When fighting began in the afternoon of October 3, 1993, the American troops knew they were in for the battle of their lives. When every civilian is a potential enemy, no fighting is easy. When every battleground is filled with

hostile civilians - people you thought you were there to help – the fighting becomes not only difficult, it becomes nearly impossible.²⁴

Distinguishing enemy soldiers from non-combatants may become unmanageable, especially if the enemy soldiers are dispersed amongst the civilian population, or the civilian and enemy populace are one in the same. Consequently, it is virtually certain that in an urban environment there will be heavy casualties among both combatants and non-combatants, especially when tanks and other weapon systems are involved. Although casualties will occur, collateral damage and casualties must be kept to a minimum. Massive, indiscriminate use of firepower is unacceptable.²⁵

Tanks operating alone in MOUT will not survive. Tanks rely on infantry to provide security and to designate targets.²⁶ Though tanks still possess the ability to close with and destroy the enemy using fire, maneuver and shock effect, the speed at which the tank operates in MOUT is predicated upon the pace by which the tank and infantry together can destroy or dislodge the enemy force. As troops move into the town, they advance forward of the tanks. Before the tank can fire its main gun, the infantry must move out of the overpressure zone created when the tank fires or risk serious injury. Tanks use high explosive (HE) rounds to defeat concentrations of enemy forces, blow holes in buildings, or destroy obstacles.²⁷ The more the city is destroyed, the more rubble from buildings will line the streets, inhibiting vehicle freedom of maneuver and providing the enemy more places to hide and to conduct ambushes. The heights and proximity of buildings cause dead space problems for FM communication

systems that operate via electronic line-of-site. The degradation of communication will require tanks and dismounted infantry to rely heavily on hand and arm signals.

CHAPTER 3

CASE STUDIES

The Battle of Hue

As part of the 1968 Tet Offensive the North Vietnamese Republican Army (NVA) launched an attack on the city of Hue, Vietnam's second largest city. Within two hours the enemy was able to seize the city, except for a small Military Assistance Command Vietnam (MACV) camp located in the southern section of the city and an Army of the Republic of Vietnam (ARVN) HQ unit located within the Citadel in the northern section of the city.²⁸ Once the enemy had seized the city they immediately began preparing fighting positions throughout the city in preparation for an American counterattack. In some areas of the city the defenders would have as long as two weeks to prepare and improve their defensive positions. The enemy dug hundreds of camouflaged, mutually supporting positions, making the Citadel an extremely difficult objective to clear.²⁹

The American armored fighting vehicles involved in this operation consisted of the M-48 tank, armed with a 90mm main gun and a 50 caliber machine gun mounted atop the turret; the M50A1 Ontos anti-tank vehicle, armed with six 106mm recoilless rifles; and the Duster anti-aircraft vehicle, armed with a 40mm gun.³⁰

The enemy force involved had no armor vehicles, but did possess large quantities of RPGs, B-40 rockets, AK-47s and a wide variety of machine guns. At the height of the battle the enemy force, consisting of two regiments with eight battalions, had seventy-five hundred soldiers made up of both Viet Cong and North Vietnamese soldiers.³²

Within hours after the North Vietnamese Army and Viet Cong (VC) forces had initiated their attack upon Hue City the MACV camp came under intense enemy mortar and RPG bombardment.³³ This camp had only a few soldiers and limited small arms weapons, and hence did not possess the personnel or resources to fend off the attackers. Consequently, a request for immediate assistance was sent to the US Marine Corps Combat Base located 8 miles to the south.³⁴ Not realizing that the attack consisted of over 6,000 enemy soldiers, the Marine HQ tasked only two and a half infantry platoons to board trucks and head toward Hue City to provide support to the MACV camp. Along the way the infantry met up with a Marine platoon of four M-48 Patton tanks also enroute to Hue City.³⁵ As this newly formed combined-arms team entered the city it instantly and unexpectedly maneuvered into an intense enemy ambush. The enemy ambush consisted of RPGs, B-40 rockets, AK-47s, and a wide assortment of machine gun fire. Immediately the force sustained several casualties. Since the trucks offered no protection from enemy fire, the Marines were forced to evacuate their vehicles and begin bounding forward using the tanks for cover and supporting fire. Some Marines climbed atop the vehicles for

protection and to provide target acquisition assistance to the tank commanders. Between the combined efforts of the tanks and Marines, the relief force pushed through the ambush and conducted a link-up with the MACV camp.

Marines involved in this event and other similar situations during the battle in Hue routinely stated that, "[when] the enemy had taken up defensive positions, dismounts could not provide enough suppressive fire - however the tanks could."³⁶

A Marine involved in the Hue City operation stated that after his squad had received several casualties and was pinned down by intense enemy fire, "another marine squad started down the street towards [us] and was mowed down. A tank was sent and came under heavy fire with a score of B-40 rockets suddenly exploding against it . . . It belched smoke, onlookers were sure the crew had been killed . . ."³⁷ Instead, the tank continued to maneuver and provide the support necessary to save the pinned Marines. The tank fired a round from its main gun into the wall of a building, creating a hole that allowed the casualty evacuation process to begin.³⁸

This first event begins to identify the tasks tanks performed during the operation. These tasks included performing a tactical road march, performing actions on contact, performing an attack by fire, assaulting an enemy position, providing support by fire, and providing shock action and firepower. Most of these tasks were conducted while the tanks were neutralizing or suppressing enemy positions with main gun and automatic weapons fire as the Marines

closed with and destroyed the enemy. Furthermore, the tanks accomplished these tasks while assisting opposed entry of infantry into buildings when the doorways or windows were covered by enemy fire, using fires to reduce enemy strongpoints in buildings, attacking by fire targets designated by the Marines and suppressing identified sniper positions.

Shortly after the Marines arrived at the MACV camp they received orders to relieve an ARVN reconnaissance company that the enemy had encircled in the northern sector of the city.³⁹ The Marines mounted trucks and began movement across the Perfume River toward the ARVN location. The tanks were not taken along because their weight was beyond the load bearing capability of the bridge, causing the Marines to conduct an attack without tanks providing overwatch protection.⁴⁰ The tanks did, however, maneuver to the banks of the river to provide limited covering fire.⁴¹ As the Marine convoy reached the far side of the bridge they drove into an enemy ambush, forcing them to dismount the trucks and continue the attack on foot. However, intense enemy fire from rockets and machine guns, and the lack of armor support forced the Marines to return back across the bridge. The tanks fired their 90mm main guns, and 50 caliber machine guns to support the Marines displacement. In the process of the failed attack the Marines suffered numerous casualties.

The lead squad went up the street - and was ambushed. The fire poured out from the houses ahead - B-40 rockets, AK-47 automatic weapons, machine guns, and recoilless rifles. Of the 150 Marines . . . 50 were dead or wounded . . . it was impossible to continue and the casualties were simply unacceptable.⁴²

The Marines quickly learned that when infantry acted alone the enemy was quick to return fire, however, when supported by tanks the enemy was less likely to return fire.

This second event reinforces the tasks that the tanks successfully accomplished. These tasks included providing shock action and firepower, performing actions on contact and providing support by fire. The tanks accomplished these tasks while neutralizing and suppressing enemy positions with main gun and automatic weapons, and suppressing identified sniper positions.

Due to the high rate of casualties suffered by American forces, aerial casualty evacuation was continuous. The nearest landing zone (LZ) available to the US forces was located 1 mile from the MACV camp. Unfortunately, the most direct route to the LZ was along a narrow street that zigzagged its way through the southern sector of the city. Along the way enemy sniper fire was routine. By the time medevac convoys arrived at the LZ the number of casualties and fatalities was always greater than when the convoy started out. To overcome this problem the tanks were tasked to create a direct path from the MACV camp to the LZ. Due to the power of the tank and the ability for it to survive fires from snipers, RPGs and B-40 rockets, the tanks quickly created a path through walls, buildings, houses, and other fortifications, creating a direct path to the LZ. The enemy did fire on the breach tank, but other AFVs overwatching the breach tank immediately and accurately neutralized enemy firing positions.⁴³

Fighting house to house to the evacuation point, as they had done the first night, was an unacceptable alternative . . . Finally the tank was directed to 'walk' its way to the LZ. The tankers did just that, knocking down walls and any other obstacles in their way . . . [the commander] was able to get his seriously wounded to the LZ along the route without any more major problems.⁴⁴

The tasks tanks performed during this event were providing shock action and firepower, breaching an obstacle, performing actions on contact, performing an attack by fire, assaulting an enemy position, and performing support by fire. These tasks were accomplished when the tanks were smashing through street barricades and reducing barricades by direct fire, using fires to reduce enemy strong points in buildings, and suppressing identified sniper positions.

Certain aspects of this operation deserve elaboration. Tanks and infantry must support one another in MOUT. "Tanks in support of infantry act as an 'assault gun' that delivers concentrated, sustained fires to reduce [enemy] held strongpoints."⁴⁵ Infantry provides the necessary protection for the tank from enemy anti-tank weaponry. Additionally, infantry operating in an urban environment without the protection and firepower of the tank, such as when the Marines initially attempted to cross the Perfume River, are potentially subject to becoming decisively engaged and destroyed by enemy forces.

Although the integration of tanks and infantry is necessary, when combined with other weapon systems such as the M50A1 Ontos anti-tank vehicle and other systems capable of delivering high-volumes of suppressive fire, the synergistic effects create an effective combined arms force.

The tasks that were performed by tanks during the battle of Hue City were standard ARTEP tasks. These tasks included performing a tactical road march, performing actions on contact, performing an attack by fire, assaulting an enemy position, providing support by fire, and breaching an obstacle. Each of these tasks are those that tanks should be expected to perform during any type of combat operation.

The battle for Hue City clearly demonstrates the key role that armor can successfully fulfill as part of a combined arms team fighting inside a city. A senior Marine officer commented that he considered the tank "his most important asset."⁴⁶

Somalia

On 3 October 1993 American Special Operation Forces (SOF) were tasked to capture several of General Mohammed Farah Aideed's key officers. Shortly after the operation began two UH-60 Blackhawk were shot down by enemy RPG fire. Once on the ground the pilots became prime targets for the Somalis. A Ranger company involved with the capture mission attempted to secure one of the UH-60 crash sites and to rescue the crew, however, due to intense enemy fire the Rangers became decisively engaged. It quickly became apparent that "the Rangers were pinned down and knew they couldn't get out of there alone."⁴⁷

A Quick Reaction Force (QRF) prepared to extract the SOF. A company-size QRF consisting of 130 light infantry soldiers, six five-ton trucks, an anti-tank

(AT) platoon, a mobile weapons platoon, and four MK-19 highly mobile multi-purpose wheeled vehicles (HMMWVs) was sent to support the SOF.⁴⁸ There were no U.S. armored fighting vehicles available for this operation.

Within minutes after departing on its mission the QRF entered a Somali ambush, resulting in the destruction of several of its vehicles. The QRF, unable to continue the mission, was "driven back by what was described as 'hails' of rifle and RPG fire."⁴⁹ Soldiers involved in the QRF mission believed that if they had armored vehicles the mission would have been successful.⁵⁰ It was apparent that a more capable force consisting of AFVs would be required to attack through the Somali ambush sites, breach any roadblocks along the route, and support the link-up operation.

The Deputy Forces Commander (UNOSOM) directed Malaysian Mechanized Battalion assets and Pakistani tanks be made available to the QRF.⁵¹ This multinational force had the only armored vehicles and they were going to be desperately needed.⁵² Four Pakistani M-48 Patton tanks and thirty-two Malaysian wheeled APCs were tasked to support a second relief attempt.⁵³ These vehicles provided the necessary combat power allowing the QRF force to link-up and extract the SOF soldiers.

During the second attempt to link-up with the Ranger company, the QRF, led by the M-48 tanks, quickly breached enemy roadblocks. The tanks also drove through several enemy ambush sites. ". . . the tanks were ambushed by machine gun fire and RPG. Seven of ten RPGs were fired at the lead tank with little

affect.”⁵⁴ The tank came to a stop, engaged the enemy position with its main gun, allowing the QRF to continue on to their objective.⁵⁵

Once at the crash site the M-48 tanks attacked to the far side and established security while the remainder of the QRF forces prepared to evacuate the SOF soldiers.⁵⁶ When the QRF and Rangers were prepared to move back to a secure location, the tanks maneuvered to secure the egress route.⁵⁷ During the extraction the enemy occupied fighting positions and roadblocks along the QRF’s egress route. The armored vehicles either engaged them with their onboard weapons or simply ran over the enemy.⁵⁸ Over the course of the entire rescue operation several APCs were destroyed by enemy RPG fire, but no tanks were lost.⁵⁹

Upon examining the Somali operation to identify the tasks and supporting tasks that were performed by tanks it appears that there were no non-standard tasks delegated to the tanks. Each of the identified tasks are those that tanks should be expected to perform during all forms of combat operations. These tasks included performing a tactical road march, performing actions on contact, performing an attack by fire, assaulting an enemy position, providing support by fire, breaching an obstacle, and providing shock action and firepower. These tasks were accomplished by the tanks while neutralizing or suppressing enemy positions with main gun and automatic weapons fire, smashing through street barricades or reducing barricades by direct fire, using fires to reduce enemy strong points in buildings, and suppressing identified sniper positions.

There are a number of differences between this operation and the Marine operation in Hue City. First, tanks were not required to support house to house clearing operations in Somalia as they did in Hue. Secondly, due to the unique circumstances of this operation, dismounted infantry did not provide security to the tanks. Thirdly, a language barrier existed between the Pakistani, Malaysian, and American soldiers that inhibited effective communication, resulting in the American soldiers having difficulty conversing with the drivers of these vehicles. Consequently, some vehicles did not maneuver along the selected routes and quickly became disoriented. Pakistani tanks, equipped with blades to breach obstacles, refused to maneuver at the front of the convoy where they would be most effective. Furthermore, the Americans quickly discovered that the APC drivers either reluctantly or totally refused to maneuver their vehicles where the potential of being engaged by Somali soldiers existed. Lastly, this operation occurred over a period of hours and during periods of limited visibility. Hue lasted a total of 26 days. However, even with these differences, the tanks were successful with providing mutual support for one another. Utilizing their shock effect and firepower, they successfully attacked through the city of Mogadishu to link-up with an encircled force. Once the link-up occurred, the QRF attacked back through the city while attempting to avoid enemy contact, performing many of the same tasks as those performed during the Hue operation. This operation further exemplifies the impact of shock effect, force protection and staying power that occurs as a result of integrating tanks into the combined-arms team.

Chechnya

In 1994 Russian Army forces deployed to Grozny as part of a military operation to prevent the Republic of Chechnya from gaining independence from Russia. President Boris Yelstin, unwilling to allow the province of Chechnya to secede, ordered a military operation designed to restore constitutional order and legality in the Chechen territory.⁶⁰

Russian political leaders believed that, "the disarming and liquidation of Chechen armed formations would be the primary task of its military forces."⁶¹ Additionally, they believed that the Chechens would present little resistance against a seemingly robust Russian mechanized force. Utilizing limited ground forces, the Russian political leaders concluded that the military tasks of disarming and liquidating Chechen forces could be easily accomplished within two weeks.⁶² The political leaders chose to use a group of rebel Chechen forces that were hostile to the incumbent Chechen government to accomplish this mission.⁶³

A force of 5,000 Chechen rebels. . . with 170 Russian tanks attempted to overthrow the Chechen government with a *coup de main* by capturing Grozny from the march as they had in years past captured Prague and Kabul. They failed and lost 67 tanks in city fighting.⁶⁴

The greatest miscalculation by the Russian political leaders clearly was the underestimation of the size and composition of the loyal Chechen forces. The Chechen force consisted of 10,000 soldiers, 50 tanks, 100 APC/IFVs, and 100 artillery pieces.⁶⁵ In addition, they possessed a substantial quantity of Russian

tanks, IFVs, and artillery.⁶⁶ As a result, the initial attack into the Chechen capital city of Grozny was a total disaster for the Russian forces.

Before Russian military leaders had the opportunity to regroup and assess the battle, the Russian political leaders ordered another immediate attack. However, to ensure success the political leaders stipulated that the Russian military leaders mobilize and employ regular Russian Army forces to conduct the second attack.⁶⁷ "Attempting to establish a credible force quickly, the Russian Army was forced to combine small units and send them [to Grozny] to fight."⁶⁸ As was the case with the rebel Chechen forces that conducted the initial attack, Russian forces conducting the follow-on mission consisted of a "rag-tag collection of various units without an adequate support base."⁶⁹

Infantry fighting vehicles went to war with their crews, but with little or no infantry on board. In some cases, officers drove because soldiers were not available.⁷⁰

The second attack into Grozny ended in complete failure for the same reasons the initial attack failed - Russian forces again attempted to seize Grozny without enough supporting infantry. "The available infantry had just been thrown together . . . many were sleeping in the carriers even as the columns rolled into Grozny."⁷¹ The Russian armored columns were mauled as they drove into Chechen engagement areas. Instead of the anticipated light resistance, Russian forces encountered heavy resistance from Chechens armed with 'massive amounts' of anti-tank weapons.⁷² The Russian attack was repulsed with shockingly high losses. "After losing 105 of 120 tanks and personnel carriers the

Russians fell back to consolidate for the long, building-by-building battle.⁷³

The Russian operation required another two months of heavy fighting and a change in tactics to finally capture Grozny. The forces involved had to learn how to function as a combined-arms team before success was achieved. This came as a surprise to the Russian leaders because the Russian armed forces probably had more experience in offensive urban warfare than any other army in the world: during World War II, the Soviet Army freed 1,200 cities from the German Army.⁷⁴

After the Russians captured Grozny they failed to detect Chechen fighters infiltrating Grozny, thus allowing the Chechens to launch a major attack against the Russian-controlled city. "Two weeks later, the Chechens recaptured the city. Receiving significant losses, the Russian forces withdrew from the Chechen Republic."⁷⁵

During the initial attack into Grozny the Russians attempted to seize the city from a march formation. Tanks were positioned in the lead as the column formation maneuvered along the city streets. Though some infantry was available, few if any were ordered to dismount to provide the necessary security for the armored vehicles. The Russian armored formations maneuvered through the narrow streets unaware that they were about to enter a series of Chechen ambushes.

The Chechen forces, being familiar with the city, accurately anticipated which routes the Russian would use for the attack. The Chechens occupied RPG

positions along the roofs and upper floors of the building that lined the Russian's approach. Additionally, the Chechens organized three-man, hunter-killer teams consisting of an RPG gunner, a sniper, and machine gunner. "[These] teams deployed at ground level, in second and third stories, and in basements. Normally five or six hunter-killer teams simultaneously attacked a single armored vehicle."⁷⁶ These hunter-killer teams maneuvered about the city engaging Russian tanks from the flanks or rear where they were most vulnerable.

Chechen forces were prepared to fight as the Russian armored vehicles maneuvered toward the center of the city. When the armored vehicles maneuvered into the engagement area the Chechens initiated the ambush by destroying the lead and trail vehicles.⁷⁷ The narrowness of the streets prevented the remaining vehicles the ability to bypass. The tanks attempted to engage enemy positions but the limited elevation and depression capability of their main guns prohibited the vehicles from engaging the enemy occupying positions above the second floor and in basements.⁷⁸ Additionally, many tanks deployed without machine-gun ammunition that would have proven effective against enemy forces occupying the upper floors. Unable to maneuver, the tanks and other AFVs were easy targets for the Chechen RPG gunners firing from rooftops and the hunter-killer teams moving along the flanks of the vehicles. During the ambushes, infantry soldiers, fearing for their lives, refused to dismount their vehicles, believing that the armored protection of the IFVs and APCs would provide adequate protection.⁷⁹ The result was that RPG weapons and heavy

machine guns killed most of the infantry as they sat inside their vehicles.⁸⁰

Tasks that tanks performed during this phase of the Grozny operation were performing a tactical road march, providing actions on contact, and withdrawing under enemy pressure. Several of the tasks the tank successfully performed in Hue and Somalia failed to be performed in Grozny for the following two reasons. First, once tanks become more involved with avoiding enemy RPG fire they lose their effectiveness to perform a role in MOUT. Secondly, although tanks and other AFVs bring a substantial amount of firepower to the operation, the tank is rendered practically useless if infantry soldiers are not securing the vehicle as they maneuver within the city.

During operations in Grozny the Russians discovered that Chechen forces were being supported with weapons and soldiers from villages on the outskirts of the city, resulting in Russian forces being tasked to seize these villages. Tanks tasked organized with other AFVs maneuvered to establish a cordon around the villages. The cordon prevented the villages from being reinforced from outside sources and prevented the enemy forces from within each village from escaping. Once a village was surrounded, infantry, overwatched by tanks, was maneuvered forward to establish a foothold on the edge of the village.⁸¹ Then tanks, along with ZSU-23-4s and 2S6s (tracked mounted antiaircraft guns), were maneuvered forward to overwatch the infantry. The antiaircraft guns proved especially effective against the Chechen hunter-killer teams tasked to destroy armored vehicles. Additionally, "the Russians found air defense guns effective

against multi-story buildings because they had sufficient elevation to hit targets in the upper stories."⁸² The anti-aircraft guns provided the large volume of suppressive firepower that permitted the tanks and infantry to bound forward and subsequently clear the enemy forces.

Once inside the village the tanks assisted with breaching obstacles and creating entry holes in the sides of structures. "The Russians came to rely heavily on the tank's 'bunker busting' rounds for engaging Chechens, primarily snipers, entrenched in buildings."⁸³ Creating holes in the sides of building permitted the infantry to move from building to building without requiring them to travel through intersections overwatched by Chechen snipers.

Russian tank-mounted searchlights proved useful for night assaults. The searchlights not only designated targets for the infantry, but also temporarily blinded the night-vision equipment of the enemy. This technique produced a psychological effect upon the enemy while helping to reduce fratricide during the assault.⁸⁴

The tasks that tanks performed during this event included performing actions on contact, supporting by fire, assaulting an enemy position, performing attack by fire, performing attack position activities, and defending (isolating the urban area). These tasks were accomplished while the tanks were isolating objectives to prevent enemy withdrawal, reinforcement or counter-attack; establishing road blocks; assisting opposed entry of infantry into buildings when blocked by obstacles or enemy fire; obscuring enemy observation using white phosphorous

rounds, providing shock action and firepower; reducing barricades; and using fires to reduce enemy strongpoints in buildings.

The initial two attempts to seize Grozny proved disastrous for the Russian Army. However, they do support an extremely relevant observation - tanks operating in a MOUT environment without the support of infantry will not survive against a stubborn enemy armed with RPGs, ATGMs, and other tank-killing weapon systems. This observation is relevant regardless of the size and power of the armor force.

Another relevant observation is the city or village involved in the MOUT operation must be sealed-off to prevent forces from reinforcing the soldiers currently in the city or from allowing the enemy forces within the city to escape. Tanks proved they are more than capable of accomplishing this task.

Additionally, attempting to seize a city from the march can prove disastrous for the attacking forces. The city must be taken successively, starting on the outskirts and working inward. Infantry must first create the secure condition that will allow the tanks to maneuver into an overwatch position. Furthermore, enemy forces cannot be bypassed. Chechen hunter-killer teams, when bypassed, were able to easily engage Russian tanks and other AFVs.

Once the Russians became more experienced with integrating the combined effects of armor and infantry, the tanks were able to fulfill their expected role. Tanks were moved forward to breach obstacles, create holes through walls and into buildings, allowing Russian dismounts an entry into buildings occupied by

the Chechens.⁸⁵

The purpose for analyzing these case studies was to identify the tasks that tanks were expected to perform in three separate MOUT operations, and to determine whether these tasks could be categorized as standard ARTEP tasks. These case studies reveal that regardless of whether tasks are standard or not, the nature of MOUT and the high level of combined arms training required can cause even the most simplest tasks to be difficult and complicated to execute. Though very little can be done to modify the nature of MOUT, much can be done to prepare the unit to effectively conduct MOUT.

CHAPTER IV

ANALYSIS

Analyses of the battles of Hue, Somalia, and Chechnya identify three training deficiencies that must be resolved to conduct MOUT effectively. These training deficiencies consist of training as a combined arms team, conducting accurate and detailed Intelligence Preparation of the Battlefield (IPB), and planning and rehearsing to fight an enemy force in a three-dimensional environment.

Creating a well trained and versatile combined arms force is a prerequisite for conducting successful MOUT operations. Combined arms and situational oriented training in urban warfare greatly improves military effectiveness. To successfully execute a MOUT operation the combined and coordinated effects of infantry, armor, engineer, artillery, and other forces are necessary. The infantry will require fire support against enemy strongpoints as much as the armor needs protection from the dismounted infantry. Combat engineer equipment, especially armored bulldozers, is necessary to support the movement of mechanized forces by reducing enemy obstacles and clearing the city streets of rubble. Only well trained and versatile combined arms forces are capable of reacting to the complex situations encountered in MOUT operations.

In Vietnam the Marines were experienced jungle warfighters, not urban warfighters. Many of the successful tactics, techniques, and procedures involving tanks operating with dismounts were learned as the Hue operation

progressed. "A few days of fighting together was all that was required" to begin operating effectively as a combined arms team.⁸⁶

In Grozny the Russian Army did not use a well trained and versatile combined arms force to conduct MOUT operations. Several senior military commanders were removed from command during this operation because they refused to take their soldiers into Grozny, knowing that their soldiers "had not received adequate training."⁸⁷ The Russians' initial attack into Chechnya was composed of various units that were individually and collectively poorly trained. The limited amount of infantry that was available had been thrown together at the last minute with some soldiers not even having weapons. Consequently, when the Russian's attempted to seize Grozny they essentially attempted to do so with tanks and IFVs but without enough supporting infantry. These armored vehicles, unprotected by dismounted infantry, were easy prey for the Chechens firing AT weapons from inside, on top and below buildings. The Russian armor columns were swallowed up in the city streets and destroyed by Chechen gunners.⁸⁸ The Grozny operation indicates how "inadequate training in the most basic maneuver and combat skills inhibited Russian operations. Overall, poor Russian combat performance could be traced to a lack training in fundamental military skills, a situation that was then exacerbated by an additional lack of training in specific combat skills."⁸⁹

In contrast to the Russian Army in Grozny, the American force in Somalia was made up by some of the most highly trained units in the American Army.

However, the combined arms QRF that was used to rescue the Ranger unit was a force that was created by the circumstances of the situation. When the initial QRF mission had failed, the Task Force commander requested augmentation by Pakistani and Malaysian mechanized forces. This newly formed multinational force had never conducted joint training together. When informed that the second QRF attempt would include tanks and APCs, the QRF commander recalls thinking, "What the f__k am I going to do with these guys?"⁹⁰ The American QRF had not trained as a combined arms force with their Pakistani and Malaysian allies. Had combined arms training occurred, the QRF commander would have immediately realized how to combine the tanks and APCs into his task organization to maximize their capabilities.

Units must also be trained on how to conduct detailed and complete Intelligence Preparation of the Battlefield (IPB) on the enemy forces. A detailed analysis of enemy forces and weapons capabilities is necessary to successfully execute MOUT operations. The military training and combat experience of the enemy can vary greatly. Furthermore, the enemy force may be composed of soldiers serving in the military, soldiers no longer serving in the military but who possess prior military training and combat experience, or mercenaries.

Additionally, the enemy force may further be comprised of civilian patriots having little or no military training but with a motivation to fight for survival or some other cause they deem worthy. In addition to the level of military training and combat experience, the variance of the type and quantity of weapons available to the

enemy force is significant. Some enemy forces may have low-tech equipment in small quantities consisting of no more than AK-47s and RPG-7s. Others may have the political backing and financial revenue to acquire larger quantities of hi-tech weaponry to include tanks, IFVs, artillery, and aerial assets. Identifying the strengths and capabilities of defending enemy forces is the first critical step in planning MOUT operations.

In an attack on the Chechen city of Grozny, the Russian Army completely underestimated the capabilities of the opposing force. They entered the city with 23,000 soldiers, 80 tanks, 208 APC/IFVs and 182 artillery pieces.⁹¹ It was believed that the Chechen force would be vastly out-gunned and the Russian force would easily produce the required combat capability to quickly achieve mission success.⁹² However, to the surprise of the Russian Army, the Chechen forces possessed a considerably robust military force. Additionally, it was "estimated that the Chechens hired 2,000-6,000 mercenaries."⁹³ Due to strong political backing and financial support, the Chechens were well equipped in the type of weaponry necessary for the defense of Grozny. The Russians' failure to plan for the capabilities of the Chechens resulted in the destruction of the Russian armored personnel carriers before the supporting infantry could dismount their vehicles.

In Somalia, American forces encountered similar problems when they underestimated the capabilities of Somali forces. During this operation General Mohammed Farah Aideed's forces did not possess hi-tech weaponry. Most of

their weaponry consisted of AK-47s, RPG-7s, and some 106mm recoilless rifles. However, they possessed no tanks, IFVs, or artillery. Once inside the city, the narrow streets surrounded by buildings on both sides allowed Aideed's clansmen to take maximum advantage of their short-range weapon systems. These clansmen were amazingly successful in establishing a series of aerial and ground ambushes. As a result of the American forces having underestimated the reactions of the Somali people and their ability to mass forces quickly, they were not prepared or organized to conduct combined arms, offensive MOUT operations.

Lastly, essential to conducting successful MOUT operations is creating, implementing and executing detailed plans for defeating the enemy in a three dimensional environment. Detailed planning will include the identification of decisive points, objectives, avenues of approach, lines of communication, and lines of operation designed to support the success of the mission. It will also template likely enemy ambush sites and strongpoints and assist with the identification of the infrastructure that will provide the enemy the capability to fight a three dimensional fight. Furthermore, detailed planning identifies the tasks and the required TTPs that soldiers must know to have a productive rehearsal. Detailed planning and rehearsals are critical for conducting successful MOUT operations.

In Grozny the Russian Army used an ill-conceived plan during their attack on the city. The detailed planning required by the Russian forces never occurred.

As a result, the Russians attempted to attack Grozny from the march. The lack of planning prevented the Russians from developing a reconnaissance plan to identify enemy obstacles, locations, and disposition. Rehearsals were not conducted, resulting in the infantry not knowing where to dismount the APCs. Contingency plans were not addressed, nor were the actions to be taken when enemy contact was made. At a minimum, rehearsals would have prepared the soldiers for the operation. As a result, the Chechen forces defeated the initial Russian force, forcing them to break contact, fall back and conduct deliberate planning prior to conducting another attempt at seizing the city.⁹⁴ Because the Russians did not consider the importance of detailed planning, the Chechens easily defeated the initial two attacks on Grozny.⁹⁵

In Somalia the lack of coordination between special operations forces and the QRF did not allow the QRF to plan and rehearse a combined arms contingency mission. The QRF was tasked to respond to any crisis situation involving American forces. To correctly prepare for such a mission the QRF should have been informed of all upcoming operations. However, when the special operation forces were ordered to capture one of Aideed's lieutenants, the QRF was not notified.⁹⁶ Consequently, rehearsals and command and control coordination between the QRF, special operation forces and potential allied forces never occurred. It was not until the first American helicopter was shot down did the QRF commander become aware that the mission was in progress. When the first attempt to link-up with American forces failed, the QRF attempted

to task organize with Pakistani and Malaysian mechanized forces. Once again, a lack of rehearsals and coordination with these allied forces significantly hampered the second rescue attempt. Because the QRF did not have the time to plan for a combined arms contingency mission with allied forces, command and control of the operation suffered, resulting in unnecessary casualties.

The nature of MOUT complicates the tank's ability to perform tasks to standard.⁹⁷ If the lack of combined arms training is a primary deficiency impacting on units' readiness prior to conducting MOUT, then it is also a deficiency that can be readily overcome if units are willing to commit the time and resources necessary to train as they expect to fight in a MOUT environment.

CHAPTER V

CONCLUSIONS

The purpose of this monograph was to determine if the United States main battle tank (M1A2) possesses the necessary characteristics required to successfully accomplish tasks in MOUT operations. It is evident that the M1A2 does in fact possess those characteristics. Although the M1A2 has never been tested in urban combat, the case studies provide clear evidence that the tank is fully capable of accomplishing critical tasks commonly required in MOUT. Additionally, when integrated into a combined arms team, it provides the other elements of the combined arms team with direct fire support, shock effect, maneuverability, and the staying power necessary for mission success. However, the success of the tank in MOUT is dependent upon the training level of all the elements that make up the combined arms team.

The purpose of analyzing the battles of Hue, Somalia, and Chechnya was to identify those tasks that tanks were expected to perform in three separate MOUT operations. Next was to determine if the tanks were successful in accomplishing those tasks, followed by a determination whether tanks have a role in MOUT. The battle of Hue demonstrated the positive results obtained when tanks and infantry operate together. Hue also demonstrated the ineffectiveness and shortcomings that occur when infantry conduct MOUT without tank support. Somalia demonstrated the disastrous consequences that may occur when tanks

are not integrated into a MOUT operation and the immediate effects gained when tanks are integrated into the combined arms team. The Grozny operation demonstrated the negative impact that occurs when tanks attempt to maneuver in MOUT without the support of dismounted infantry and, like Somalia, the positive effects gained when tanks, infantry, and other AFVs operate effectively as a combined arms team. In all cases armor contributed to the success of the operation. Yet simply having the tank available in each of these operations did not always make a positive difference.

In addition to concluding that tanks fulfill a number of critical roles in MOUT, it is also important to state that each task and supporting task identified in this analysis are listed in ARTEP 71-1-MTP, The Tank and Mechanized Infantry Company and Company Team. Therefore, this monograph also concludes that the tasks tanks performed in these case studies and those tasks that tanks may anticipate performing in future MOUT operations can be considered standard ARTEP tasks that a tank crew or tank section should be expected to perform in any given operation.

Though the M1A2 provides tremendous combat power, it is vulnerable to a number of weapon systems available to the enemy. Furthermore, the nature of MOUT can severely limit the ability of the tank to operate in such an environment. Thus, the tank should never function alone in urban terrain. It will be the responsibility of the infantry and other combat systems to provide the essential security and assist with providing situational awareness in order for the

tank to close with and destroy the enemy using fire, maneuver and shock effect.

There have been a number of recommendations of how to improve the tank to operate more effectively in an urban environment. Recommendations that range from modifying the weapon systems of the tank in order to fire a wide variety of ammunition, developing electromagnetic and explosive reactive armor, to completely developing new MOUT specific AFVs and deleting the M1A2 from participating in MOUT. However, in a MOUT operation, "the bulk of the tactical firepower will need to come from large-caliber, protected, direct fire weapons. To fulfill this firepower requirement will call for a tank, or future systems descended from the tank."⁹⁸ Additionally, "the US does not plan to field a new-generation main battle tank before 2015 at the earliest. This is partly due to the lack of a clearly defined threat since the end of the cold war."⁹⁹

Although improvements can be made to increase the lethality and survivability of the tank, the level of training that exists between the combined arms team will determine the success of the operation as the three case studies have shown. To truly be successful in any operation our forces must learn how to leverage the full capabilities of the tank and other weapon systems of the combined arms team to maximize their utility at accomplishing the mission. This can best be achieved by training as those forces intend to fight.

The old saying 'live and learn' must be revised in war, for there we learn and live; otherwise we die. It is with this learning, in order to live, that the Army is so vitally concerned.¹⁰⁰

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⁸³Ibid., J6.

⁸⁴Grau, *Strategic Forum*, 4.

⁸⁵Grau, *Interview*.

⁸⁶Nolan, 143.

⁸⁷Raevsky, 684.

⁸⁸Grau, *Strategic Forum*, 2.

⁸⁹MCWP, J-4.

⁹⁰DeLong, 51.

⁹¹Raevsky, 682.

⁹²Ibid., 683.

⁹³Ibid.

⁹⁴Grau, *Strategic Forum*, 2.

⁹⁵Grau, *Interview*.

⁹⁶DeLong, 46.

⁹⁷Nolan, 142.

⁹⁸Peters, 47.

⁹⁹Christopher F. Foss, "Modernization Points Way for Future MBTs (Main Battle Tanks)," In *Jane's Defense Weekly*, 18 June 1997.

¹⁰⁰U.S. War Department, *Pamphlet no. 20-17 Lessons Learned and Expedients Used in Combat*, (Washington D.C. GAO July 1945), 1.

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