

THE LIMITS OF FIRE SUPPORT: AMERICAN FINANCES AND FIREPOWER
RESTRAINT DURING THE VIETNAM WAR

A Dissertation

by

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ABSTRACT

Excessive unobserved firepower expenditures by Allied forces during the Vietnam War defied the traditional counterinsurgency principle that population protection should be valued more than destruction of the enemy. Many historians have pointed to this discontinuity in their arguments, but none have examined the available firepower records in detail. This study compiles and analyzes available, artillery-related U.S. and Allied archival records to test historical assertions about the balance between conventional and counterinsurgent military strategy as it changed over time.

It finds that, between 1965 and 1970, the commanders of the U.S. Military Assistance Command, Vietnam (MACV), Generals William Westmoreland and Creighton Abrams, shared significant continuity of strategic and tactical thought. Both commanders tolerated U.S. Army, Marine Corps, and Allied unobserved firepower at levels inappropriate for counterinsurgency and both reduced Army harassment and interdiction fire (H&I) as a response to increasing budgetary pressure. Before 1968, the Army expended nearly 40 percent of artillery ammunition as H&I – a form of unobserved fire that sought merely to hinder enemy movement and to lower enemy morale, rather than to inflict any appreciable enemy casualties. To save money, Westmoreland reduced H&I, or “interdiction” after a semantic name change in February 1968, to just over 29 percent of ammunition expended in July 1968, the first full month of Abrams’ command. Abrams likewise pursued dollar savings with his “Five-by-Five Plan” of August 1968 that reduced Army artillery interdiction expenditures to nearly ten percent of

ammunition by January 1969. Yet Abrams allowed Army interdiction to stabilize near this level until early 1970, when recurring financial pressure prompted him to virtually eliminate the practice. Meanwhile, Marines fired H&I at historically high rates into the final months of 1970 and Australian “Harassing Fire” surpassed Army and Marine Corps totals during the same period. South Vietnamese artillery also fired high rates of H&I, but Filipino and Thai artillery eschewed H&I in quiet areas of operation and Republic of Korea [ROK] forces abandoned H&I in late 1968 as a direct response to MACV’s budgetary pressure. Financial pressure, rather than strategic change, drove MACV’s unobserved firepower reductions during the Vietnam War.

DEDICATION

To Linda, Brandon and Kaitlyn

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This project remains my own, as do its flaws or shortcomings. My views do not necessarily reflect those of NATO, the Department of Defense or the U.S. Army.

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CHAPTER I

INTRODUCTION: FIREPOWER RESTRAINT DURING THE VIETNAM WAR*

In October 1966, out of the darkness blanketing a U.S. Army base camp in South Vietnam, sudden and then sustained concussions of sound and pressure jolted Major General Arthur S. Collins, Jr., who had just lain down to rest within his sandbagged living quarters. The newly arrived commander of the U.S. Army's 4th Infantry Division, Collins immediately recognized the sounds as outbound artillery fire and thought that his camp had been attacked by the enemy: communist insurgents known as the Viet Cong. Hearing the continuing artillery fire, he leapt from his tent, pistol drawn, and asked his men in which direction he could find the enemy. His men informed him that they had not been responding to any enemy attack. Rather, the artillerymen on the camp had expended nearly 700 rounds of artillery ammunition that night in unobserved and randomly-timed Harassing and Interdiction (H&I) strikes that were intended to weaken the enemy's morale while hindering the enemy's freedom of movement. His men insisted that this type and volume of ammunition expenditure was routine.¹

Collins was appalled. Beginning the next morning, he lectured his men that H&I must prove both wasteful and counterproductive given the nature of their war in South Vietnam. He pointed out that artillery fired at unconfirmed targets had little chance of

*Part of the material reported in this chapter is reprinted with permission from "The Costs of Artillery: Eliminating Harassment and Interdiction Fire during the Vietnam War," by John M. Hawkins, 2006. *Journal of Military History* 70: 91-122, Copyright 2006 by Society for Military History.

inflicting enemy casualties, but a greater likelihood of inflicting property damage and thereby arousing resentment among the civilian population. He also emphasized that the monetary cost of each round was magnified by the need to ship it halfway around the world. Moreover, he added, U.S. soldiers continued to risk their lives hauling such ammunition from port to base camp over oft-ambushed mountain passes. Losing soldiers' lives to fulfill such a tactical mission that, at great expense, actually worked against the prospects for victory would, he suggested, constitute the height of folly.²

Collins soon reduced H&I within his command, but his efforts remained exceptional until later in the war. The Army continued to fire nearly 85 percent of its artillery ammunition unobserved throughout 1966 and into the following year, mostly as H&I. During the same period, the Marine Corps fired H&I at similar rates in South Vietnam's northern provinces. From early 1968 until mid-1970, the Army gradually reduced and nearly eliminated the practice, but only the Republic of Korea Army joined these budget-driven reductions, whereas Filipino and Thai artillerymen continued to employ little firepower in their quiet sectors and the Marines and Australians fired large percentages of H&I until late into 1970. The South Vietnamese Army, moreover, persisted in conducting H&I missions long after other services and nationalities had reduced this exercise of conventional firepower.³

Examining how, when, and for what reasons the Allied services and nationalities cut back on unobserved firepower during the Vietnam War will inform the historical debate over American military strategy during the conflict. Many questions remain unanswered that this project will address. Why did the ground forces of nearly all services and

nationalities rely so heavily on unobserved firepower early in the war? How abrupt were their cutbacks? Why did the Army and the Marine Corps differ in their approach? Did evolving military strategy incorporate a greater appreciation for the counterproductive nature of unobserved firepower or did social, political, or economic factors impose more significant constraints? Why did the Koreans follow the Army trend, while the Marines and the Australians did not? Why did the South Vietnamese Army continue to fire H&I for so long? What did changes in Allied employment of unobserved firepower suggest about the Allies' changing prospects for securing an independent, non-communist South Vietnam? Put another way, what do drastic changes in unobserved firepower suggest about the Allies' approach toward winning a hybrid, simultaneously conventional and counterinsurgent war?

Since the 1970s, scholars have spent decades explaining why American military power failed to secure an independent, non-communist South Vietnam, but they have neither charted nor analyzed the reasons behind the Army's dramatic reduction of unobserved firepower, nor have they examined the Army's reductions in an inter-service or Allied context. These potential insights have remained unexploited, perhaps, due to the background and assumptions of the major contending schools of historical thought.

Those historians who view the war as a contest of conventional military might have had little need to dissect America's prodigious employment of firepower. Representing what might be termed the "conventional war school," Dave R. Palmer, for example, asserts in *Summons of the Trumpet* (1976), that the fundamental error of the war was political: policy makers erred by not allowing the military to strike communist

sanctuaries in Laos, Cambodia, and North Vietnam. Thus, he concludes, the military's "only answer was attrition" and conventional tactics made sense.⁴ Phillip B. Davidson, who served as MACV J-2, or Assistant Chief of Staff for Intelligence, for both Westmoreland and Abrams, similarly contends that "If blame [for losing the Vietnam War] had to be assessed, it lay with the president and his civilian advisers in the State Department and in OSD [Office of the Secretary of Defense]" because "It was the civilians who had convinced the president of the feasibility of carrying out a limited war; it was the civilians who had sold him on 'gradualism'; and it was the civilians who had, through the president, placed the United States forces on the strategic defensive – a 'no win' concept."⁵ Likewise, Harry G. Summers argues in *On Strategy: A Critical Analysis of the Vietnam War* (1982) that the conventional North Vietnamese Army represented the real enemy, while the prospect of "tactical successes" led the United States "to deploy against a secondary force [Viet Cong insurgents] and exhaust itself in the effort."⁶ To this school, the endurance of communist sanctuaries simultaneously explains both the need and relative impotence of large scale, firepower-intensive conventional operations and tactics.

An opposing school of thought considers unobserved firepower routinely, but only briefly, because it attributes Allied military failure to an American obsession with firepower-intensive conventional operations. In *The Army and Vietnam* (1986), Andrew F. Krepinevich argues that the Army remained wedded to its "Concept" of conventional warfare, using firepower "as a crutch in lieu of an innovative counterinsurgency strategy." H&I and other injudiciously applied firepower proved extremely

counterproductive because it “alienated the population and provided the enemy with an excellent source of propaganda.”⁷ In three pages of his 1978 work, *America in Vietnam*, Guenter Lewy also addresses H&I, pointing out that unexploded H&I ordnance often provided the Viet Cong with material for mines and booby traps while inflicting few enemy casualties and having “an often undesirable effect on civilians.”⁸ In another approach, John A. Nagl has extended the Krepinevich thesis by comparing British operations in Malaya to Army activities in Vietnam and arguing that, during the Vietnam War, the conventionally-minded Army lacked the culture needed to learn about and adapt to counterinsurgency imperatives, including the need for firepower restraint.⁹ Biographer Lewis Sorley has argued that Westmoreland failed to understand that counterinsurgency, or pacification, was “more difficult,” more complex, and more fundamental than conventional operations in the Vietnam War. He adds that Westmoreland courted failure and, at the very least, incurred years of unnecessary delay by shunting the imperatives of pacification “more or less unassisted” onto the South Vietnamese while keeping the U.S. Army “uninvolved.”¹⁰ Other than Sorley, historians of this “hearts and minds school” typically focus on the very conventional command of Westmoreland, the top American officer in Vietnam until June 1968, and fail to mention eventual cutbacks in unobserved fire by his successor, General Creighton Abrams, thereby implying that the practice continued unabated until the end of the war.

Yet Sorley contends that Abrams broke sharply with his predecessor’s conventional strategy after June 1968 and focused on Vietnamese hearts and minds by applying traditional counterinsurgency principles such as firepower restraint, including immediate

cutbacks in unobserved firepower. In *A Better War* (1999), Sorley argues that Abrams' shift in strategy yielded Allied victory in the Vietnam War years before a pusillanimous U.S. Congress "defaulted" on its commitments to provide financial, logistical, and firepower support to the South Vietnamese.¹¹ Indeed, "From his first days as commander, Abrams had clamped down on excessive use of force ... Likewise he cutback sharply on unobserved artillery fire."¹² Sorley offers limited documentary references, but presents several quotations in which Abrams expressed a desire to protect civilians by restricting American firepower. To Sorley, Abrams recognized that Vietnamese peasants faced threats of "mortar and artillery attacks ... by both enemy and friendly forces" and he therefore sought to protect the populace by restraining indirect fire in populated areas, particularly Saigon.¹³

Other historians of the "hearts and minds school," such as Lewy and Richard Hunt, acknowledge Abrams' desire to focus more on pacification, but they question his effectiveness in changing the Army's conduct of the war. Lewy concedes that Abrams desired reform, but argues that he could not overturn the Army's firmly entrenched doctrine and organization during his command.¹⁴ Nagl, like Lewy, argues that when Abrams took command of MACV in June 1968, Abrams "confronted a culture that by then was so entrenched in its [conventional, firepower-intensive] attitude that even the MACV commander could not change it."¹⁵ For his part, Hunt recognizes that large-scale conventional operations may have been "anomalous" under Abrams and agrees that "Abrams viewed the war differently," but argues that Abrams "was responding to changes in the nature of the war itself."¹⁶ Thus, Lewy, Krepinevich, Hunt and Nagl find

not a radical shift in strategy during Abrams' command, but rather a continued lack of firepower restraint in a counterinsurgency environment.

Supporting firepower-related assertions by Lewy, Krepinevich, Hunt and Nagl, this dissertation will argue that the Army and Republic of Korea (ROK) ground forces reduced unobserved firepower over time, not because of a fundamental shift from conventional to counterinsurgency strategy, but because increasingly powerful financial constraints generated within U.S. forces a need to justify the effectiveness of military spending. The Marines, the Australians, and the South Vietnamese did not follow the Army trend and instead continued to fire high rates of unobserved fire into late 1970. Indeed, fiscal pressure prompted deep Army cutbacks in unobserved fire before Abrams' command attempted to shift the Army from conventional to counterinsurgency strategy later in the war. Even after Westmoreland departed Vietnam, renewed fiscal pressure, rather than military imperatives, continued to drive each of Abrams' subsequent reductions in Army unobserved fire. The ground forces of nations fighting alongside the Americans followed suit, or not, depending on how tightly they were bound to the American supply system and its controls.

Cutbacks in unobserved fire reflected not a radical shift in military strategy designed to win the war, but rather a sequence of domestic fiscal constraints that progressively limited the scope, duration, and potential success of the Allied war effort. Only after the Army nearly eliminated unobserved fire in 1970 did MACV endorse eliminating the practice as a vehicle to mollify South Vietnamese resentment. In essence, the Army intended its cutbacks to buy time, rather than to secure greater popular support for its

counterinsurgency efforts. By the time that the Army and some Allies had virtually eliminated unobserved fire, however, neither budgetary savings nor firepower restraint could overcome the intersection of greater, countervailing forces that were already working against America's continued participation in the war.

Before examining the changing role of unobserved firepower during the Vietnam War, it is important to first consider and understand how military, social, political, and economic factors intertwined to precipitate changes in military conduct in Southeast Asia. Indeed, this interdependence forms the context for understanding the larger relevance of this dissertation. The factors and their interdependence are famously discussed in the nineteenth century treatise *On War* by Carl von Clausewitz, a work widely revered by American military officers and institutions throughout much of the twentieth and into the twenty-first century.

Clausewitz described war as a “paradoxical trinity” where the popular passions of “primordial violence, hatred and enmity” interacted in a “variable” balance with the “chance and probability” of military operations and the primacy of political aims and concerns. Within this balance, military operations represented “an instrument of policy” that should be “subject to reason alone.” In other words, campaigns that did not serve policy, that wrongly discounted popular passion, or that otherwise sought “to fix an arbitrary relationship” between these three factors courted failure through a flawed understanding of the immutable nature of war.¹⁷ During the Vietnam War, America courted failure in each section of Clausewitz's trinity, but flawed policy mattered most.

As a subset of the broader Cold War, the Vietnam War worked in three ways against America's effort to contain Soviet and Chinese communism. First, an overarching "Containment" policy impelled the United States to wade deep into a difficult proxy struggle over South Vietnam – a strategic backwater – when America's vital interests demanded strong and direct defense elsewhere. As John Lewis Gaddis explains, containment originally envisioned "only five meaningful centers of power in the world—the industrial complexes of the United States, Great Britain, the Rhine valley, the Soviet Union, and Japan—and that as long as no more than one of these was under hostile control, international equilibrium would be preserved."¹⁸

Hardly conceivable under "Containment's" original design, America's commitment to Vietnam instead represented "the logical and predictable consequence" of National Security Council Report 68 (NSC-68), a zero-sum vision of containment which sanctioned the defense of an almost unlimited combination of American peripheral interests, prestige, and credibility considerations.¹⁹ Thus, for less than vital interests America bled down its national power in the strategic backwater of South Vietnam while its principal enemies, China and the Soviet Union, remained relatively unscathed. Policy makers had not only failed to appreciate not only the limits of American power, but they had also failed to discern between vital and peripheral interests.

Understandably but unfortunately for the United States, American policy makers had further blurred the distinction between vital or peripheral interests by subscribing to the apocalyptic "Domino Theory." The shocks of the early Cold War understandably generated great concern about Communist designs: China fell to Mao's forces in 1949,

the Soviet Union detonated an atomic weapon during that same year, North Korea invaded South Korea in 1950 with China later intervening on its behalf, and the United States suffered through a second Red Scare during the McCarthy controversies in the early 1950s. Although President Dwight D. Eisenhower refused direct military assistance to the French at Dien Bien Phu in April 1954, he nevertheless deemed Indochina important by having funded most of the French effort and citing "the 'falling domino' principle. You have a row of dominoes set up, you knock over the first one, what will happen to the last one is the certainty that it will go over very quickly."²⁰

It is hardly plausible that Malaya, the Philippines, Formosa, New Zealand, Australia, and Japan would have inevitably fallen had South Vietnam succumbed to communism, but as Tom Wicker emphasizes, "in the depths of the Cold War, from the victor of World War II, the 'domino theory' had much force and a certain popular logic."²¹ Indeed, stung by the Cuban Missile Crisis and other acts of Soviet bellicosity, Presidents John F. Kennedy and Lyndon B. Johnson likewise averred the "Domino Theory." Kennedy committed more than 16,000 advisors to shore up South Vietnam before his assassination in November 1963 and the latter added more than 500,000 American military personnel to the effort lest the United States "surrender the Pacific and take up our defenses on our own shores."²² When contemplating the national interest, policy makers had failed to studiously avoid the slippery slope in thought and action.

For much of the war, American policy makers unwittingly served their enemies' purposes by opposing an illusion of communist solidarity. The Soviets and the Chinese willingly bled American power in a proxy struggle that did not directly threaten their

own security, but “ideological, strategic, national, and even racial differences” prompted them to oppose each other as well.²³ The Chinese were in North Vietnamese Prime Minister Pham Van Dong’s recollection, “always ready to fight to the last Vietnamese” to weaken both the United States and what they traditionally viewed as a Vietnamese nuisance on their southern border.²⁴ The Soviets likewise sought to weaken the United States and China by strengthening the North Vietnamese.

Ho Chi Minh exploited these competing Soviet and Chinese interests with artful agency. As William E. Odom observes, “A long-time loyalist to Moscow and early member of Lenin’s Communist International, [Ho Chi Minh] was never under China’s thumb. Yet he cooperated with Beijing to balance his dependency on Moscow, allowing neither to frustrate his aim of unifying all of Vietnam under his rule.” America’s struggle to preserve a divided Vietnam “was not only serving Soviet purposes against China, but also weakening NATO, hurting the U.S. currency in the international exchange rates, and making the charge of ‘imperialism’ believable to citizens in many countries allied to the United States.”²⁵ Secretary of Defense Robert S. McNamara, responsible for much of America’s flawed policy in his own right, later blamed American misunderstanding on the fact that “the top East Asian and China experts in the State Department ... had been purged during the McCarthy era of the 1950s.”²⁶ Yet President Richard M. Nixon eventually exploited the Sino-Soviet fissure to help extricate U.S. forces from Vietnam. Whatever the reasons for American ignorance, this underscores the need for nuanced threat estimates formed through open dialogue with cultural, regional, and diplomatic experts.

Logical, predictable, but flawed in its assumptions, American policy toward Vietnam also failed to sufficiently appreciate the second portion of Clausewitz's trinity, popular passion, in three ways. First, American leaders failed to recognize a daunting pattern of Vietnamese resistance to foreign intervention. For nearly 1000 years, the Vietnamese had fought to expel intermittent Chinese incursions from the north. From the Trung sisters and Trieu Au, to Tran Hung Do and Le Loi, the Vietnamese venerated self-sacrifice and even martyrdom for this cause. Although disorganized and ineffectual, the Vietnamese also resisted French colonizing efforts. With Japan's arrival during World War II, the communist Viet Minh laid credible claim to Vietnam's nationalist tradition, by resisting first the Japanese and then the French.

Even as it underestimated the strength of nationalism among Vietnam's communists, the United States overestimated the prospects for indigenous popular passion on behalf of South Vietnam's government. Ngo Dien Diem's corrupt, authoritarian, insular, and nepotistic regime may have appealed to minority Catholics and landowners, but it had much less appeal to majority Buddhists and South Vietnamese peasants. The revolving door of military dictators who succeeded Diem offered little better. The United States often appreciated the insufficiency of South Vietnam's political leadership, but the flawed imperatives of the "Domino Theory," NSC-68, and a vision of monolithic Communism impelled it ever forward.

Finally, both the military and its civilian policy makers sowed seeds of distrust that would eventually choke out the potential for sustained popular passion at home. Policy makers feared political debate over the Vietnam War and too long believed that limited

and gradually applied American power would compel the North Vietnamese to back down. Not wishing to lose Vietnam to communism and not wishing to risk his Great Society programs at home, the Johnson administration minimized debate about the war and gradually moved the United States into a large-scale ground commitment. Military leaders were also culpable in this deceit. As H. R. McMaster contends, “there was no reconciliation of McNamara’s intention to limit the American military effort sharply and the Chief’s assessment that the United States could not possibly win under such conditions.” Thus, McMaster contends that, for personal and institutional interests, “The Joint Chiefs of Staff became accomplices in the president’s deception and focused on a tactical task, killing the enemy.”²⁷ Having de-linked means from ends, the military eagerly trumpeted its battlefield successes, arguing that communist forces were growing progressively weaker during Westmoreland’s tenure. This blend of arrogance and deception would exact a terrible price after the Tet Offensive in 1968, highlighting the primacy of policy and the importance of integrity in public service.

Political constraints made the Vietnam War more difficult for the United States in the third portion of Clausewitz’s trinity, military operations. Viewing the war in conventional terms, Summers describes the army as an axe best used to cleave symmetrical formations of opposing enemy forces while striking at the source of communist strength and infiltration, North Vietnam, as well as sanctuaries in Cambodia and Laos. To Summers, American policy makers precluded military victory by failing to declare war, failing to mobilize the nation, and most importantly, by too long limiting ground conflict within the confines of South Vietnam. “While we will still need ‘deeds

of valor' and proficiency in logistics and tactics," Summers concludes, "we must insure that these skills are applied in pursuit of a sound strategy."²⁸

Summers correctly identifies the need for sound strategy and national unity during prolonged or demanding conflicts, but his rejection of limited war and over-emphasis on conventional operations wrongly dismissed the necessity and prospects for counterinsurgency operations. As Krepinevich argues, political constraints did not necessarily preclude American victory. Rather, organizational inertia led Westmoreland to approach the war in a decidedly conventional manner. Lacking an institutional memory of frontless, irregular conflicts, the army naturally reverted to more than fifty years of preceding conventional experience that included World War I, World War II, and the Korean War. Thus, the Army remained wedded to firepower and "big unit" operations, relegating population security and the battle for hearts and minds to the South Vietnamese, even as it trained their forces to adopt a conventional posture.²⁹

The Army developed better counterinsurgency capacity following Westmoreland's tenure, but this late military improvement could not overcome the now critical social and political factors, each of which were exacerbated by economic constraints. Lewis Sorley argues that General Creighton Abrams eventually defeated the Viet Cong by pursuing a "one war" strategy that combined smaller conventional operations with effective pacification initiatives designed to further population security and the campaign for South Vietnamese hearts and minds.³⁰ Some historians such as Richard Hunt and Guenther Lewy question not only the speed, but also the degree to which Abrams changed the Army's conduct of the war, but Abrams clearly achieved significant

progress in balancing America's approach to the war.³¹ Whether or not Abrams merely reacted to shifts in communist strategy, and whether or not he defeated the Viet Cong, he showed that the military can and must adapt successfully in wartime. Yet even an optimal military application – one sustained for years and devoid of all unnecessary firepower -- may have proven insufficient, given the social and political challenges described above.

Despite fresh tactical successes achieved through overwhelming firepower, American policy makers began to disengage from Vietnam following the 1968 Tet Offensive. Tet had proven a disaster for the Communists who sought a general uprising, but instead incurred grievous losses. Yet the offensive repudiated earlier optimistic appraisals and prolonged or wider warfare remained a non-starter. Reviewing the military prospects and considering the war's social, political, and economic costs, Johnson's new Secretary of Defense, Clark Clifford, "turned against the war" and encouraged advisors "organized and dedicated to changing Lyndon Johnson's mind."³² On 26 March 1968, most of the "Wise Men," an informal group of elder statesmen and advisors, most of whom had previously supported the war, generally agreed that America should begin to disengage from Vietnam because it no longer had the time, or political will, to accomplish what it set out to do.³³ Appraising popular support as leaders must, Johnson shunned further escalation.

As tallies of ammunition expended, dollars spent, and casualties incurred grew ever higher, American public and congressional support for the war waxed and waned throughout Nixon's subsequent tenure. Nevertheless, this support progressively declined

with disengagement and transfer of responsibility to South Vietnam until, with all American combat units withdrawn, Congress ended American commitments entirely, cutting off air support, logistical support, and even funding. Abandoned by its former patron, South Vietnam fell to conventional invasion in 1975.

Increasing financial costs correlated with decreasing public, congressional, and even administration support for a less than circumscribed war effort. Indications that higher taxes might be required had already fueled public dissatisfaction when in August 1967, unable to ignore, defer, or soften the mounting costs any longer, Johnson proposed a ten percent surtax to fund the war. Almost immediately, public opinion polls tilted into uncharted disfavor, with most Americans viewing the war itself as an error and few approving of Johnson's wartime leadership in any case.³⁴ Soon afterward the dollar plummeted on world exchanges during the gold crisis of March 1968, hemorrhaging American gold reserves while underscoring the war's true fiscal costs and, in turn, prompting a deep review of American strategy within administration circles. Dollar valuations reemerged as a significant concern in 1970 and America withdrew from the gold standard in 1973, the very year that its last combat units departed South Vietnam.³⁵

From each portion of Clausewitz's trinity, cascading failures compounded the scope and difficulty of the Vietnam War. Insufficient South Vietnamese nationalism plagued America's war effort, as did comparatively strong North Vietnamese nationalism, an increasingly divided American public, and fickle congressional support. The military suffered from its own failures to question deceitful policy and to embrace Abrams's "one war" approach sooner. Most importantly, however, America bled its national power on

behalf of less than vital national interests. This policy, formulated in ignorance, fear, arrogance and deceit, eventually proved less than compelling given the costs required to attain its ends. With these complications, the demands of the war soon exceeded American support.

In the Clausewitzian context, then, this first prospect of studying Allied unobserved firepower during the Vietnam War will serve as an important barometer with which to measure the changing efficacy of American military strategy and to test the contending schools of historical thought. Since political aims and concerns had to retain primacy, at least at the highest levels, the United States could not risk a wider war to ease its strategic constraints as advocated by “conventional war” historians such as Palmer and Summers. Instead, the United States pursued a strategy of attrition within South Vietnam, relying on conventional operations, tactics, and prodigious amounts of unobserved firepower to subdue its communist adversaries’ will and ability to fight. Yet as “hearts and minds” historians such as Krepinevich and Sorely insist, proper military strategy within the confines of South Vietnam instead called for significant firepower restraint, while unobserved firepower worked against the war effort, offering little chance of inflicting enemy casualties, but a greater likelihood of inflicting property damage or casualties that risked arousing resentment among the civilian population over time. Whether and to what degree cutbacks in unobserved fire signaled a change in military strategy are among the recurring questions involved in the debate over America’s prospects for victory in Vietnam.

Notes

1. Lt. Gen. Arthur S. Collins, Jr., Interview by Col. Chandler Robbins, III, Vol. II, 1981, pp. 364-365, Box 2, Arthur S. Collins, Jr. Papers, U.S. Army Military History Institute, Carlisle Barracks, PA (hereafter MHI, Carlisle).
2. Collins, Interview by Robbins, 364-367.
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CHAPTER II
AMERICAN ARTILLERY IN SOUTH VIETNAM: INNOVATION AND
FIREPOWER DOMINANCE*

The large-scale ground forces that the United States committed to the Vietnam War from 1965 to 1973 fought a war that was simultaneously conventional and a counterinsurgency. On one hand, the U.S. Army and U.S. Marine Corps battled the conventional combat power of regular North Vietnamese Army units or irregular Viet Cong who infiltrated and occasionally massed for combat throughout the frontless 1,200-mile length of South Vietnam. This alone demanded adaptation and tremendous effort – the tropical weather and variable terrain favored an elusive communist enemy who could often choose when and where to fight, withdrawing afterward to cross-border or hidden sanctuaries, whether in the coastal plains, the often rugged and heavily forested mountain highlands, or the expansive and inundated Mekong River delta. On the other hand, the Army and Marine Corps recognized and pursued a more fundamental, but less tangible, war to deny the enemy the largest sanctuary of all: South Vietnamese popular support. The methods and quantity of American artillery employment created unintended consequences, but they permitted the Army and Marine

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Corps to dominate tactical, conventional challenges in restrictive or otherwise unfavorable situations.

Army and Marine Corps artillery dominated conventional engagements during the Vietnam War by adapting tactics, techniques, and procedures and employing innovative weapons and ammunition that overcame the challenges of harsh terrain and bad weather to deliver tremendous volumes of firepower on, or at least near, the frequently elusive communist enemy. The conventional prowess of Army and Marine Corps artillery, employed so extensively that it risked inflicting unintended intangible losses, sprang from both modest technological innovation and impressive tactical adaptation in an environment of broader organizational and cultural rigidity.

Notwithstanding the American artillery's adaptation and innovation, it is worth mentioning that a plateau of scientific achievement, the hybrid nature of the war, and American organizational and cultural expectations virtually guaranteed that American artillery would approach Vietnam as it had previous wars. The basic methods and munitions for indirect fire support had changed little since World War II. The U.S. Air Force employed some electro-optical and even laser-guided bombs during the war, but artillerymen had no equivalent precision-guided munitions to lessen firepower expenditures on observed targets, nor did the absence of a well-organized conventional opponent permit artillerymen to park some or all of their howitzers and serve as infantry. Yet Americans also subscribed to the motto "Save Lives, Not Ammunition."¹ Accordingly, artillerymen focused on providing a lethal fire support umbrella that increased proportionally with the American commitment, providing all-weather,

mutually supporting fires to almost anywhere that American forces operated. When the United States deployed artillery battalions to Vietnam, it deployed firepower to keep soldiers and Marines alive.

As Robert H. Scales explains in his Vietnam-focused chapter of *Firepower in Limited War*, Army and Marine Corps artillery battalions in Vietnam served as the “workhorse” of a system in which “firepower in massive quantities” held “primacy over maneuver” in a manner that conformed to American organizational and cultural predilections. Eventually, up to 65 American artillery battalions served in Vietnam at the same time. This yielded a ratio of artillery to supported infantry somewhat lower than that of World War II, but the battalions expended much more ammunition to support their maneuver counterparts than during that earlier conflict. In fact, the Army and Marines fired a staggering twenty million artillery rounds in Vietnam.² Many historians have found in these numbers an “addiction to firepower” that led to unnecessary collateral damage and thereby jeopardized the concurrent struggle for South Vietnamese popular support, a subject considered later in this chapter.³ Whatever the verdict, it is clear that the artillery umbrella that the United States developed over its soldiers and Marines provided them with a level of firepower protection equal or comparable to that received by their twentieth century predecessors.

When the United States committed heavy ground forces to the Vietnam War in 1965, American artillerymen deployed with equipment and methods that had proven responsive and reliable in many industrialized armies during several decades of conventional war. Their predecessors had engaged targets beyond direct line of sight

since the beginning of the twentieth century, not long after the accurate, quick-firing French 75mm gun, Model M1897 designed by French Colonel Albert Deport, rendered direct fire weapons and methods obsolete. They likewise inherited a system of charts and methods, originally devised by German Colonel Georg Bruchmuller and Captain Erich Pulkowski. During World War I, these two officers developed procedures allowing accurate, predicted hits with artillery, abandoning the need for obvious spotting rounds and thereby increasing the lethality of sudden bombardments. American artillerists also pioneered the use of centralized fire direction before World War II, further increasing the lethality and responsiveness of artillery.⁴

The war in Vietnam posed a unique challenge that American artillerymen resolved through decentralized ingenuity – how to deliver responsive fires in any direction, perhaps at the same time. Preparing to fire in that manner led artillerymen to create dissimilar and overly complicated firing charts with the attendant risk of friendly casualties, either through delayed response or erroneous calculation of target location. The Gunnery Department of the United States Army Artillery and Missile School at Fort Sill, Oklahoma, found that by January 1967, artillerymen had developed “almost as many new methods [to solve the problem] as there were FDCs [Fire Direction Centers]” and that these charts and tools each looked “like a kaleidoscope.” Accordingly, as outlined in *Artillery Trends*, an unclassified professional journal for both Army and the Marine Corps artillerymen, the Artillery School instituted a new method that simplified the calculations by requiring “only one additional piece of equipment” – a revised protractor – to complement the system and methods first worked out decades earlier.⁵

Solutions to the firing chart problem proceeded unevenly during the first year of the war. Indeed, some units arrived in Vietnam with solutions already in hand while others lagged. Artillery battalions of the airmobile 1st Cavalry Division, for example, had worked out and “habitually” practiced their own solutions while maneuvering in the United States, beginning in 1964. Lieutenant Colonel Lloyd J. Picou, a student at the U.S. Army War College and a former commander of the 1st Cavalry Division Artillery in Vietnam, recalled that this preparation was “due to the nature of airmobile operations.” Artillerymen of the 1st Cavalry Division had already expected deployment deep within a hostile area, where they could expect to fire in any direction. When they arrived in Vietnam, their own charts were already configured “for all around firing,” while other artillery units with which they worked “had not received this training and initially were slow to react.”⁶

During the first year of the war, most soldiers and Marines also fought without artillery weapons optimized to fire in any direction. Light artillery battalions, typically operating with and in direct support of maneuver brigades, possessed the M101A1 howitzer. In the estimation of Major General David Ott, the Army’s senior artilleryman in 1973, this was “virtually the same 105-mm. howitzer that had been used to support U.S. forces since World War II.” It had advantages – it proved reliable, relatively inexpensive, easy to load, and had a high ground clearance when towed by a 2-1/2 ton truck. It was transportable by CH-47 (Chinook) helicopter. It had only a partial traverse capability, however, requiring its operators to lift and shift its stabilizing legs when they sought to fire outside of their traversing arc. This inability to fully traverse sometimes

meant delayed responsiveness – a flaw shared by all of its heavier, towed 155mm M114A1 and larger counterparts, whether airmobile or not. The Army’s self-propelled howitzers, such as the 105mm M108 and the 155mm M109, each of which entered service in 1962, could fully traverse but were road-bound and often irrelevant.⁷

During 1966, American artillerymen improvised a way to more quickly traverse the 155mm, towed M114A1 howitzers. At the prompting of U.S. Army Weapons Command, the men of Battery B, 8th Battalion, 6th Artillery, experimented with pedestals comprised of metal collars, torsion bars, and jacks underneath the M114A1’s point of balance when shifting trails. Having determined the point of balance by trial and error, they welded to it a metal collar, and then mounted the collar to a torsion bar attached to a firing jack. By supporting the weight of the howitzer this way, the men reduced its all-round traverse time to only nineteen seconds. Lieutenant Nathaniel W. Foster announced in *Artillery Trends* that “efficient employment of the system definitely allows for fire to be brought on any target involving a shift faster than all present Army howitzers with two possible exceptions: the M108 and the M109,” but he acknowledged that “key to the successful use of this equipment is proper prior preparation.” The possibility of imbalance, the often soggy terrain, and the great weight of the M114A1 rendered even this improvisation a less than optimal solution for mobile operations.⁸

Fortunately, the Pentagon already had been developing the light and mobile 105mm M102 as a replacement for the venerable M101A1 and these new howitzers began to reach Vietnam in early 1966. More expensive, but lighter than the M101A1 howitzer in service since World War II, the M102 traversed to all directions and weighed a mere 60

percent of its predecessor, allowing transport by even $\frac{3}{4}$ -ton vehicles carrying greater volumes of ammunition.⁹ Produced by Rock Island Arsenal, Illinois, the M102 had first entered service in 1964 and continued as the primary artillery weapon in airborne, air assault, and light infantry units until the Army began to field the M119A1 in 1989.¹⁰ Thus, the M102 proved to be an ideal complement for the revised firing charts and, together, these effectively solved the all-round traverse problem on the ground.

At once a significant innovation and a misnomer, the Army designated helicopter units as “aerial artillery” during the Vietnam era. At first it created and deployed Aerial Rocket Artillery (ARA), mounting dozens of 2.75-inch rockets to UH-1B or UH1-C (Huey) helicopters. These would orbit and directly attack any visible targets or flush the enemy from concealed positions, engaging those who attempted to escape.¹¹ The Army later renamed this ARA as aerial field artillery (AFA) when it mounted even more rockets to even faster AH1-G (Cobra) gunships.¹²

Yet Army and Marine Corps helicopters did not fire beyond line of sight in Vietnam. Aerial artillery was exceptionally mobile and able to traverse with ease in any direction, but while it dramatically increased firepower domination of a battlefield under good weather conditions, it really constituted a direct fire weapon system like a battle tank’s main gun or an infantryman’s rifle. Aerial artillery could be requested over the radio like any other artillery, this was true.¹³ Nevertheless, this flexibility did not change the fundamental nature of the support that it provided. The Army’s willingness to accept the misnomer of aerial artillery during the Vietnam era highlighted the persistent tactical difficulty of harsh terrain and an elusive enemy.

Given the typically short duration of engagements, the lack of clearly definable frontlines, and the vast area of operations, individual artillery batteries of six or eight howitzers became habitually associated with particular maneuver battalions of several hundred men while preserving the ability to support similar, neighboring teams. Under this expansive umbrella of coverage, any point in an area of operations may have been protected by the firepower of at least one artillery battery of six howitzers and often more. Moreover, each artillery battery was typically located with the headquarters of its respective maneuver battalion. Light, airmobile artillery of units such as the 1st Cavalry Division could easily displace and accompany maneuver formations on deep attacks. On the other hand, some batteries dedicated a few guns to base defense and others to tactical employment, but most artillery fired from fixed and relatively permanent positions on outposts known as firebases, usually ringed by barbed wire and other defenses.¹⁴

If all-round traverse capability was important outside the wire, it was even more imperative at the firebases themselves. The typical firebase occupied by 105mm and 155mm batteries resembled a five-pointed star, with the six howitzers of the battery placed one at each point and the last in the center. Infantry provided a tight perimeter around the guns, reinforced by barbed wire, bunkers, claymore mines, trip flares, and as many mortars and direct-fire weapons as possible. The center howitzer could provide illumination at night or it could augment the fires in any direction, but it typically could not provide its own direct fire against an attacking enemy. Heavier 175mm and 8-inch guns typically occupied diamond-shaped firebases. Whatever their formation, the

howitzers at each point could traverse to support one another, with the attendant delays, but they could only deliver direct fire within their respective range fans.¹⁵

Improved ammunition dramatically increased the lethality of artillery when employed in direct fire defense of firebases. XM546 antipersonnel, or “Beehive,” rounds were on hand at nearly every artillery emplacement and each contained more than 8,000 flechettes, or thin metal darts, that shredded flesh, clothing, personal equipment, and even light metal when fired from a howitzer at point-blank range. When illumination revealed enemy in or near the barbed wire perimeter of a firebase, a single Beehive ammunition could rip a swath through enemy and stop the attack, as first happened on 7 June 1966 along the firebase perimeter of Battery A, 2nd Battalion, 320th Artillery, near Tou Morong in Binh Thuan Province.¹⁶

More technical ingenuity augmented the artillery’s potential contribution to firebase defense. Lieutenant Colonel Robert Dean, commander of the 1st Battalion, 8th Artillery, developed a technique called “Killer Junior,” permitting artillerymen to set mechanical time fuses to detonate projectiles only 30 feet above the ground at distances between 200 and 1,000 meters. Whereas the enemy could sometimes avoid Beehive effects by crawling or lying down, they could rarely escape “Killer Junior.”¹⁷ Perfected by Dean’s “Killer” or “Automatic Eighth” battalion in late 1967, not long after he had assumed command, this simple technical innovation was first employed near Chu Chi in Tay Ninh Province and, together with the advent of Beehive ammunition, rendered American firebases much more resistant to ground assault.¹⁸

The lethality of artillery-enforced firebase defenses prompted the American military to emplace some of them as deliberate, firepower deathtraps for communist forces. In April 1969 the Army constructed Fire Support Base Crook along the Cambodian border in Tay Ninh Province, in the middle of the enemy's 9th Division area, hoping to lure that elusive enemy into a direct engagement against the full force of American firepower. Built in one day, the firebase appeared to promise an easy target for soldiers of the NVA's 9th Division, who attacked it for several days in June. Behind its concertina, sandbags, and earthworks, however, this 80-yard wide position concealed tremendous killing power. Artillery and supporting helicopters and aircraft obliterated the enemy attack and, on the second night, at least 323 enemy died without the loss of a single American soldier, although three were wounded. The Army confirmed that "the volume of automatic weapons fire and bursting munitions" had been "so great" that most of the enemy had been "cut down in the open." Fire Support Base Crook owed its lopsided defensive victory to fire support planning and to prodigious "Killer Junior" by its six howitzers.¹⁹

American artillery also contributed substantially to base camp defense. Much larger than a battalion-size firebase, a base camp contained brigade or higher headquarters and an array of supporting units that provided supply, maintenance, medical, and other specialized services for an area of operations. Base camp perimeters varied, but were typically so long that even several batteries of artillery could not provide a ring of direct fire capability. Instead, each artillery battery had its own position area inside the wire and defended the base camp by responding to calls from patrols and sentries or to the

observations of searchlight and radar operators. Radars like the AN/MPQ-4 counter-mortar radar and the AN/TPS-25 ground surveillance radar tended to deliver their enhanced protection to base camps as they were organic to artillery units higher than battery level.²⁰

The advent of unattended ground sensors also increased the artillery's lethality in the defense. As Robert Scales concisely explains, "These small, battery powered devices, emplaced by hand or delivered by air and artillery, could locate the enemy with great accuracy and timeliness." Indeed, when these sensors detected seismic, magnetic, or acoustic signatures of units or individuals, they broadcast radio alerts directly to an artillery battalion's Fire Direction Center [FDC] or other monitoring location for relay. On 24 September 1968, the first such sensor mission engaged infiltrating communist forces near Tay Ninh along with Cambodian border, with confirmed battle damage of seven enemy soldiers killed in action and many others wounded. They also played an important role in the 77-day defense of the huge Marine base at Khe Sanh in Quang Tri Province, where more than 150,000 artillery rounds and 110,000 tons of bombs decisively prevented the communist enemy from annihilating the American outpost.²¹ Sensor missions approximated observation by artillerymen – they delivered, in artillery parlance, acquired or otherwise observed targets. When precisely and skillfully emplaced and monitored, such sensors traded ammunition for the lives of American soldiers and Marines.

The communist insurgency in South Vietnam's restrictive and inundated Mekong Delta inspired artillerymen to their most impressive tactical and technical innovations

during the Vietnam War. The delta's road network had proven limited and vulnerable to ambush, numerous rivers and canals dissected dense vegetation, and inundated rice paddies and marshlands were unsuitable as artillery platforms. The U.S. Navy had tried to strangle communist infiltration by patrols along the delta's coast and along its larger rivers, but the Viet Cong had subsequently shifted their traffic to smaller waterways.²² Accordingly, General William C. Westmoreland, Commander of the Military Assistance Command, Vietnam (MACV), seized upon an idea proposed by a naval subordinate, Captain David F. Welch. In late 1966, he arranged for the 2nd Brigade of the Army's 9th Infantry Division to form a joint Mobile Riverine Force (MRF) with the Navy for the first time since the American Civil War.²³ Seeking to help find, fix, and destroy the enemy with overwhelming firepower, MRF artillerymen avoided poor terrain by installing howitzers on landing craft and specially constructed artillery barges. As Ott later explained, "Without these new developments ... U.S. maneuver force activities in the delta area would have been seriously curtailed or often would have had to take place out of range of friendly field artillery."²⁴ The advent of riverine artillery carried firepower-intensive warfare into the last corner of South Vietnam and it merits consideration in greater detail.

Two artillery battalions provided the bulk of riverine artillery support during the war. The 3rd Battalion, 34th Artillery (3/34 Artillery) arrived in December 1966 and supported the MRF from its inception to its deactivation in July 1969. This battalion served as the only pure riverine artillery battalion, employing its three batteries of six 105mm towed howitzers primarily from barges and immediately redeploying to the

United States upon MRF deactivation.²⁵ The 2nd Battalion, 4th Artillery (2/4 Artillery) arrived in January 1967 and likewise supported the MRF through deactivation. The 2/4 Artillery then remained in Vietnam, supporting the 25th Infantry Division, until October 1970. Also possessing eighteen 105mm towed howitzers, it moved them by helicopter instead, rendering it a more versatile force and contributing to its longer stay in-country.²⁶ Other units provided limited and sporadic artillery support to the MRF on a case-by-case basis.

MRF planners originally considered the employment of both 105mm and 155mm towed howitzers in the delta, but immediately discounted the latter's extensive use. Both howitzers were ubiquitous in Vietnam and each possessed significant advantages. Light and responsive, the 105mm M102 howitzers possessed omni-directional firing ability – a valuable attribute in a war without fronts. They could also emplace quickly and maintain a high rate of fire. Their larger cousin, the 155mm, delivered a massive punch but could not transverse fully. Although each howitzer rested atop a base plate and employed a recuperating mechanism to partially dampen its recoil forces, the 155mm howitzer also partially dissipated recoil through spades affixed to its trail legs. These spades grabbed the earth solidly after the first round fired, stabilizing the howitzer, but rendering bold adjustments difficult. The 155mm howitzer's excessive weight and recoil therefore proved particularly ill-suited for the Mekong's saturated soil conditions. Recognizing the problem in its January 1967 *Riverine Operations: Interim Training Text*, the Army's Combat Developments Command (CDC) noted that "Support by

medium [155mm] and heavier artillery will be limited initially to that which can be fired from the land base or, possibly, from roads leading from the land base.”²⁷

Although they quickly recognized the 155mm’s unsuitability for riverine operations, early MRF planners still maintained an overly optimistic appraisal of Mekong Delta mobility. They envisioned naval Landing Craft Mechanized (LCMs) transporting both 105mm howitzers and the 2-1/2 ton trucks or M113 armored personnel carriers used to tow them. Upon reaching the area of operations, the vehicles would tow the howitzers to shore-based firing positions. Of the two vehicles, the planners considered the heavier, but tracked, M113 most promising for the task.²⁸

Riverine troopers soon found it difficult to select shore-based firing positions. Riverbanks in the delta often possessed prohibitively steep slopes, limiting the number of landing sites available. Even when the vehicles could dismount, the soft, saturated soil often provided inadequate support for even the smaller 105mm howitzers. The howitzers frequently shifted under their own weight and recoil, jarring the accuracy of their fire and endangering friendly troops. Occasional patches of elevated or otherwise dry ground proved prohibitive as well, since Vietnamese villages had long since occupied these sites.²⁹ Innovation was imperative or the troopers might face their enemy without American artillery support.

In December 1966, before the arrival of 2/4 Artillery and 3/34 Artillery, artillerymen from the 1st Battalion, 7th Artillery (1/7 Artillery) developed an initial workaround for riverine artillery employment. They successfully devised a method to fire 105mm howitzers directly from landing craft.³⁰ Indeed, with its length, high-walls, and

retractable forward bow ramp, the Navy's ubiquitous LCM-6 seemed to offer an ideal solution. Using discarded wood from leftover ammunition packaging, innovative crewmen constructed raised firing platforms inside the LCM-6. They installed wooden joists and spacers to raise the howitzer's panoramic telescope just above the vessel's wall, so that the gunners could observe shore-based aiming posts. Sandbags and additional wooden supports transferred the howitzer's recoil to the landing craft's frame. Dropping the bow door, the howitzer was able to fire once the landing craft had beached and anchored securely to the bank. Unlike barges or aerial platforms, the high walls of the LCM-6 restricted the howitzer to a narrow field of fire. These walls offered excellent small arms protection, however, and the LCM-6 could rotate under its own power when necessary. The LCM-6 also provided convenient storage for up to 450 rounds of ammunition, but the howitzer crew still required replenishment during extended operations.³¹ The *Interim Training Text* codified this solution.³²

Already enthusiasts of helicopter warfare, Army innovators quickly provided riverine units with an aerially delivered "paddy" platform for the 105mm howitzer. Resembling a square table 22 feet long on each side, the platform's legs consisted of adjustable pilings mounted atop wide footpads. A CH-47 Chinook could transport and emplace one platform, after which a second Chinook would deposit the 105mm howitzer, ammunition, and crew. A CH-53 Sky Crane could transport the entire firing position at one time.³³ Helicopter emplacement and the platform's adjustable legs allowed riverine artillery batteries to occupy previously restricted areas inundated by up to five feet of water. Riverine planners valued this flexibility when establishing mutually supportive

fire bases.³⁴ Artillerymen identified a significant drawback, however, noting that “The ‘paddy platform’ represents an exposed, silhouetted target to enemy gunners.”³⁵

Riverine artillerymen next tested P-1 naval pontoons as an enhanced solution to their employment dilemma. Major Daniel P. Charlton and Captain John A. Beiler, both of 3/34, developed a creative use for these buoyant, flat-surfaced containers, turning them into mobile artillery platforms. Each pontoon drew a shallow draft and offered thirty-five square feet of deck space. In accordance with Charlton and Beiler’s vision, the MRF joined numerous pontoons into barges 90 feet long and 28 feet wide. They added armor plating to the sides, constructed living quarters in the center, and placed ammunition storage areas on each end. Free of obstructions, the barges offered ample firing space for one howitzer on each end. MRF artillerymen welded their howitzer base plates to the deck, providing sturdy and fully traversable firing platforms once gun crews lashed their barge to the riverbank.³⁶ Army Transportation Corps LCM-8s towed the barges into position and sometimes served as fire direction or command centers. The LCM-8 possessed much greater power and cargo capacity than the Navy’s LCM-6. Army LCM-8s served as logistical support vessels for the MRF, ferrying large quantities of ammunition and other supplies during operations.³⁷

Riverine troopers also experimented with firing M109 self-propelled howitzers from the LCM-6. The fully armored and tracked M109 required no special modification to the landing craft since its turret already protruded above the walls. The 155mm M109 simply rolled into the craft backward and, with the vessel moored securely to the bank, rotated its turret in the proper direction and fired. Like the 105mm howitzer, the M109

could engage in direct fire by simply dropping the bow doors. Unlike the 105mm, the M109 had the added advantage of fully armored protection in this role. As with other wheeled and tracked vehicles, limited possibilities for offshore movement precluded the M109 from most delta service.³⁸ Specially mounted 105mm howitzers proved sufficient.

Like other infantry units, MRF soldiers supplemented their artillery with organic mortars and other fire support. Some of the MRF's mortars were mounted on naval craft, providing greater responsiveness and ammunition capacity. Converted landing craft known as "Monitors," or "battleships," featured a centrally mounted 81mm mortar, two M118 grenade launchers, four .30-caliber machine guns, two .50-caliber machine guns, and a forward turret containing one 40mm cannon.³⁹ The ship's mortars functioned in either the direct or indirect fire mode, augmenting their effectiveness in combat. MRF troopers also carried smaller, 4.2mm mortars to supplement their firepower.⁴⁰ Naval gunfire provided additional support on occasional missions near the coast. MRF units also relied on air strikes and on the improperly named Aerial Rocket Artillery (ARA). Mortar firepower paled in comparison to that delivered by 105mm or 155mm howitzers, however, and MRF infantrymen continued to value their riverine artillery support.

To maximize artillery coverage during search and destroy operations, the MRF sought to preposition its riverine artillery units like other, land-based artillery on the offensive. Riverine artillery would normally establish two or three firing positions along the river bank at night, each ready to fire by daybreak and each capable of supporting the

other as well larger, mobile riverine base and its patrols ashore.⁴¹ Riverine batteries required additional emplacement time, however, as their howitzers needed to establish secure moorings before acquiring accurate location data. The *Interim Training Text* acknowledged and standardized the new tactical considerations for riverine artillery.⁴²

Throughout South Vietnam, Army and Marine Corps units expected to call in firepower when they had an enemy cornered. Captain William W. Witt extolled the virtues of lavishly expending artillery ammunition in 1968. In a special edition of *Infantry* magazine, he described a “hammer and anvil” operation known as a “fire flush.” In this operation “a blocking force encircles an area and awaits the enemy to exit as a “hunting force” pursues him and “he is subjected to intense, saturation-type, indirect fire.” Witt claimed that “The fire flush has been used successfully many times in Vietnam.”⁴³ Indeed, in 1969, commanders still overwhelmingly and justifiably lauded the practice of “piling on” artillery and air-delivered firepower to kill the enemy once he had been located.⁴⁴

With the advent of riverine artillery, MRF operations resembled the firepower-intensive operations of their land-based counterparts. Labeling their search and destroy missions “strike operations,” riverine troopers simply used a different mode of transport. Indeed, according to one authority, “Strike operations involve sealing off a major river by Navy patrol forces and moving up a subsidiary stream in order to form natural blocks with contiguous patrols. Troops are then beached to move against the blocking forces or against the opposite shore, thus entrapping enemy forces in the area.”⁴⁵ During Operation HOPTAC XVI in June 1967, for example, MRF troopers combined a hammer

and anvil maneuver with “air and artillery supporting fires” until the enemy “had to remain in his positions or perish in any attempt to withdraw.”⁴⁶ As the fire support section of the *Interim Training Text* explained, “Normal [artillery] tactics do not change” in the riverine environment.⁴⁷ Like other search and destroy operations, helicopters conducted reconnaissance and committed the reserves.⁴⁸ Unlike land-based operations, however, MRF operations typically lasted between two and four days because the continuously wet conditions threatened soldiers with trench foot after remaining in the soggy conditions for an extended time.⁴⁹

Conceivably, employment and logistical challenges might have forced MRF units to adopt a less artillery-intensive approach to search and destroy operations. Without landing craft, barges, and aerially delivered platforms to support their howitzers, riverine soldiers might have had to close with the enemy themselves or shy away from attrition operations altogether. Even with the aid of special firing platforms, riverine artillery batteries might have found ammunition resupply difficult after expending their initial, or basic, load. These situations would have forced them to use ammunition more efficiently.

Riverine units possessed abundant logistical assets, however, and used them to support artillery intensive search and destroy operations. As the MRF’s Army component commander explained, “In Vietnam, logistical support for riverine operations is much simpler than for normal land operations.”⁵⁰ Throughout each operation, naval landing craft plied the waters between the MRF and its base camp, bringing forward supplies of every sort, including copious amounts of artillery ammunition. Some

participants observed that “inland waterways resemble roads or railways and can be considered simply as lines of communication.”⁵¹ Since the artillery barges and LCMs always remained on these waterborne highways, their support vessels avoided cross-country travel and transshipment, pulling alongside the stationary howitzers themselves. Riverine units suffered fewer ammunition constraints than their land-based counterparts. They had access to firepower and used it to protect American soldiers as well as to inflict casualties upon the enemy.

Whether pursuing the enemy in airmobile, riverine, or land-based operations, or simply defending firebases and basecamps, American artillery units also employed massive ammunition expenditures to protect soldiers and Marines against unseen targets, but with few quantifiable results. In July 1967, a Pentagon study found that a staggering 65 percent of all American bombs and artillery had struck “places where the enemy might be (e.g. free strike zones, suspected routes of VC movement, reported VC encampments) but usually without reliable information that he is there.” Unobserved fire had constituted 85 percent of Army and 73 percent of Marine Corps artillery ammunition expenditures, most of it as H&I. Drawing from the 1st Cavalry, the 1st Infantry, the 25th Infantry, and the 101st Airborne divisions, its data underscored the prevalence of unobserved fire throughout zones one, two, and three of the four Corps Tactical Zones (CTZs) in Vietnam.⁵² Both the 9th Infantry Division and the Mobile Riverine Force proved no exception in Zone IV. Regarding battle damage, the study found that “The evidence is too fragmentary,” but “What little hard evidence there is consistent with conclusion that such strikes may have killed as few as 50 to 100

VC/NVA in 1966.”⁵³ Indeed, artillerymen did not expect to inflict significant enemy casualties with unobserved fire, rather they hoped to diminish the enemy’s morale and to hinder his freedom of movement.

Unlike artillery fired directly at an opponent, unlike the “fire flush” of a cornered enemy, and unlike “piling on” firepower to minimize friendly casualties, such unobserved artillery missions posed unnecessary risks to the concurrent, but intangible, struggle for South Vietnamese popular support. As the July 1967 Pentagon study explained, the furtive communist enemy benefited logistically from the sheer volume of munitions employed, thereby increasing their own capacity to influence the struggle. The study had found that “The VC get most of the materials they require for mines and booby traps from dud bombs, dud artillery shells, and captured ordnance.” Indeed, “the 27,000 tons of dud bombs and shells each year from such attacks provide the enemy with more than enough material to use in mines and booby traps.” Furthermore, the study cautioned, these unexploded munitions sometimes killed unfortunate Vietnamese civilians, whose friends and families could resent the firepower-intensive American effort even more.⁵⁴

American officers occasionally recognized unobserved artillery fire as a counterproductive waste of resources, but it continued throughout most of the war. In a particularly insightful and critical observation, Major General Arthur S. Collins, Jr., commander of the 4th Infantry Division in 1966, asked his officers to “Consider the troops, trucks, and fuel that we use.... Then if you carry this back to the ships,” he continued, “the number of rounds that have to be loaded and unloaded, have to be stored

and protected, and even go back to the manufacturing, think what a waste this is of our national resources.” Collins found this appalling since “none of it is observed and you have no indication of any effect at all on the enemy.”⁵⁵ Taking significant action, he reduced unobserved fire, citing not only the need for “economical use of resources”, but also the danger for “loss of life or damage to [Vietnamese civilian] property.”⁵⁶ On Collins’s first night with his men, he had told them that with unobserved artillery fire, “some Caribou are wounded or killed and probably some Vietnamese people are wounded or killed. We have no way of knowing and we’re not going to find out and it doesn’t help our image.”⁵⁷ To Robert Scales, the “nightly discomfort” and danger posed by such needless unobserved fire did cause “anti-American feeling” to grow among the South Vietnamese.⁵⁸ Collins’ restraint proved exceptional, however, and unobserved fire persisted in other Zones at decreasing levels until 1970, when budget cutbacks forced the Army and Marines to virtually eliminate this practice.⁵⁹

Thus, the Army and Marine Corps had overcome diverse challenges to dominate most conventional engagements with firepower so thoroughly that employing artillery in that way risked unnecessary loss of South Vietnamese popular support throughout much of the war. Harsh terrain, bad weather, and an elusive enemy might have invited a different approach, but innovative artillerymen found ways to deliver a firepower umbrella consistent with previous twentieth century conflicts and the American expectation to “Save Lives, Not Ammunition.” From defending bases to piling firepower on a cornered enemy, their firepower against confirmed enemy locations clearly preserved the lives of soldiers and Marines, but their unobserved firepower

invited popular resentment in a struggle that was not only a conventional war, but also a counterinsurgency. To deliver this firepower, artillerymen had developed innovations of enduring value such as omni-directional traverse, Beehive ammunition, “Killer Junior,” sensor-acquired missions, and helicopter-based firepower. They also created the first, but short-lived, riverine artillery force.

Yet whether they realized it or not, the sheer volume of their unobserved artillery firepower built a cautionary monument for future students of counterinsurgency to consider. As it evolved during the Vietnam War, American artillery did not significantly change warfare, but it did preserve a firepower-intensive approach consistent with earlier, more conventional conflicts.

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CHAPTER III

INHERITING AN INTER-SERVICE FAITH IN UNOBSERVED FIREPOWER*

During the Vietnam War, the Army and Marine Corps fired a staggering amount of artillery ammunition, most of it at unobserved targets. Up to sixty-five American artillery battalions served in Vietnam at the same time and, attempting to defeat both conventional and irregular communist opponents, they expended nearly twenty million artillery rounds. The typical American maneuver battalion in South Vietnam received more artillery support than its counterparts had during World War II.¹ Yet a surprisingly large percentage of this support went unobserved. The Army fired nearly 85 percent of its artillery ammunition unobserved during the first two years of America's large-scale ground commitment from 1965-1967.² The Marine Corps registered similar figures in South Vietnam's northernmost provinces. All of this suggested a strong and relatively uniform, inter-service faith in conventional firepower early in the war.

To understand why the Army and Marine Corps at first relied so heavily on unobserved fire in Vietnam, it is necessary to examine how their experiences and doctrine had previously developed. From their adoption of the accurate, quick-firing French 75mm Gun, Model M1897 before World War I until the first Marine artillery rolled ashore at Da Nang, South Vietnam, in March 1968, Army and Marine Corps

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artillerymen emulated their counterparts in other western nations, employing considerable amounts of unobserved artillery fire during the twentieth century wars in which they participated. They carried this well-ingrained practice into Vietnam, despite its hybrid, simultaneously conventional and counterinsurgent nature.

The advent of the French 75mm Gun, Model M1897 at the end of the nineteenth century marked a technological revolution that rendered previous artillery obsolete. Multiple technical innovations allowed this new, rapid-fire weapon to accurately deliver ten times more firepower than traditional, direct-fire artillery. The French tried to guard this new technology, first designed by Colonel Albert Deport at the Bourges and Puteaux arsenals in France, but most western nations – including the United States – soon began to manufacture their own.³

In 1905, a young and gifted U.S. Army Staff College instructor, Captain Oliver L. Spaulding, Jr., of the Army Artillery Corps explained to his students at Fort Leavenworth, Kansas, how the Army's new "rapid-firer" guns promoted indirect, even unobserved, fire. Although Spaulding had been a student the previous year and had only received his commission in 1898, his students were fortunate. Spaulding's father had been both a Brigadier General of U.S. Volunteers during the American Civil War and later a Michigan Congressman. Captain Spaulding eventually became an Assistant Commandant of the Field Artillery School, an Army War College Instructor, a Professor of Military Science, and a Brigadier General in his own right before becoming a rather prolific military historian. Spaulding had naturally developed keen perceptions of

contemporary artillery developments. By sharing them in his numerous Staff College lectures, he was already informing Army artillery doctrine.⁴

Spaulding explained that the crews servicing the new guns needed only to depress a single lever to open the new howitzer's breechblock, rather than rotating it, pulling it out, and swinging it open in three discrete actions as they had before. Independent recoil systems meant that crews no longer needed to roll their guns back into position after each round. Traversing mechanisms meant that crews no longer needed to lift and shift gun trails to aim their weapons. Finally, unitary ammunition meant that crews no longer needed to separately load shells, propellant, and primers. Collectively, these improvements meant that the new guns would not only fire much faster than their predecessors, but also that "training upon a target invisible to the gunner," which was so "difficult and inaccurate" before, now became "as easy and accurate as direct aiming."⁵

As Spaulding knew, artillerymen needed education to embrace the possibilities of indirect fire. Siege artillery had fired beyond line of sight for years, but its ability to damage part of a very large target, like a city, generally compensated for its lack of accuracy. Field artillery, on the other hand, had fought "in the line" with the infantry and cavalry since its inception and had directly engaged its opponents. The new "rapid-firers" could deliver effective firepower near a discrete target, even from behind an intervening hill, but many artillerymen clung to the line and attributed cowardice to indirect fire. Other artillerymen had dismissed the new indirect fire concept, believing that time consumed by intricate, preparatory calculations would simply allow the enemy to escape.⁶

Artillerymen had, however, just witnessed the first significant, wartime employment of indirect fire during the Russo-Japanese War of 1904-1905. U.S. Army Captain Tiemann Horn offered keen insights. Like Spaulding, but a few years older, Horn's family also possessed a heritage of wartime service – his great-grandfather had served as a captain of New York State Artillery during the War of 1812.⁷ He, too, would attain the rank of Brigadier General, even serving as interim commander of the 7th Infantry Division during World War I.⁸ Graduated from the U.S. Military Academy in June 1891, Horn had been commissioned as a second lieutenant of cavalry, but successfully transferred to the field artillery in December 1891.⁹

Horn explained in the November-December 1908 volume of the *Journal of the United States Artillery* that "The first indirect laying used by the Russians came in the Battle of Tahichao, in July, 1904. Its efficiency was at once recognized, and its adoption ordered; in fact, the inauguration of their indirect firing was accompanied by the defeat of 252 Japanese guns by 40 Russian." More importantly, he continued, "The ammunition supply of the two armies was a contrast, the Japanese kept moving forward and thus made their artillery projectile supply a difficult matter, while the Russians, falling back upon the trains, had the opposite experience." At the Battle of Liao Yang alone, the Russians fired 116,000 rounds and their positions resembled "dumping grounds for scrap iron...."¹⁰

American observers in the Russo-Japanese War reported that the Russians had simply wasted much of their available ammunition. To Captain John F. Morrison, who observed both the Second Japanese Army near Haicheng and the Third Japanese Army

near Port Arthur, it was “exceedingly doubtful if the effect [of Russian ammunition consumption] was commensurate with the cost.”¹¹ Having observed the First Japanese Army near Mukden, Lieutenant Colonel Edward J. McClelland likewise reported that Russian artillery frequently wasted ammunition by firing without observing effects and that they “often expended ammunition uselessly in searching the hills.”¹²

Incurring shorter supply lines as they recoiled from the Japanese and possessing the new, rapid firing guns, the Russians indulged in financially expensive unobserved artillery fire with little effect. William Neuffer, a German officer considering the changes that the French 75mm and its cousins had wrought on warfare, explained that the desultory artillery expenditures of the earlier Boer War had mattered little, while “with the Russians ... a great distinction must be drawn between expenditure and waste.” The Russians had fired up to 500 rounds per gun per day, often to simply harass the enemy, while the Japanese were “more economical” and rarely exceeded 200 rounds per gun. The difference was due, in Neuffer’s opinion, to “the new rapid fire pieces” that the Russians possessed and their “relative facility for the resupply of ammunition.”¹³ Paraphrasing Colonel Fritz Gertsch, a Swiss observer who in 1907 and 1910 published a two-volume memoir of the Russo-Japanese War, Neuffer emphasized that the Russians did this because, they “knew with certainty that there would always be a new supply of cartridges. There is nothing astonishing in their having fired so badly.”¹⁴ Indeed, Gertsch observed, “such a disregard of ammunition seem[ed] to be a sin (trespass)” because it was so wasteful.¹⁵ To Neuffer, “it would seem that, in a future war, we must

expect a considerably increased employment of artillery ammunition.... But first, we should strive to teach our officers to know how to be economical with ammunition."¹⁶

In the decade between the Russo-Japanese War and World War I, American artillerymen also equated unobserved fire with indiscipline and waste. Both Neuffer and Horn advocated ammunition economy when considering the Russian example. To Captain Horn in particular, "The disadvantage of wasting ammunition ... was conclusively shown, and in the absence of definite information as to target, it should not be undertaken."¹⁷ Horn did not disparage suppressive or preparatory fire, for example, since it was based on definite information and its object was "not only to destroy and kill, but principally to keep the enemy off his firing line, or demoralize the efficiency of his fire against our advancing lines." Nevertheless, Horn concluded, "the whole strength of the artillery lies in its fire, our modern gun is a quick firer, and tons of ammunition can be expended in a very short time, but it is only the hits that count."¹⁸ As late as 1912, Horn argued in a paper presented to the U.S. Army Staff College at Fort Leavenworth, subsequently published in *The Field Artillery Journal*, that "the field artillery avoids firing at objectives of small importance, and practices economy of ammunition." Furthermore, he contended, "It does not expend ammunition against ravines, roads, woods, villages, etc., except in cases where it is positively known that they are occupied by an enemy who, if left undisturbed, would produce a material effect upon the combat."¹⁹

While the United States remained neutral during the first years of World War I, the views of officers like Spaulding and Horn held sway, but when America sided with

the Allies on 6 April 1917, the prospect of American operations on the Western Front impelled American artillerymen to consider European practices. In 1917, the staff of the U.S. Army War College reprinted and distributed a British artillery manual that called for maximizing the enemy's "moral loss" by "denying to the enemy the arrival of reliefs, reinforcements, ammunition, and supplies of all kinds." These missions targeted "communication trenches ... and other approaches that are hidden from view" during the day and "communication trenches, tracks, roads, cooking places, and so on" during the night. The British even found poison gas particularly effective in artillery missions against wooded and low-lying areas, especially at night, since "fear" would compel enemy forces to encumber themselves with protective equipment.²⁰

French combat experience influenced American artillerymen even more directly. In July 1917, the U.S. Army's School of Fire for Field Artillery at Fort Sill, Oklahoma, reopened after being closed for one year during the Mexican border crisis. One month later it welcomed a small liaison mission of French artillerymen, each a combat veteran of the Western Front, to help prepare young artillerymen for imminent deployment. Led by Clement Durette, a Major of French Artillery, this team provided "valuable" assistance in the estimation of the school's new commandant, Colonel William J. Snow.²¹

The Field Artillery Journal, serving both Fort Sill and artillerymen throughout the Army, published a paper written by Durette's counterpart, Major Jacques G. Legrand, who served as an executive member of the French Mission at American General Headquarters throughout U.S. participation in the war. Ultimately commended by the

United States for helping organize, train, and equip American artillery on the Western Front, Legrand explained in his article that “Harassing fire is generally executed by a single gun firing at irregular intervals. It is intended to hinder the movement of supplies for [the] enemy’s troops, and it is directed on the most frequently used paths, roads, and tracks.” He added that “When the circumstances permit, it will be executed by gas shells.”²² Separately, a French field manual translated and reprinted by the Army War College in 1917 likewise declared that “Harassing fire is for the purpose of embarrassing the movements of enemy troops and supplies.” The French directed this fire “on routes and trails traveled by reliefs and supplies, on railways ... on halting places used in the distribution of supplies; and on working parties.” But they fired no more than a few rounds per mission and executed them “at different hours of the day or night.”²³ The French also recognized that “Certain gas shells give incontestable results on sheltered regions, such as ravines and woods.”²⁴

The contrast between Legrand’s concepts and the views previously advanced by Spaulding and Horn reflected a persistent wartime debate over the relative merits of observed versus unobserved indirect fire. Boyd L. Dastrup, Field Artillery Branch Historian of the U.S. Army Field Artillery School at Fort Sill, Oklahoma, highlights that Spaulding, Snow, and most other officers at Fort Sill continued to give “little attention to bombarding the rear area to disrupt command and control, logistics, or reserve formations even though [European-style] indirect fire would permit engaging such deep targets.” General John J. Pershing, Commander of the American Expeditionary Force [AEF] during World War I, and Brigadier General Lesley J. McNair, the AEF’s senior

artilleryman, both criticized the European practice of unobserved indirect firing because they thought that it was too rigid and rarely engaged obstacles that blocked the infantry's advance. Nevertheless, AEF artillery schools in France taught such unobserved "map fire" techniques based on European experience.²⁵

The relative merits of "deep" or "map fire" aside, when the United States joined the Allied side in World War I in 1917, Americans began a decades-long practice of unobserved harassing fire that persisted into the Vietnam War. Supporting the 2nd Division's defense of Chateau Thierry, one of the first major engagements by the American Expeditionary Force, the 2nd Field Artillery Brigade "put down over the whole enemy front" an "extremely heavy harassing fire" intended to "break up hostile concentrations." The 2nd Field Artillery Brigade reported that "With an abundant supply of ammunition a very heavy harassing and interdiction fire by our guns was maintained on the enemy at all times."²⁶ Likewise, an American staff officer who had participated in the Meuse-Argonne Offensive in late 1918 reported in *The Field Artillery Journal* that the Second Division had been continually "harassing" German organizations and assembly areas with intermittent high explosive rounds and poison gas, while "interdicting" their rearward lines of communication with long-range artillery fire.²⁷ Like the Russians in 1904-1905 and like other belligerents of World War I, when the United States had plenty of ammunition, it expended it freely – if only to inflict fear and harassment upon the enemy.

Even in a purely conventional environment like World War I, unobserved fire caused relatively few casualties and its effects on morale were difficult to establish. The

Germans on the receiving end of the vaunted but unobserved American harassing effort at Chateau Thierry, dismissively described it as either "light" or "the usual harassing fire," and it often produced no casualties.²⁸ More intense harassing fire sometimes demanded a more detailed entry, as on Tuesday 11 June 1918, when one German battalion reported "strong harassing fire on rear area" during the day and "extremely intense harassing fire on the rear area and approach roads" throughout the night. Yet all of this shelling resulted in only one German casualty: a 2nd Lieutenant of Reserves named Corde, who was "killed on his way" to the regimental headquarters.²⁹ The following day, the nearby 71st Infantry Regiment recorded "During the night heavy harassing fire by the enemy on the rear area, including the bivouac area of the battalion, forcing us to get out of the way."³⁰ Unobserved fire did not often kill significant numbers of the enemy, but it apparently inconvenienced them if strongly applied.

In his wartime diary, Corporal Horatio Rogers also dismissed the harassing fire that he experienced as ineffective. Serving as a young enlisted observer in the AEF's Battery A, 101st Artillery, 26th Division, during World War I, he had watched both sides send and receive harassing fire and described these strikes as "a sudden scatter of shells, usually directed against a road or a trench, and intended to catch the enemy unawares." To Rogers, these missions were "purposely fired at irregular intervals. Sometimes they would come every ten minutes all day, and the next day they would come at alternate intervals of ten and twelve minutes, with occasional rests of an hour thrown in to tempt us out of our dugouts." Rogers added that "A favorite way was to send over a second rafale [volley] about two minutes after the first, to catch the stretcher bearers or whoever

might have run out to the help of the wounded men.” Carrying his breakfast from the kitchen area one morning, Rogers once experienced a near miss by an artillery strike. He dropped his breakfast, yet remained undeterred, emphasizing that “After the shells had burst and the splinters had whistled over my head I got up and went back to the kitchen for more. This time I succeeded in getting my breakfast back to the dugout.”³¹

Despite its questionable morale effect and its great cost in ammunition, unobserved harassing fire became an accepted part of American artillery doctrine and changed little during the interwar period. In 1925, Fort Leavenworth's General Service School not only prescribed harassing fire for "annoying the enemy, causing casualties, and destroying his morale," but also stated that harassing fire "delivered in reply to hostile harassing fire is sometimes called retaliation fire." In this type of fire, "The ammunition expenditure ordered, if possible," was to be "greater than that caused by the enemy in his harassing fire."³² In a 1938 instruction manual, *Tactical Employment of Field Artillery*, Fort Sill's Field Artillery School further delineated unobserved artillery fire into the categories of harassment and interdiction. It called for interdiction fires with a purpose of “preventing the use of areas or roads by the enemy” and harassing fires with a purpose of “disturbing the rest of enemy troops, curtailing their movement, and lowering their morale.” It recommended irregular intervals between “rounds or bursts of fire” and still advocated the use of “shell, shrapnel, or gas shell.”³³

Unobserved harassing and interdiction (H&I) fire remained prevalent during World War II. The 1940 edition of U.S. Army's *Field Manual (FM) 6-20, Field Artillery Tactics and Techniques* delineated harassing and interdiction fires but avoided any

mention of gas shells. Interdiction fire would still be “delivered on points or areas which it is desired to prevent the enemy from using.” As before, these targets chiefly consisted of “roads used for moving supplies or reserves, crossroads, assembly places, railroad stations, detraining points, defiles, bridges and fords.” When unobserved, these missions would be “delivered throughout an extended period of time, avoiding regular intervals between rounds, or bursts, of fire.” Harassing fire, on the other hand, was “delivered during a relatively quiet period to interfere with and annoy the enemy, to keep his troops alerted unnecessarily, and to lower his efficiency and morale.”³⁴ The Field Artillery School’s 1943 edition of *Tactical Employment* still called for H&I as well.³⁵ Accordingly, units such as the XV Corps Artillery, opposing German forces in the fall of 1944, fired up to 37 percent of their ammunition as H&I.³⁶

During the Korean War that began in June 1950, an initial shortage of field artillery underscored its importance in multiple conventional roles. Postwar economizing had left most field artillery battalions with only two of their three authorized firing batteries. Moreover, the batteries consisted of only four guns, rather than the previously authorized six. This lack of firepower proved debilitating – the Americans could mass the fires of no more than three batteries at a time. Lacking the firepower to stop the North Korean advance after President Harry Truman committed American forces in July 1950, General Douglas MacArthur strongly demanded more artillery. Meanwhile, pressed ever closer to the southern port city of Pusan by the rapid and fluid North Korean advance which sometimes created a temporarily frontless environment, American artilleryman often

engaged the enemy with direct fire and strove to more easily traverse their artillery in 360 degrees.³⁷

Following MacArthur's Inchon landing, the drive to the Yalu River and subsequent Chinese intervention, firepower became even more important to American forces during the relatively static warfare that persisted until 1953. Whereas the Chinese and North Koreans relied on sheer numbers of infantry to generate combat power, the answer for American forces lay in the prodigious employment of artillery. During a communist offensive in May 1951, Lieutenant General James Van Fleet, commander of the American Eighth Army, admonished his subordinates that "We must expend steel and not men. I want to stop the Chinamen here and hurt him. I welcome his attack and want to be strong enough in position and firepower to defeat him. I want so many artillery holes that a man can step from one to another. This is no overstatement! I mean it!"³⁸ His artillery used ammunition in "Van Fleet loads," rates of consumption five times greater than previously allowed, and at least one battalion, the 38th Field Artillery, fired more than 12,000 rounds during a single, 24-hour period.³⁹ Responsible to feed such ravenous customers, one ordnance officer reported that X Corps alone consumed 25,000 tons of ammunition during a 28-day period, up to 1,800 tons in one day, but that ordnance soldiers had continued to supply these Van Fleet loads of ammunition "without interruption."⁴⁰

Despite the Ordnance Corps' successful delivery of Van Fleet loads in May 1951, Allied inventories of some artillery calibers had dropped nearly to zero during this fortunately brief communist offensive. This dangerous situation revealed a persistent

shortfall in American ammunition production that prompted nearly two years of ammunition rationing and a related Congressional investigation in 1953. During the static phase of the Korean War from 1951-1953, ammunition rationing precluded many unobserved and, by deduction, less necessary harassing and interdiction fires by American artillery.

Van Fleet best outlined American ammunition concerns during his testimony before the U.S. Senate Armed Services Committee on 1 April 1953. Stating that American rates of ammunition resupply were based on averages consumed in France during 1944, Van Fleet emphasized that ammunition received in Korea “was always below those tables.” This was backward, he emphasized, because there were fewer American guns in Korea “per division or per yard” than in France and the enemy artillery capability had rapidly increased, particularly during 1952. Moreover, the communist enemies did not “value life.” They used, in Van Fleet’s words, “mass attacks, taking their losses in great numbers in order to place some people on the objective and succeed.” When Senator John Sherman Cooper of Kentucky cited Van Fleet’s similar testimony of 4 March 1953 and asked whether more artillery ammunition could have prevented any Chinese waves from reaching their objective(s), Van Fleet replied “Yes.” To do this, Van Fleet explained, “A great deal of that firing must be ahead of time, must be preventing trouble, so as to destroy the enemy’s attack before it is launched, to counterbattery artillery so that it cannot shoot, to harass and interdict many days ahead of time when you sense that he is building up in an area to launch an attack. If we shoot at that time, the attack will never come off. If we wait until the attack is launched, it is generally too late.” To Van

Fleet, “If you have more ammunition, you seize the initiative from the enemy and put pressure on him that keeps him down and prevents him from staging raids against us – preventive work – if you can shoot sufficient amounts.” In Korea, Van Fleet’s artillery had not cut back on unobserved fire willingly – it had merely observed temporary supply restrictions caused, in part, by steel industry strikes that impacted the production of artillery ammunition during 1952.⁴¹

Naturally, the production-driven ammunition rationing practiced during the Korean War registered little impact on unobserved fire doctrine. The U.S. Army’s firepower ethos remained as firm as ever. Even General Matthew B. Ridgway, who had succeeded MacArthur in April 1951 as commander of United Nations forces in Korea and who was Van Fleet’s immediate predecessor as commander of the Eighth Army, had asserted in October 1951 that “arty [artillery] has been and remains the great killer of Communists. It remains the great saver of soldiers, American and Allied.”⁴² Like its European forebears during World War I, both the Army’s *FM 6-20, Field Artillery Tactics and Technique*, published as the war ended in 1953, and the 1958 edition of *FM 6-20* continued to call for harassment and interdiction fires “based on studies of maps, [the] terrain, road nets available to the enemy and all available target intelligence.” Both editions prescribed such fires to be “prearranged” and “irregularly spaced,” to maximize effectiveness and avoid revealing a pattern to the enemy.⁴³

In 1961, the Army divided *FM 6-20* into two publications, but neither of them altered H&I. *FM 6-20-1* addressed *Field Artillery Tactics* while *FM 6-20-2* covered *Field*

Artillery Techniques. Both manuals transferred sections of text covering H&I from the 1958 version verbatim. Neither manual added new material regarding H&I.⁴⁴

Close to the time that these two new field manuals were published, increased numbers of American advisors began to arrive in South Vietnam. They quickly identified the need to curtail firepower in what appeared to be a counter-insurgency (CI) environment. In its August 1962 “Lessons Learned Number 20,” the Army section of U.S. Military Assistance Advisory Group (MAAG) emphasized that “All forms of firepower, from the carbine to the 500 pound bomb, must have *positively identified* VC targets to be effective in CI operations. The indiscriminate use of firepower, regardless of caliber, type or means of delivery cannot be condoned in CI operations.” Indeed, the MAAG report continued, “Since the VC have no ‘rear areas’, no logistic bases and no staging or cantonment areas in the generally accepted conventional sense, the application of firepower on a ‘suspected VC area’ to destroy VC combat potential is of little value.” In a frontless war, “Unless targets are completely identified as enemy or completely clear of non-combatants, casualties among the people, rather than the VC, will result.” The thoughtful 1962 MAAG report concluded that such civilian casualties would “only serve to strengthen VC influence over the population with the final result that the fundamental task of separating the guerrilla from the people will be far more difficult.”⁴⁵

The South Vietnamese military did not necessarily share MAAG’s restraint. In fact, at a meeting held on 5 December 1960 between MAAG and its Army of Vietnam (ARVN) counterparts, the ARVN informed MAAG that it would place individual 105mm howitzers in static, “territorial defense” positions around Saigon. If the enemy

attacked in their vicinity, South Vietnamese military and paramilitary defenders would have at least one howitzer with which to respond, believing that the presence of artillery would deter or at least drive off the enemy. ARVN carried out its plan despite MAAG opposition, eventually expanding it to protect other populated areas in South Vietnam, even at the village level, and manning the howitzers not just with soldiers, but later with poorly trained paramilitary forces. Subsequent American analysis found that the ARVN expended almost as much ammunition in such weak, one or two gun territorial defense positions as it did during combat operations. Thus, far from viewing artillery as inherently counterproductive in counterinsurgency, the South Vietnamese military itself favored the psychological impact of even single howitzers defending populated areas.⁴⁶

The ARVN diversion of resources to territorial defense artillery resembled earlier French commitment to position artillery during the First Indochina War from 1946-1954. Seeking to protect populated areas around Hanoi while simultaneously scouring the countryside for Viet Minh guerillas in order to destroy them, the French had scattered numerous outposts near Hanoi and along the main routes used by their forces. These outposts were often manned by one or two Vietnamese Army platoons, some French soldiers and NCOs, a single French officer, and one or two artillery pieces. The French developed patterns for their artillery. They tried to ensure overlapping artillery coverage from one outpost to the next. They concluded that even one artillery piece could greatly assist an outpost at risk of being overrun, the indirect fires of French position artillery could deliver only limited psychological impact – whether harassing the enemy or reassuring defenders.⁴⁷ By 1954, the French had allocated 370 guns to mobile field

artillery and distributed a comparable 323 guns in piecemeal “positional” emplacements, mainly along lines of communication.⁴⁸ Thus, French position artillery created the precedent that the ARVN later pursued despite MAAG objections.

As the ARVN expanded its territorial defense artillery during America’s advisory effort, unobserved fire persisted in American artillery doctrine, with only slight changes to address counterinsurgency warfare. Indeed, on the eve of its large-scale ground deployment to Vietnam, the U.S. Army had not significantly revised its H&I doctrine. *Change 1 to FM 6-20-2* in January 1963 merely corrected a total of ten typographical errors.⁴⁹ The Army even published a new version of *FM 6-20-1* in July 1965 – the very month that President Johnson dispatched more than forty battalions to Southeast Asia. Like its predecessors, the 1965 version of *FM 6-20-1* called for harassing and interdiction fires “based on studies of maps, terrain, and road nets available to the enemy, and all other target intelligence.” It found “enemy batteries, assembly areas, observation posts, communication centers, command posts, and leading elements” suitable for harassing fires and “harbors, road junctions, bridges, and crossroads” suitable for interdiction. Both fires would still be “irregularly timed to prevent the enemy from determining their pattern.”⁵⁰ *FM 6-20-1* now added an important caveat, however, regarding H&I fire in counterinsurgency operations: “The control of artillery fire in counterinsurgency operations is most important because of the general limitation on the use of artillery in populated areas.” Indeed, the manual cautioned that “Indiscriminate use of artillery fire can quickly alienate a population.”⁵¹

Although the 1965 version of *FM 6-20-1* addressed counterinsurgency operations and warned of the “indiscriminate use of artillery fire” in “populated areas,” its authors had not fully embraced MAAG’s “Lessons Learned Number 20.” In that report, after condemning “The indiscriminate use of firepower, regardless of caliber, type or means of delivery,” MAAG had asserted that the VC lacked “rear areas ... in the generally accepted conventional sense” and that “the application of firepower on a ‘suspected VC area’ to destroy VC combat potential is of little value.” Indeed, “Unless targets are completely identified as enemy or completely clear of non-combatants, casualties among the people, rather than the VC, will result.” Such poorly directed fires risked “only serv[ing] to strengthen VC influence over the population with the final result that the fundamental task of separating the guerrilla from the people will be far more difficult.” Many in the Army did not agree that the VC lacked rear areas, however, and therefore found value in attacking suspected VC locations. Furthermore, the Army would soon employ expedient methods to ensure that entire areas remained “clear of non-combatants.” Indeed, the definition of a “populated area” would prove the pivot on which American H&I fire would turn in Vietnam.

By the publication of *FM 6-20-1* in 1965, even MAAG’s concern with the counterproductive nature of lavishing firepower on “suspected VC areas” had proven transitory. In its “Lessons Learned Number 31,” published on 27 September 1963, MAAG had addressed “Artillery Organization and Employment in Counter Insurgency.” While admitting that “There are no well defined battle areas” in Vietnam, MAAG no longer referred to the counterproductive nature of unrestrained firepower. Instead,

MAAG now emphasized how South Vietnamese Army units dispersed their artillery pieces to maximize coverage, rarely massing their fires because of “the great respect the Viet Cong have shown for the capability of artillery weapons.” MAAG viewed this assertion as “justified to a degree” and even added that “There is considerable evidence that movement of an artillery piece into a new area sometimes causes the Viet Cong to evacuate the area within range of the weapon.”⁵² Thus, it appeared that America’s numerous, well-supplied, and capable artillery units could provide a tremendous morale advantage in Vietnam, given the Viet Cong’s tendency to relocate once artillery occupied the vicinity.

Foreshadowing America’s widespread use of unobserved fire in Vietnam, MAAG’s “Lessons Learned Number 38,” published in March of 1964, also described the ARVN use of H&I during so-called Area Saturation Operations “to illustrate successful tactics and techniques employed” Vietnam’s counterinsurgency environment. Area Saturation Operations were “characterized by decentralized, platoon-sized patrols conducted continuously day and night in an area controlled by the VC.” The ARVN deemed H&I useful in these operations because it sought to “deny the VC free access to all areas” and “not necessarily to kill every VC but to create an environment which is too unhealthy for him.” The South Vietnamese would spread rifle company patrol bases throughout a battalion area of operations and cover the “intervals between the rifle companies” with H&I fire. MAAG explained that, “As the VC attempt to evade the company patrols by moving out of the area, they may be confronted with the (H&I) fires.”⁵³ As with MAAG’s 31st Lessons Learned, “Lessons Learned Number 38” no longer addressed the

counterproductive aspects of H&I detailed in “Lessons Learned Number 20” only two years before.

Despite MAAG’s shift in favor of unobserved fire, many American advisors still believed that the South Vietnamese used too much artillery. Colonel Charles K. Nulsen, Jr., a 1949 graduate of West Point whose father had also graduated from West Point in 1908, explained in a 1968 Army War College paper that advisors before 1965 found that “the Vietnamese were afraid to take casualties and would always use artillery as a substitute for an infantry attack.” Nulsen had served as an advisor to South Vietnamese Ranger units during 1962-1963 and later as an infantry battalion commander in South Vietnam. He argued that “Unfortunately, we [the U.S. Army] have fallen into the same error,” but on a larger scale, expending “approximately ten times the amount of artillery as they do.” Nulsen believed that riflemen were the most reliable and appropriate firepower – he had little use for artillery in Vietnam.⁵⁴

Nulsen’s views about artillery firepower were exceptional, however, and hard to emulate. As historian Robert Scales explains, Nulsen had served as a battalion commander in the 196th Light Infantry Brigade that was attached to the 25th Infantry Division. In this capacity, he trimmed his companies to 70 or 80 men and gave them extensive training in field craft and self-reliance. Moving light and fast through the jungle, these units hid from and surprised the Viet Cong, rather than the opposite. They eschewed firepower and helicopters, embracing and learning the jungle terrain through repeated patrolling while avoiding firepower preparations of their routes and even the time needed for artillery support. Typically, Nulsen’s companies neither incurred nor

inflicted significant casualties during their many brief engagements, but Nulsen's battalion retained the tactical initiative through this approach and achieved favorable kill ratios. Favoring the firepower of riflemen and in jungle terrain, Nulsen had crystallized his advisory ideas in a well-trained battalion while American, and even South Vietnamese, artillery delivered significant firepower support to units elsewhere in Vietnam. Some other U.S. Army units adopted parts of Nulsen's approach, but only after a few more years of firepower intensive warfare.⁵⁵

Thus, when the American military began its large-scale ground commitment to Vietnam in July 1965, it inherited a firmly entrenched, inter-service faith in unobserved artillery fire. Rooted in the advent of the French 75mm Gun, Model M1897, this faith had weathered early criticism in both conventional and counterinsurgency contexts. In conventional warfare, ammunition economy arguments of doctrinal pioneers such as Spaulding, Horn and Neuffer yielded to the imperatives of well-supplied industrial warfare during World War I, World War II, and the Korean War. This extensive conventional experience had, in turn, yielded entrenched artillery doctrine that proved impervious to the brief, "hearts and minds" warnings of American advisors engaged in counterinsurgency in South Vietnam. By 1965, the MAAG's opposition to unobserved firepower was itself overcome by American doctrinal inertia and by the ARVN, which resurrected the scattered, positional artillery of French experience. Some advisors, such as Nulsen, continued to eschew indirect firepower of any sort, but most of the United States military remained firmly committed to the American motto "Save Lives, Not Ammunition." Just as American concern with ammunition economy had yielded to the

established practices of other major belligerents during World War I, MAAG's early warnings about the counterproductive nature of H&I could not withstand the logic of plentiful ammunition and an overwhelming Allied advantage in indirect fire capability. When the American military arrived in force, the sound of indirect fire began to dominate the contested areas of South Vietnam.

Notes

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CHAPTER IV

THE U.S. ARMY AND UNOBSERVED FIREPOWER, 1965-1967*

Prodigious observed and unobserved firepower promised to support American military strategy in South Vietnam from President Lyndon Johnson's commitment of large-scale United States ground forces in July 1965 to his pro-war public relations campaign in late 1967. Johnson's top military officer in Vietnam during this period, General William C. Westmoreland, Commander of the Military Assistance Command, Vietnam (MACV), fought a war that was *simultaneously* conventional and a counterinsurgency conflict. On one hand, regular North Vietnamese Army (NVA) units and irregular Viet Cong (VC) infiltrated and occasionally massed for combat throughout the frontless 1,200-mile length of South Vietnam. On the other hand, Westmoreland recognized a more fundamental, but less tangible, war to deny the enemy the largest sanctuary of all: South Vietnamese popular support. Under Westmoreland, the U.S. Army focused on the more conventional part of the war.¹

Comparing South Vietnamese popular support for their own government to a house beset by insurgent "termites," Westmoreland viewed NVA and main force VC units as "bully boys" bent on demolishing the termite-weakened structure by hurling massed combat formations armed with figurative "crowbars." Convinced that he did not possess

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enough American troops to simultaneously strengthen and protect the South Vietnamese house and assessing comparative strengths and weaknesses, Westmoreland relegated the less tangible, yet culturally and linguistically demanding counterinsurgency, or “pacification,” responsibility to the South Vietnamese, although he asserted that “more American troops were usually engaged on a day-by-day basis, helping weed out local opposition and supporting the pacification process, than were engaged in the big fights.” Nevertheless, he believed that “Superior American firepower would be most advantageously employed against the big units, and using it in remote regions would mean fewer civilian casualties and less damage to built-up areas.” Moreover, he posited that “The fewer Americans in close contact with the people also meant that much less provocation of the xenophobia of the Vietnamese, that much less opportunity for unfortunate incidents between American troops and the people.” Thus, Westmoreland focused the Army on “eliminating” the “bully boys” or “at least, so harrying them as to keep them away from the building” to generate “a possibility of eliminating the termites or enticing them to work for our side.” Against “an enemy with relatively limited manpower,” Westmoreland perceived no feasible alternative to a largely conventional “war of attrition” by the U.S. Army.²

Yet Westmoreland’s war of attrition was itself infeasible for two principal reasons. First, the communists viewed the war as a high-stakes struggle for unification and independence and were therefore willing to mobilize and exchange casualties, even at highly unfavorable rates, far longer than the United States, which would become increasingly aware of the costs required to maintain the strategic backwater of South

Vietnam. Second, the United States could not efficiently bring its firepower to bear on the elusive communists. In fact, the more firepower that it employed to destroy a furtive enemy by conventional means, the greater the likelihood that the South Vietnamese population – the object of the struggle – would view their erstwhile protectors as uncaring or even indiscriminate, giving increased appeal to the communists.

Westmoreland's own resources, not those of the North Vietnamese, were "relatively limited" in this perspective, which Westmoreland, like other firepower enthusiasts, failed to fully appreciate.

While prosecuting his firepower-intensive, attrition-based strategy, Westmoreland generated numerous conventional engagements and high enemy body counts during 1965-1967, but he began to cut back on unobserved firepower after July 1967 despite his commitment to attrition. Following the very conventional Ia Drang battles of November 1965, the Army conducted eighteen other large and firepower-intensive operations in 1966 that each pulverized more than 500 enemy soldiers. Such operations continued in 1967. Meanwhile, a Department of Defense study found that Army unobserved fire constituted nearly 91 percent of artillery missions and 85 percent of ammunition, most of it H&I with few quantifiable results, even as firepower accidents temporarily piqued Westmoreland's concern about civilian casualties.³ Westmoreland had consistently cautioned the Army to avoid overzealous unobserved fire, but financial concerns drove him to finally reduce unobserved artillery fire. Realizing by July 1967 that unobserved fire incurred risks without providing meaningful attrition or other conventional

advantage, Westmoreland cut back on less remunerative unobserved artillery strikes once budgetary concerns forced economization within his command.

Troopers of the U.S. Army's 1st Cavalry Division inaugurated – and appeared to validate – Westmoreland's strategy in a stunning “first battle” of helicopter mobility and firepower near Chu Pong Mountain in South Vietnam's Central Highlands in November 1965. Seeking to find and pulverize a single regiment of NVA “bully boys” recently detected by radio intercept, the 1st Battalion, 7th Cavalry (1/7 CAV) moved by helicopter from Plei Mei Special Forces Camp to the base of Chu Pong Mountain on the morning of 14 November. After landing in a clearing code-named Landing Zone (LZ) X-Ray, the troopers depended upon two artillery batteries that simultaneously emplaced in nearby LZ Falcon. Instead of a single NVA regiment, however, the troopers had landed near portions of *three* NVA regiments, the 320th, 33rd, and 66th. In the subsequent pitched battle that lasted nearly three days, 1/7 CAV relied upon massive quantities of air and artillery delivered firepower to defend their small landing zone until the numerically superior and conventional NVA assaults abated. After the 2nd Battalion, 5th Cavalry (2/5 CAV) and the 2nd Battalion, 7th Cavalry (2/7 CAV) relieved 1/7 CAV at LZ X-Ray on 17 November, 2/7 CAV suffered heavy casualties during a meeting engagement while marching to nearby LZ Albany before U.S. Air Force B-52 bombers carpet bombed the site of the first battle. Including skirmishes before and after these two engagements, the Army killed 3,561 North Vietnamese soldiers at a cost of 305 American dead.⁴

At the Ia Drang, observed firepower drove a casualty exchange ratio that was significantly favorable to the United States, nearly twelve North Vietnamese killed to one American, and it blocked any reprise of 1/7 CAV's annihilation under General George Armstrong Custer near the Little Bighorn River, Montana, on 25 June 1876, but the contributions of unobserved artillery fire were uncertain. Lieutenant General Harold Moore, who had served as Commander of 1/7 CAV, remembered that the two artillery batteries at LZ Falcon, Alpha and Bravo Battery of the 1st Battalion, 21st Artillery, "fired more than four thousand rounds of high-explosive shells on the first day alone" and kept 1/7 CAV "surrounded by a wall of steel." Indeed, firing for "five straight hours" on 14 November, these twelve guns had piled up "stacks of shell casings, one at least ten feet high" and even melted a gun tube. Yet random, unobserved harassing and interdiction (H&I) fire – different than artillery missions called upon confirmed enemy positions – simply helped to provide flank and forward security. It may have been "continuous" and "close-in" during the night, but the determined enemy still managed to mass for attacks, even in such a conventional environment.⁵ In the wake of the Ia Drang battles, as the Army discounted the near-run defense of LZ X-Ray and suppressed the catastrophe near LZ Albany in favor of a mobility and firepower narrative that had generated favorable kill ratios, few found cause to question how unobserved artillery firepower contributed to the Vietnam War.

The 1st Cavalry Division continued unobserved fire at high rates during the next two years. During search and destroy Operations MASHER and WHITE WING in Binh Dinh Province from January to March 1966, the 1st Cavalry Division expended more

than 141,000 artillery rounds, many of them unobserved. Admitting that it was “difficult to assess the effectiveness” of such missions, the 1st Cavalry Division Artillery nevertheless cited a captured Viet Cong soldier whose unit suffered 25 wounded on 8 February during a programmed, but effectively random, H&I strike. To bolster faith in unobserved fire, it cited another prisoner who on 26 February “indicated that new units and filler personnel arriving in Binh Dinh Province from NVA are afraid of air strikes and artillery and that they become demoralized after being in a strike area.”⁶ During Operation JIM BOWIE in March 1966, the 1st Cavalry Division managed to fire 3,664 of 4,397, or 83 percent, of its artillery missions as H&I.⁷ During Operation THAYER that October, one of the 1st Cavalry’s supporting battalions, the 1st Battalion, 77th Field Artillery continued to fire 1,272 of 1,693, or 75 percent, of its missions as H&I.⁸

The 1st Cavalry Division’s reliance on unobserved firepower was not unique: a Department of Defense study in July 1967 found that unobserved fire prevailed at similar rates throughout the Army and even the U.S. Marine Corps. The Office of the Assistant Secretary of Defense for Systems Analysis studied multiple divisions and found that unobserved fire constituted nearly 85 percent of all Army artillery ammunition expended, most of it as H&I, whether during offensive or defensive operations. Other than H&I, only helicopter Landing Zone (LZ) preparatory fires contributed to these unobserved totals, increasing them by no more than 2.5 percent. The study drew from the 1st Cavalry, the 1st Infantry, the 25th Infantry, and the 101st Airborne divisions.⁹ With the Marine Corps, these units demonstrated the prevalence of H&I fire throughout three of the four Corps Tactical Zones (CTZs) dividing Vietnam:

Zones I, II, and III.¹⁰ The Army's 9th Infantry Division and the Mobile Riverine Force also conducted extensive H&I missions in Zone IV.

It is important to recognize that, even though H&I missions demanded fewer rounds on an individual basis, their sheer volume yielded massive ammunition expenditures with few quantifiable results. As late as September 1967, H&I missions consumed 39 percent of rounds fired by the entire I Field Force Vietnam Artillery (First Field Force Artillery) as it supported the 1st Cavalry's parent organization in the II Corps Tactical Zone.¹¹ The July 1967 Pentagon study found that a staggering 65 percent of all bombs and artillery struck "places where the enemy might be (e.g., free strike zones, suspected routes of VC movement, reported VC encampments) but usually without reliable information that he is there." Regarding battle damage for H&I missions, the study found that "The evidence is too fragmentary," but "What little hard evidence there is consistent with conclusion that such strikes may have killed as few as 50 to 100 VC/NVA in 1966."¹² Indeed, the Army's after action reports and lessons learned rarely mentioned battle damage that H&I missions inflicted. Since artillerymen had little reason to expect enemy casualties, they did not likely check. Unobserved fire was mainly preventative.

Yet the idea of "Sav[ing] Lives, Not Ammunition" with firepower permeated Army thinking during the Westmoreland years, much as it had during earlier conventional wars. In an important example, during the static phase of the Korean War, the Commander of the American Eighth Army, Lieutenant General James Van Fleet, had admonished his men that "We must expend steel and not men. . . . I want so many

artillery holes that a man can step from one to another.”¹³ To the U.S. Congress, he justified unobserved fire as “preventive work – if you can shoot sufficient amounts.” He prescribed harassment and interdiction fire “many days ahead of time when you sense that [the enemy] is building up in an area to launch an attack. If we shoot at that time, the attack will never come off. If we wait until the attack is launched, it is generally too late.”¹⁴

Likewise, Army and Marine Corps units throughout South Vietnam expected to call in firepower when they had an enemy cornered. Captain William W. Witt extolled the virtues of lavishly expending artillery ammunition in 1968. In a special edition of *Infantry* magazine, he described a “hammer and anvil” operation known as a “fire flush.” In this operation “a blocking force encircles an area and awaits the enemy to exit as a “hunting force” pursues him and “he is subjected to intense, saturation-type, indirect fire.” Witt claimed that “The fire flush has been used successfully many times in Vietnam.”¹⁵ This outlook would not disappear anytime soon -- in 1969, commanders still overwhelmingly and justifiably lauded the practice of “piling on” artillery and air-delivered firepower to kill the enemy once he had been located.¹⁶

Adapting to an unconventional war, and possessing bountiful supplies of ammunition, the Army developed many ways in which unobserved artillery fire could also “Save Lives, Not Ammunition,” but it was difficult to prove their effectiveness. Most were departures from traditional artillery employment because, unlike earlier conflicts, American artillerymen could not identify “routes and trails” or “roads used for moving supplies or reserves, crossroads, assembly places, railroad stations, detraining points,

defiles, bridges and fords” directly *behind the enemy’s lines* and, therefore likely areas to harbor enemy forces. Yet when contacts flared along American perimeters and routes, the firepower of an expansive artillery umbrella was generally available, whether planned or on call.

The Army sometimes employed some unobserved artillery fire to deter insurgent mortar attacks near firebases, base camps, or other positions. Operation FIREBALL I, conducted by the 25th Infantry Division during 1966 provided an example of this. The 25th Division Artillery “immediately initiate[d] an effective H&I program” at the outset of the operation. Despite the absence of any real evidence, the 25th Division Artillery declared that its program had been effective because “an enemy mortar attack was not mounted on the artillery battery or supported unit even though both occupied Viet Cong dominated territory for three weeks.”¹⁷ Such negative evidence highlighted the Army’s faith in unobserved firepower and the strength of its conviction to “Save Lives, Not Ammunition.”

In another application of H&I, the Army would sometimes fire these missions along its routes of advance. Even the Army’s riverine units employed H&I in this manner during their operations in the heavily populated Mekong Delta. The staff of the 2nd Brigade, 9th Infantry Division, operating jointly with the U.S. Navy as part of the Mobile Riverine Force, found that “An effective anti-ambush measure against ambush positions located near a bend in the river is to employ artillery and airstrikes (preferably napalm) on likely and known positions prior to entering the area.” Suggesting a conscientious effort to follow rules of engagement, however, the brigade also added that

“This is not always feasible because of ground clearances and compromising the route of movement.”¹⁸

Other American H&I sought to frustrate enemy ambushes and mining activity. Approving of this adaptation, the U.S. Military Assistance Command, Vietnam (MACV) transmitted it throughout the Army as “Combat Lessons Bulletin Number 10” in November 1966. MACV declared that “An artillery interdiction program fired along isolated sections of a road is effective in disrupting enemy mining activity. Fires should be adjusted during daylight hours and then placed at random on selected targets during hours of limited visibility.” Blending the concepts of harassing and interdiction fire, the bulletin’s author emphasized that “The surprise effect of apparently unadjusted artillery fire will restrict and discourage enemy mining activity.” MACV cautioned, however, that “VT or time fuze should be employed to enhance burst effects and to prevent or minimize damage to road beds.”¹⁹ *Artillery Trends* reprinted this lesson learned verbatim in May 1968.²⁰

Many H&I missions simply sought to lower VC morale and curtail enemy freedom of movement by targeting trails and rear areas as H&I missions had in previous wars, but with a lesser standard of target intelligence. Writing about his experiences in Vietnam, one artilleryman remembered that “Every night, starting around 2300 hours, we would fire our H&I’s ... periodically and keep it up throughout the night. Intelligence would speculate which trails the Viet Cong would be using to transport supplies and would pick some spot on the trail on which to drop a few rounds.” These fires simply sought to “confuse and delay enemy movement.”²¹ Robert W. Tagge, a battery commander in the

1st Battalion, 77th Field Artillery from 1965-1966, remembered that his battalion fired H&I missions almost continuously, even during daylight hours.²² Naturally, artillerymen could expect the majority of these rounds to simply pound dirt, sparing all potential casualties.

Enemy morale often became the only estimated target, given a lack of other compelling motivations. Michael Sloniker, who served a battery fire direction officer in the 2nd Battalion, 319th Field Artillery from March to November 1968, found that “H&I fires were a sense of comfort to the LPs [listening posts] and OPs [observation posts] off the firebase” and “kept at least one gun warmed up during the night.” Conversely, however, “H&I fires conditioned us to sleep during noise, and degraded our sense of danger.” Comforting OPs and keeping guns warmed up hardly justified such an exorbitant expense of artillery ammunition.

Target intelligence failed to redeem the practice. Sloniker explained that the assistant operations officer for his battalion selected H&I targets based on available intelligence.²³ Lieutenant General David Ott, however, who served as executive officer of the Second Field Force Artillery and commander of the 25th Infantry Division, admitted that “We seldom had good intelligence – target intelligence – other than when we were in physical contact with the enemy.”²⁴ Veterans remembered that H&I targets were set up hours in advance, originated at battalion and division level, changed nightly, and typically targeted trails, road intersections, and abandoned villages. Furthermore, when operating independently, batteries would plot their own H&I targets.²⁵

While massive B-52 strikes like those at the Ia Drang in November 1965 could destroy, demoralize, or stun scattered enemy forces, sporadic H&I fire could not achieve similar effects. Writing in 1978, Guenter Lewy found that “there was evidence to show that B-52 strikes had a substantial psychological effect” on the enemy.²⁶ Indeed, in 1985 a Viet Cong veteran named Truong Nhu Tang published a memoir in which he explained that “for all of the privations and hardships, nothing the guerillas had to endure compared with the stark terrorization of the B-52 bombardments.” Remembering a B-52 strike, he continued that “it seemed, as I strained to press myself into the bunker floor, that I had been caught in the Apocalypse. The terror was complete. One lost control of bodily functions as the mind screamed incomprehensible orders to get out.”²⁷

Under Westmoreland, MACV nevertheless envisioned that artillery H&I could achieve results comparable to B-52 strikes. “Counterinsurgency Lessons Learned No. 62,” published in March 1967, flatly declared that “Harassing and Interdiction (H&I) fires based on an understanding of the current intelligence situation can be very effective in demoralizing the enemy both day and night.”²⁸ Attempting to gauge the effectiveness of its H&I program in July 1967, the Second Field Force Artillery also found that “There have been comments with specific reference to H&I fires in IPW reports. The general indication is that H&I fires have been inflicting damages and casualties causing enemy personnel to rally.”²⁹ The Second Field Force Artillery had sounded more certain in February 1967, however, when it explained that “While it is often difficult to accurately assess the total casualties inflicted by H&I firing, there is little doubt of its overall effectiveness.” Perhaps confusing the results of artillery H&I and B-52 strikes, and

incorporating overly flattering appraisals, Second Field Force Artillery continued that “Prisoners of War and personnel voluntarily returning to government control (Chieu Hoi’s) frequently cite unexpected artillery fire and air strikes as what they fear most.”³⁰

Despite MACV’s faith in H&I, even Westmoreland published rules of engagement warning that overzealous unobserved fire could hinder the American war effort. On 7 September 1965, the general issued “MACV Directive 525-3,” which sought to minimize non-combatant battle casualties and their impact. His directive emphasized that, to alienate the people from the government, “The VC exploit fully incidents of non-combatant casualties.” It posited that “the battle for Vietnam flows backward and forward across the homes and fields of the hapless rice farmer and small town inhabitant,” adding that “Whether, at any one time, he lives in a VC or GVN controlled hamlet depends to a large extent upon factors and forces beyond his control.” Therefore, “The use of unnecessary force leading to non-combatant battle casualties in areas temporarily controlled by the VC will embitter the population, drive them into the arms of the VC, and make the long-range goal of pacification more difficult.” Indeed, the directive declared that “Prestrikes in populated areas, reconnaissance by fire into hamlets and poorly selected harassing and interdiction fires are examples of military measures which will be counterproductive in the long run.”³¹ Thus, Westmoreland deemed unobserved fire to be counterproductive as early as September 1965, but the Army’s inertia and his own commitment to firepower-based attrition apparently precluded meaningful restrictions near or outside populated areas until budgetary pressure emerged in late 1967.

Some historians assert that Westmoreland disregarded a prescient, population-centric Army study when deciding how to fight the war in Vietnam, but this does not hold true for unobserved artillery firepower.³² In July 1965, Army Chief of Staff Harold K. Johnson had commissioned a study titled “A Program for the Pacification and Long-Term Development of Vietnam” (PROVN). Published on 11 March 1966, the study found that “There is no question that a significant number of noncombatants have been killed and maimed; their houses, livestock and crops have been destroyed. The two greatest offenders are unobserved artillery fire in populated areas and aircraft strikes on hamlets when pilots receive fire from their vicinity.” Therefore, emphasized PROVN, “The population is bound to be alienated.” To correct this problem, the study concluded that “Certain simple rules must be rigidly enforced,” adding that Westmoreland had already “promulgated” many of these rules. Regarding H&I, PROVN only recommended that American forces conduct “No unobserved artillery fire in populated areas,” echoing the guidance already present in both Westmoreland’s Directive 525-3 and *FM 6-20-1*.³³

Unfortunately, Directive 525-3, the PROVN study, and the July 1965 edition of *FM 6-20-1* shared a similar flaw. As long as American units *did not fire* H&I into “populated areas,” these missions could continue. It, too, ignored the assertion by “Lessons Learned Number 20” that the VC lacked “rear areas ... in the generally accepted conventional sense” and that “the application of [H&I] firepower on a ‘suspected VC area’ to destroy VC combat potential is of little value.” It also avoided the assertion that “Unless targets are completely identified as enemy or completely clear

of non-combatants, casualties among the people, rather than the VC, will result.” As Directive 525-3’s preface explained, the war often ranged back and forth across the countryside, leaving “hapless” farmers and other civilians little choice whether their homes remained under GVN or VC control. Furthermore, these noncombatants did not necessarily remain in the confines of their hamlets at any given time. Few areas in Vietnam would prove completely devoid of civilians unless actively searched prior to H&I missions, an endeavor that few units chose to undertake.

Moreover, the definition of a “populated area” present in these documents proved malleable for commanders pursuing force protection. None of the documents stipulated a population density. Although Westmoreland emphasized to his superiors that “the toll being taken of civilian lives by the increased military war effort is of great concern to me,” subordinate commanders could determine these figures and areas for themselves.³⁴ Indeed, Directive 525-3 ordered commanders at all levels to “to strike a balance between the force necessary to accomplish their missions with due regard to the safety of their commands and the high importance of reducing to a minimum the casualties inflicted on the non-combatant population.”³⁵ When employing H&I to try to avoid ambushes, prevent mortar attacks, clear routes of advance, or simply to frustrate VC movement, many American commanders understandably sought to “Save Lives, Not Ammunition,” a long-standing American motto.

The idea of trading firepower for soldiers’ lives was justifiable, but Directive 525-3 contained a more fundamental problem concerning firepower and non-combatant casualties in a frontless environment. It allowed commanders to actually conduct H&I

missions near *populated areas*, so long as South Vietnamese and U.S. forces deemed those areas hostile. Indeed, the directive declared that “Free strike zones should be configured to eliminate populated areas except those in accepted VC bases.”³⁶ In a message to the Commander-in-Chief, Pacific (CINCPAC) on 9 October 1965, Westmoreland broadened this free strike exception to “accepted VC war zones and base areas.”³⁷ South Vietnamese and U.S. forces agreed upon such Free Strike, or Free Fire Zones, in advance of operations. Allied forces could expend ordnance within these areas at will, with no requirement for clearance or coordination outside their respective fire direction procedures. So long as no friendly *soldiers* were at risk, H&I and other missions could proceed. Any “hapless” civilians in the target area were simply out of luck. Naturally, U.S. artillery units tended to operate in or near hostile areas. In this sense, the directive had exceeded the strictest interpretation of the PROVN study and *FM 6-20-1*.

Directive 525-3 treated friendly areas carefully, but it only mandated three feeble methods to avoid civilian casualties that unobserved fire might cause in hostile areas. It stipulated that “Troop indoctrination briefings will be held before each operation to emphasize both the short and long range importance of minimizing non-combatant battle casualties.” It also directed that “With due regard to security and success of the mission, whenever possible, the people will be warned of impending air strikes or operations by leaflets and broadcasts.” Thus, the directive asserted, “Blame for military action in the area would be shifted to the VC.” Finally, “Operations should be planned in coordination with province and district chiefs with due regard to security of plans.”³⁸

Troop indoctrination briefings would prove useless, so long as artillerymen did not fire H&I into friendly populated areas. As with the definition of a “populated area,” however, the requirements for leaflets, broadcasts, and meetings with province and district chiefs contained their own caveats for impotence.³⁹

By 1967, stricter rules of engagement regarding H&I fire seemed warranted as communist propaganda capitalized on the practice. A translated communist radio broadcast on 18 March 1967, for example, emphasized that “innumerable scenes of killing and destruction by the U.S. aggressor’s bombs and bullets have occurred day and night on the fertile, populated, and rich South Vietnamese territory.” The broadcaster added that “The quantity of bombs and bullets the Americans have used in Vietnam not only demonstrates the ruthlessness of the war, but also exposes the American’s evil intention of massacring our people.” He cited the 25th Infantry Division’s sector, in particular, as “an area where U.S. planes and guns have been free to bomb and bombard any place and at any hour of the day.”⁴⁰ Anti-war protesters, such as Vietnam Veterans Against the War, would later echo similar complaints.

Not only could the Viet Cong capitalize on the propaganda value of unobserved firepower, but a Pentagon study in July 1967 also indicated that the enemy benefited logistically from the American practice. The study had found that “The VC get most of the materials they require for mines and booby traps from dud bombs, dud artillery shells, and captured ordnance.” Indeed, “the 27,000 tons of dud bombs and shells each year from such attacks provide the enemy with more than enough material to use in mines and booby traps.” The sheer volume of American artillery fire ensured that these

shops did not have to search extensively for explosive filler to construct the booby trap devices that killed more American soldiers than any other weapon during the war.⁴¹

Published by the Southeast Asia Programs Division (SEA PRO), a Pentagon office under the Assistant Secretary of Defense for Systems Analysis, this study reached several important decision makers. The director of SEA PRO, Mr. V. K. Heyman, claimed in July 1967 that his monthly analysis reports were “read and praised by a wide-range of high-level people, most particularly Mr. [Robert] Komer,” the civilian administrator of America’s pacification effort in Vietnam. Chartered by Secretary of Defense Robert McNamara on 8 February 1966, SEA PRO sought to “collect and analyze data on deployments, consumption, attrition and related aspects of the SEA effort.”⁴² Since SEA PRO’s Monthly Analysis reports reached the Secretary of Defense and America’s civilian administrator for pacification, one can reasonably assume that they reached Westmoreland as well.

Some studies suggested that unobserved artillery missions *likely* caused a collectively large number of civilian casualties, especially near populated areas, early in the war. In 1976, Thomas C. Thayer studied hospital admission rates for wartime civilian casualties. Having served as a systems analyst for Secretary of Defense Robert McNamara during the war, Thayer emphasized that the United States did not cause all, or even most, of the civilian casualties in Vietnam as some anti-war activists implied. He posited, however, that “the U.S., while not reporting them in combat records, inevitably must have caused quite a few, given the kind of war that was fought in Vietnam.” As part of his analysis, Thayer considered civilian casualties in three categories: those caused by mines and

mortars, those caused by guns and grenades, and those caused by shelling and bombing. He attributed the first group to Viet Cong activity, the third to Allied activity, and he divided the second between each side. Using this method, Thayer estimated that Allied shelling and bombing inflicted as much as 43 percent of civilian casualties in 1967, but he emphasized that this “crudely” calculated percentage *decreased* as the war progressed.⁴³

The number of civilians killed by American artillery fire proved controversial, but the U.S. embassy in Saigon reported similar civilian casualty estimates to Westmoreland in July 1967. Explaining that “A detailed nationwide reporting system of civilian war casualties among hospital admissions was started only in November, 1966,” the embassy offered a “reasonably accurate estimate” that the South Vietnamese had suffered nearly 4,000 civilian casualties per month. It attributed “more than half” of them to the Viet Cong. The embassy based its number “solely on reports from province hospitals where AID maintains medical advisor teams,” which produced a monthly average of 2,520 admissions. It arrived at 4,000 through an estimate of unreported cases, as did Thayer, because “Wounded who obtain treatment at local hamlet dispensaries or who do not seek treatment or those who are killed on the spot are not included” and “We know that these cases exist.” Estimating that Allied forces may have caused up to 1,800, or 45 percent, of these casualties, the embassy nevertheless lauded the various restrictions already placed on how the Allies applied firepower. Somewhat fatalistically, the embassy added that “The battle ranges back and forth through villages and the people always cannot or do not have the opportunity to move out of its way. In this type of war there will

inevitably be civilian casualties. It is the Allied – but not the VC – intention to keep these as low as possible.”⁴⁴

The embassy echoed Westmoreland’s previous expectations concerning American controls on the application of firepower, expectations that seem to belie stereotypical portrayals of Westmoreland as callous, or even careless, in this regard. Since the commitment of large-scale ground forces in July 1965, the general had routinely emphasized the importance of accurate target intelligence. To a joint board called to improve tactical air support, for example, Westmoreland cautioned that an expanding American military effort meant that more civilians would likely become “victims of our firepower.” Proper targeting could combat this trend. Westmoreland declared that “In all wars, many targets are attacked which could be called ‘targets of suspicion.’ In Vietnam we must be very careful in this regard.”⁴⁵ In October 1965, he reiterated to his commanders that naval gunfire support “should be used with prudence. Except in emergency all targets should be spotted. They should be carefully selected.”⁴⁶ His standing, 15-point “Guidance for Commanders in Vietnam” directed his subordinate leaders to “Use your firepower with care and discrimination, particularly in populated areas.”⁴⁷ Collectively, these statements undermine the stereotype of Westmoreland as an advocate of massive or indiscriminate firepower, even near populated areas, to encourage the South Vietnamese to stop supporting the Communists.

In mid-August 1966, Westmoreland had confronted a perceived crisis regarding civilian casualties. While engaging Viet Cong forces, American aircraft bombed and strafed a hamlet near the Mekong delta village of Truong Trung. Reporters quickly

seized upon the civilian casualties involved. On 19 August, *Time* magazine reported in its weekly “Viet Nam” section that the attack killed 24 inhabitants and wounded 82, “among them women and children.” *Time* explained that, “Amid a chorus of protest, President Johnson personally requested an explanation, asking U.S. officials in Saigon to answer three questions: 1) Were there Viet Cong in the hamlet? 2) Were the inhabitants forced by the Viet Cong to remain in the hamlet during the attack? 3) Did Viet Cong shoot at a spotter plane that directed the strike?” American spokesmen had responded in the affirmative to each question, *Time* continued, and this “illustrated the tragic dilemma of fighting an anti-guerilla war.”⁴⁸

MACV responded by holding a press conference in which Westmoreland declared that “As far as the U.S. Military Assistance Command in Vietnam is concerned, one mishap – one innocent civilian killed, one civilian wounded or one dwelling needlessly destroyed is too many.” He emphasized that “People, more than terrain, are the objectives in this war, and we will not and cannot be callous about those people ... We realize we have a great problem, and I assure you we are attacking it aggressively.”⁴⁹ At a Commanders’ Conference five days later, the general distributed “rules of engagement and procedures on control of fires of all types,” stressing that “It is extremely important that we do all we can to use our fires with discrimination, and avoid noncombatant battle casualties.” To Westmoreland, this was “a very sensitive subject, both locally and among our own press corps.”⁵⁰

Despite the concern that he voiced in the fall of 1966, Westmoreland saw no need to direct substantive changes regarding H&I fire at that time. He issued a new MACV

Directive 525-3 on 14 October 1966 but that document hardly differed from its predecessor. The new directive simply expanded on Westmoreland's guidance regarding troop indoctrination, requiring commanders to "maintain and conduct a thorough and continuing program to emphasize both the short and long range importance of minimizing noncombatant casualties."⁵¹

The only other change present in the new directive was one of semantics. The directive now referred to "Free strike zones" as "Specified strike zones." Westmoreland had officially redesignated these zones on 20 December 1965 in "MACV Directive Number 95-2, Aviation."⁵² The motivation for this change was simple – "Specified strike zones" did not sound as reckless to the media and other laymen. A MACV fact sheet later confirmed that Westmoreland made the change to avoid the impression of "uncontrolled indiscriminate firing" in these zones.⁵³ Indeed, as early as 15 September 1965, Westmoreland had stated to a joint board called to improve tactical air support that "The term 'Free Bomb Zone' implies indiscriminate bombing. A suggested substitute could be 'Special or Designated' Bomb Zone."⁵⁴

By April 1967, Westmoreland's concerns over civilian casualties had receded. At a subsequent Commanders' Conference, he declared that "We have been our own worst enemy in advertising civilian casualties. The press picks up reports and people in the U.S. think there are more civilian casualties than anytime in history. Actually, there are fewer than ever. Commanders and troops have exercised the greatest restraint. We must do all we can to publish the true story."⁵⁵ During the same meeting, one of

Westmoreland's division commanders even advocated that "We must make heavy use of free fire zones."⁵⁶

Mainly directed against enemy freedom of movement and morale by the armies of various nations throughout the twentieth century, unobserved artillery fire likely killed few civilians or soldiers and Westmoreland directed no significant changes to unobserved artillery fire until he detected important monetary concerns in July 1967. In that month, his MACV staff published a study on ammunition expenditures. Its timing coincided with both the Pentagon's study on unobserved fire and AID's casualty estimates, but the subject matter of the former spurred Westmoreland to squarely question the conduct of H&I fire in Vietnam. Like the Pentagon study, the MACV ammunition study concluded that American forces expended nearly six tons of ammunition for each enemy soldier killed during 1966. The MACV analysts concluded that these expenditures already exceeded *three billion dollars a year* and that "a substantial portion of this cost [was] for artillery ammunition."⁵⁷

Westmoreland had previously warned of unobserved fire's potentially counterproductive nature regarding civilian casualties, but he now seized upon ammunition efficiency when addressing his subordinate commanders. Starting in July, he ordered the U.S. Army, Vietnam (USARV) staff to re-examine the employment of American artillery. USARV hosted an artillery conference on 15 August, where Westmoreland and his subordinate commanders discussed "the rising trend in ammunition expenditures" and the corresponding need to use resources more efficiently.⁵⁸ Leaving H&I "under the control and judgment of Field Force

commanders” for now, Westmoreland gathered their recommendations concerning possible reductions in H&I fire. At the conference, his subordinate commanders generally defended H&I by calling for “improved intelligence at all levels.”⁵⁹

MACV was not alone in recognizing the profligate waste associated with unobserved artillery fire and Westmoreland soon received ample support to reduce the practice within his command. The Chief of Staff of the Army, General Harold Johnson, had also appreciated the extent of unobserved artillery fire during a visit to MACV during July and August. In a 2 October cable to Westmoreland, Johnson remembered that he “came away with the impression that approximately 6 per cent of artillery fires were observed,” an approximation that the Army’s senior artilleryman and former Comptroller of the U.S. Continental Army Command, General Charles Brown, closely corroborated to Johnson after a separate visit to South Vietnam. Johnson cautioned Westmoreland that “We are in the process of making our initial budget submission for FY [Fiscal Year] 69. Today we are writing checks for a quarter of a billion dollars every month to pay for ammunition.” Briefly noting an idea of “silencing the battlefield,” General Johnson emphasized that “When one relates this enormous cost to the unobserved artillery fires it is obvious that a significant question is raised, especially in view of the domestic furor over the cost of the war, poverty programs, and tax increases. This is a problem that both of us share,” he added, “because of the essentiality of maintaining U.S. domestic support for the war effort in Vietnam.” Although General Johnson repeated that he would “deplore and oppose any inclination from the Washington level to impose limitations on firepower application,” he concluded that it was “prudent” for

Westmoreland “to undertake a very careful examination of the problem.”⁶⁰ Having already started such an examination, Westmoreland would soon generate real reductions in unobserved fire.

Despite his subordinates’ defense of unobserved artillery fire, Westmoreland reached a turning point regarding the practice in July and August of 1967. He would no longer accept weak doctrinal justifications for the unrestrained application of unobserved artillery fire, even in hostile areas. His future guidance regarding unobserved fire would initiate a steady decrease in these missions that would continue throughout the remainder of his command in Vietnam. To Westmoreland, gross fiscal inefficiency had sounded the death knell for wasteful, unobserved artillery missions. Whether he viewed bolstered enemy propaganda, augmented enemy logistics, or unfavorable AID, Pentagon, and American press estimates of civilian casualties as comparable disadvantages remains unclear, but these factors did coincide for Westmoreland in July 1967. It is clear, however, that budgetary concerns drove him to finally deem unobserved artillery fire a dubious practice. Therefore, to save money, Westmoreland soon began to order cut backs in unobserved artillery expenditures in South Vietnam.

Notes

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CHAPTER V
UNOBSERVED FIREPOWER BY U.S. MARINES AND ALLIED GROUND
FORCES, 1965-1967*

To pursue victory in Indochina, the United States and Allied ground forces deployed considerable amounts of conventional artillery to South Vietnam from 1965-1967. As the U.S. Army's buildup progressed, its number of artillery battalions swelled from eighteen in 1965, to 36 in 1966, and to 53 battalions plus four separate batteries during 1967.¹ Meanwhile, the U.S. Marines deployed nine battalions and five separate batteries in South Vietnam's four northern provinces of Da Nang, Chu Lai, Phu Bai, and Dong Ha.² The Republic of Korea dispatched four artillery battalions to support its Capital Division ("Tigers") in Binh Dinh Province and another four battalions to support its 9th Infantry Division ("White Horse") at Ninh Hoa. The 1st Australian Task Force, operating southeast of Saigon in Phuoc Tuy Province, included two Australian batteries and a single Royal New Zealand Artillery unit, the 161st Artillery Battery. The 1st Philippine Civic Action Group, located in Tay Ninh Province, also included a single artillery battalion.³ The South Vietnamese Army (ARVN) included 27 artillery battalions, while the ARVN Airborne Division and the Vietnamese Marine Corps (VNMC) brigade each fielded an artillery battalion as well. Thus, by the end of 1967,

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more than 100 U.S. and Allied artillery battalions served in South Vietnam, as 71 battalions and nine separate batteries of U.S. and Third Country partners served alongside 29 South Vietnamese artillery battalions.⁴

In South Vietnam, the U.S. and its Allies employed this prodigious artillery in a war that was *simultaneously* conventional and a counterinsurgency. On one hand, regular North Vietnamese Army (NVA) units and irregular Viet Cong (VC) infiltrated and occasionally massed for combat throughout the frontless 1,200-mile length of South Vietnam. On the other hand, the United States and its Allies recognized a more fundamental, but less tangible, war to deny the enemy the largest sanctuary of all: South Vietnamese popular support. Even when used to kill the enemy, firepower could prove counterproductive if poorly restrained, since civilian casualties or collateral damage could alienate the population whose passive or active support represented the object of the struggle.

From 1965-1967, American and Allied ground forces approached the intersection of collateral damage and counterinsurgency from different perspectives, but plentiful ammunition and faith in conventional weaponry prompted each to employ tremendous amounts of unobserved firepower. The U.S. Army fired up to 91 percent of artillery missions and 85 percent of artillery ammunition against unobserved targets, mostly H&I, as it focused on destroying NVA and main force VC units in remote areas and relegated the less tangible, yet culturally and linguistically demanding counterinsurgency, or “pacification,” responsibility to the South Vietnamese.⁵ The Marine Corps advocated population-centric American operations and even pioneered the use of Combined Action

Platoons – Marines who lived among South Vietnamese villagers, but its artillery likewise fired nearly the *same amount* of artillery unobserved.⁶ The Australians employed unobserved firepower while also endeavoring to treat the population with careful regard, while the Philippine battalion relied on unobserved firepower to accomplish its narrow mission of base camp defense.⁷ General William Westmoreland, Commander of the Military Assistance Command, Vietnam (MACV), found that Korean units “were sensitive about keeping [their own] casualties down, which resulted in a deliberate approach to operations involving lengthy preparations and heavy preliminary fire.”⁸ The South Vietnamese Army (ARVN) believed that even small amounts of artillery inspired fear: it dispatched half of its artillery to one- or two-gun “territorial defense” positions around South Vietnam and there expended half of its ammunition.⁹

Both Army and Marine Corps doctrine sanctioned unobserved artillery fire in counterinsurgency. The Army’s *FM 31-16, Counterinsurrection Operations*, published in 1963, cautioned that artillery would have “limited freedom to fire due to civilian villages, activities, and movements,” but suggested that it could “harass guerillas during periods of reduced patrol activity by friendly elements.” Moreover, it advised that “the demoralizing effect of artillery fire on guerilla units will often justify its use when there is little possibility of its inflicting substantial damage.”¹⁰ *FM 6-20-1, Field Artillery Tactics*, published by the Army in 1965, prescribed unobserved and “irregularly timed” artillery fire at targets such as “harbors, road junctions, bridges, and crossroads” after “studies of maps, terrain, and road nets available to the enemy, and all other target

intelligence.” It cautioned, however, that “Indiscriminate use of artillery fire can quickly alienate a population.”¹¹

The Marine Corps codified clearer doctrinal authority for the extensive use of unobserved fire in counterinsurgency. *FMFM-9, Field Artillery Support*, published in 1963, called for unobserved fires based on “all available counterguerilla intelligence and information” that would “interfere with the guerilla plans by denying use of communication routes, selected areas and terrain features, disrupt and demoralize the guerilla, destroy his confidence and will to fight.”¹² The following year *FMFM 8-2, Operations Against Guerilla Units*, called for artillery fires against potentially “unoccupied” targets including “communications routes” and for “harassing” fires intended “to disturb the rest of the guerilla, to curtail his movement, and by threat of loss, to lower his morale.”¹³ The 1964 and 1967 editions of *FMFM 8-2* each acknowledged that “Related to the total guerillas killed, ammunition expenditures by artillery may appear excessive,” but the 1967 version advised ways to solve this “complex logistical problem” that did not include reducing unobserved fire. Indeed, it recommended expanding harassing fires into daytime hours “when circumstances warrant.”¹⁴

The Army and the Marines believed unobserved fire to be an effective deterrent against insurgent mortar or rocket attacks on firebases, base camps, and other positions. Operation FIREBALL I, conducted by the Army’s 25th Infantry Division during 1966 provided an example of this. The 25th Division Artillery “immediately initiate[d] an effective H&I [harassment and interdiction, or unobserved fire] program” at the outset of

the operation. Despite the absence of any real evidence, the 25th Division Artillery declared that its program had been effective because “an enemy mortar attack was not mounted on the artillery battery or supported unit even though both occupied Viet Cong dominated territory for three weeks.”¹⁵ Marine doctrine described unobserved, countermortar fire in conventional terms, explaining that “normal countermortar techniques are utilized in target accumulation, target selection, and target attack” and stipulating that “Plans are prepared on active locations.”¹⁶

The defense of Camp J.J. Carroll in Quang Tri Province provided another example of unobserved fire in a conventional, countermortar program. In a July 1967 oral history interview, Captain John W. Swantis, the Fire Support Coordinator of the 3rd Marine Regiment, 3rd Marine Division, explained the program. “At all times,” he kept each of his artillery batteries aimed and “cleared” to fire at positions from which the enemy had fired mortars or rockets “more than once.” If Camp Carroll received indirect fire, then his batteries were “instructed to immediately fire these locations,” while personnel in two observation towers searched for its point of origin as a countermortar radar scanned the area. The batteries would proceed to deliver unobserved fire onto other “known locations” until a point of origin was determined. Swantis emphasized that “Normally, we do receive target locations from the towers by the time we are done completing our unobserved fire and we go into observed fire on the enemy positions. The results of this apparently are quite satisfactory because not since the first time that Camp Carroll was hit have we taken any significant number of rounds.”¹⁷

Most unobserved artillery fire comprised harassment and interdiction (H&I) missions intended not to inflict significant casualties, but rather to lower enemy morale and freedom of movement by randomly-timed, one or two-gun volleys against trail intersections and terrain features that the elusive communist enemy might use, particularly during hours of darkness. Writing about his experiences in Vietnam, one Army artilleryman remembered that “Every night, starting around 2300 hours, we would fire our H&I’s ... periodically and keep it up throughout the night. Intelligence would speculate which trails the Viet Cong would be using to transport supplies and would pick some spot on the trail on which to drop a few rounds.” These fires simply sought to “confuse and delay enemy movement.”¹⁸ Robert W. Tagge, a battery commander in the 1st Battalion, 77th Field Artillery from 1965-1966, remembered that his battalion fired H&I missions almost continuously, even during daylight hours.¹⁹ Lieutenant General David Ott, who served as executive officer of the Second Field Force Artillery and commander of the Army’s 25th Infantry Division in South Vietnam, later the Army’s senior artilleryman, admitted that “We seldom had good intelligence – target intelligence – other than when we were in physical contact with the enemy.”²⁰ Veterans remembered that H&I targets were set up hours in advance, originated at battalion and division level, changed nightly, and typically targeted trails, road intersections, and abandoned villages. Furthermore, when operating independently, batteries would plot their own H&I targets.²¹ Naturally, artillerymen could expect the majority of these rounds to simply pound dirt, sparing all potential casualties.

Marine H&I resembled the Army practice. Lieutenant Earl Gorman, a 1964 U.S. Naval Academy graduate and Marine forward observer during 1965-1966, recalled H&I as a “nightly ritual” in which his battery executive officer determined, “in consultation with” an artillery liaison officer embedded with the infantry, “the most likely place to kill, or at least disturb the nightly activities of the enemy by shooting howitzer rounds at the best-guessed places he might approach or inhabit.” Relying on current available intelligence and “a careful study of maps,” they “avoided any place where civilians may have been or where Marine ambush patrols had been set up.” After sending the targets “up the chain of command for approval,” Marine artillery “desultorily” fired H&I “all night long,” and “one round at a time.” He recalled that “Usually the shells exploded harmlessly into rice paddies or onto an intersection of unoccupied trails. Occasionally they stuck sleeping peasants in their thatch-roofed homes or penned-up water buffaloes tied up in a nearby corral,” but emphasized that “chances were less than slim the enemy would be hit.”²² He also recalled plotting H&I targets, usually “roads, hilltops and trail junctions out in the boonies,” after his liaison officer had likewise selected the coordinates in a “scheme [that] was designed for ‘at random’ high explosive projectiles to crash at no foreseeable time or place, to make enemy movement at night chancier.”²³

In the northernmost province of South Vietnam, Quang Tri, Marines employed extensive H&I to protect their camps and to discourage infiltration near the Demilitarized Zone (DMZ). By January 1967, nine Marine camps traced the main east-west road, Route 9, and two river lines that also generally paralleled the DMZ. These included the Cua Viet camp on the coast, Gio Linh north of Cua Viet, and several camps

inland along Route 9 and the Cua Viet-Mieu Giang-Cam Lo river line: Dong Ha, Con Thien, Cam Lo, Camp Carroll, and a camp named the Rockpile. Along the Thach Han river south of the Rockpile, Marines were stationed at Ca Lu and, finally, in the remote outpost of Khe Sanh near the border with Laos. Threats in this area included not only local guerillas, but also Main Force Viet Cong and conventional NVA units that infiltrated south after staging in safe havens north of the DMZ, prompting the 1-13th Marines at Khe Sanh to fire more than *95 percent of artillery missions as H&I* from August to December 1967.²⁴

Even near the DMZ, close to communist cross-border sanctuaries, firing at H&I targets around Marine camps had little prospect to inflict significant enemy casualties. The H&I system at Camp Carroll, explained by the 3rd Marine Regiment's Fire Support Coordinator, Captain Swantis, can be taken as representative. Marine maneuver battalions generated targets both day and night "based on locations the enemy has used before," such as "harbor sites, known avenues of approach, known avenues of withdrawal, known rocket and mortar sites, and other areas which the enemy [was] apt to occupy," but sites that the Marines were "not able to observe or occupy" themselves. Captain Swantis recalled that, each day, after plotting all the battalion targets on the map, he and his lieutenants and looked over them to "decide if additional H&Is are needed based on our knowledge of the enemy, or based on our knowledge of intelligence gathered from the S-2 based on the enemy's activities in the area." Swantis and his assistants then plotted additional H&I targets if they felt that they were necessary.²⁵ Thus, H&I target selection was loose at best and intended to deter movement, not to kill

– despite *previous* enemy activity at these locations, chances were remote that these unobserved and randomly timed projectiles would actually strike anyone.

Marines employed H&I to deter enemy movement during 1965-1967, but they objected to building and manning a large, conventional barrier along the DMZ throughout most of this period. Secretary of Defense Robert S. McNamara proposed the idea to the Joint Chiefs of Staff in March 1966 and pressed its increasing realization through December 1967. Named Practice Nine, Illinois City, and finally Dye Marker as it evolved, the barrier plan included a 600 meter-wide “trace,” cleared of vegetation and extending nearly 30 kilometers from Dong Ha Mountain to the South China Sea. Within this trace was to be an obstacle line of mines, concertina wire, and acoustic sensors to detect enemy movement. Behind the trace, one Marine and one ARVN regiment would man six company strong points and three battalion base areas, supported by another Marine battalion based at Dong Ha and by artillery. The Commander of the III Marine Amphibious Force, General Lewis Walt, continued to believe that a mobile defense force, even of division size, would be more flexible and economical than such fixed defenses. In August 1967, the Commandant of the Marine Corps, General Wallace M. Green, testified to the Senate Subcommittee on Preparedness that “From the very beginning I have been opposed to this project.” Lieutenant General Robert E. Cushman, Jr., who replaced Walt on 1 June 1967, later called the barrier system “*stupid*.”²⁶ The root of the Marine complaint was the timeless principle that military obstacles are effective only when observed – to properly observe the barrier would demand too many Marines on too little terrain.

Yet the Marine Corps felt compelled to advertise the supposed effectiveness of its unobserved and randomly timed artillery fires. Insisting that “The daily thunder of artillery engaged in harassing and interdiction missions is not without its merits,” the April 1967 issue of the Marine bulletin “Professional Knowledge Gained from Operational Experience in Vietnam,” advised its readers that enemy “campsites had received hits and near misses, supply caches were destroyed, trail systems and river crossing sites were struck, forcing the VC to dislocate.” It admitted that “enemy casualties from H&I fires are seldom discovered by friendly patrols,” but that “dried blood and discarded dressings have been located, and villagers occasionally have reported VC carrying parties moving their wounded to more secure locations.” Yet the same issue also noted that “Strikes in populated areas, reconnaissance by fire into hamlets, and poorly selected harassing and interdiction fires are examples of military measures which will be counterproductive in the long run.”²⁷ The August 1967 issue again asserted that “Harassing and interdiction (H&I) fires based on an understanding of the current intelligence situation can be very effective in demoralizing the enemy both day and night.”²⁸

It is important to recognize that Army and Marine harassment and interdiction missions demanded few rounds on an individual basis, but their sheer volume yielded massive ammunition expenditures. In September 1967, H&I missions consumed 39 percent of rounds fired by the Army’s I Field Force Vietnam Artillery (First Field Force Artillery) in the II Corps Tactical Zone, south of the Marine Corps area of operations.²⁹ In November 1965, 4-12th Marines likewise fired 2,807 of 6,590 rounds, or 43 percent

of its ammunition as H&I. Between June 1966 and December 1967, the 1-11th Marines expended 114,229 of 242,081, or 47 percent unobserved and 88,398 of those rounds constituted H&I.

Ironically, such massive expenditures of ammunition helped to ease the Viet Cong's logistical demands. In July 1967, a Pentagon study explained that "The VC get most of the materials they require for mines and booby traps from dud bombs, dud artillery shells, and captured ordnance." Indeed, "the 27,000 tons of dud bombs and shells each year from such attacks provide the enemy with more than enough material to use in mines and booby traps." Thus, the American penchant for unobserved fire helped to provide the Viet Cong with a ready supply of explosive filler that the Viet Cong fashioned into booby traps – devices that killed more American soldiers than any other type of weapon during the war and that sometimes killed unfortunate Vietnamese civilians as well.³⁰

This high volume of unobserved artillery fire not only contributed to the dangers posed by mines and booby traps, but it also carried a potential for more direct human tragedy. Lieutenant Gorman recalled "The Night Rules" that he and his infantry company commander, Captain Ron Adams, had explained to South Vietnamese villagers in their area: "Very simply, anyone out [of the village perimeter] at night was considered the enemy. As such, they would be shot at and killed." This and the "Harassment and Interdiction projectiles fired at arbitrary times to random locations all night long" made the policy "very straightforward and deadly" and "caused serious concern among the people." It could be sometimes deadly indeed: one of Gorman's

H&I missions eventually killed a woman and a baby at a road junction outside the village during nightly curfew. The Marine officer who subsequently investigated the incident reiterated the policy, but told Gorman not to plan any more H&I at that road particular road junction. Nevertheless, Gorman remained “very saddened,” even “haunted,” by the incident for decades after the war.³¹

Tragedy could result when H&I accidentally fell near fellow soldiers, too. Marine Captain Andy DeBona, commanding Mike Company, 3rd Battalion, 26th Marines near Camp Carroll in Quang Tri Province, once recalled hearing what “sounded like our own artillery” firing for some time, before he suddenly “heard *bang-shhhm-booms* come in nearby” that “sounded like it was coming from the direction of Camp Carroll.” DeBona “reported to Battalion that we were receiving friendly H&I fire,” because “It was only one gun at a time and it was spaced well apart.” Camp Carroll then “denied that they were shooting anywhere near the location we reported, but the *bang-shhhm-booms* continued,” whereupon DeBona confirmed the azimuth to the next boom by compass and reported this to his chain of command. Incredibly, DeBona recalled, “Battalion came back and said again, ‘No, Camp Carroll denied it,’” and the risk of imminent fratricide persisted.³²

One senior Army officer perceived other counterproductive aspects of unobserved artillery fire in October 1966. Major General Arthur S. Collins, Jr., commander of the 4th Infantry Division, took significant action when he learned that his officers had fired hundreds of rounds as unobserved harassing and interdiction (H&I) during his first night commanding them in the field. Almost immediately, he asked them to “Consider the

troops, trucks, and fuel that we use.... Then if you carry this back to the ships,” he continued, “the number of rounds that have to be loaded and unloaded, have to be stored and protected, and even go back to the manufacturing, think what a waste this is of our national resources.” To Collins, this was appalling, since “none of it is observed and you have no indication of any effect at all on the enemy.”³³ He reduced unobserved fire substantially over the next several days, from hundreds of rounds per night to nearly zero, citing not only the need for “economical use of resources,” but also the danger for “loss of life or damage to [Vietnamese civilian] property.”³⁴ He estimated that unobserved artillery firing sometimes killed animals, or even civilians, but that “We have no way of knowing and we’re not going to find out and it doesn’t help our image.”³⁵ Collins’ philosophy of firepower restraint remained exceptional, as unobserved fire persisted at high levels among other Army units during 1965-1967, revived in the 4th Infantry Division after he departed in 1967, and comprised a significant percentage of missions until 1970, when budget cutbacks forced the virtual elimination of the practice.³⁶

Records of Marine artillery units during 1965-1967 not only lack a corollary to Collins’ exceptional reductions in unobserved fire, but they also demonstrate that Marine zeal for the practice grew to match, if not exceed, that of the Army. From June 1965 to July 1967, the eight artillery battalions of the 11th and 12th Marine Regiments averaged 86 percent of missions unobserved, while harassment and interdiction fire constituted 75 percent of all Marine artillery missions. During 1966, the Army had fired up to 91 percent of its missions unobserved and the Marines up to 94 percent. In fact, during the

entire period June 1965 to July 1967, the eight artillery battalions of the 11th and 12th Marine Regiments averaged 86 percent of missions unobserved and 75 percent H&I. Between August and December 1967, when Westmoreland and the Army began to consider cutting back on wasteful ammunition expenditures, the Marines continued to average 86 percent of missions unobserved and 76 percent of missions as H&I. Like the Army, the Marines also consumed considerable quantities of ammunition on this unobserved artillery fire: between June 1966 and December 1967, the 1-11th Marines expended 114,229 of 242,081, or 47 percent of ammunition unobserved, while 88,398 of those rounds constituted H&I.³⁷

With few exceptions, Marine unobserved fire remained consistently high even at battalion level. The percentage of H&I missions by 1st Battalion 11th Marines (1-11th Marines) hovered between 31 percent and 37 percent between December 1966 and April 1967, but it rose again to 51 percent in May and climbed to 88 percent H&I by December 1967.³⁸ In his monthly “command chronology,” the commander of 1-11th Marines between December 1966 and April 1967, Lieutenant Colonel Mark P. Fennessey, mentioned neither ammunition constraints nor philosophical objections to unobserved fire as had Collins. The percentage of H&I missions recorded by his battalion had dropped significantly in this single battalion for several months, but without fanfare or explanation.³⁹

Two other aberrations in Marine data underscore just how pervasive H&I fires were within I Corps during 1965-1967. The 1st Battalion 12th Marines (1-12th Marines) also recorded changes in H&I during December 1966 to May 1967. Its H&I fell from 91

percent in November 1966 to 20 percent in December 1966 and stayed near this lower level until May 1967, when it jumped back to 83 percent H&I. The 4th Battalion 12th Marines (4-12th Marines) also experienced a similar drop, but only in November and December of 1966.⁴⁰

While unobserved fire thundered nightly, and even daily, at most Marine camps, the few Marines who were embedded in South Vietnamese villages shunned most artillery and air support. These Marines belonged to the Combined Action Platoons (CAPs), squads of Marines who helped platoons of South Vietnamese Popular Forces (PFs) to provide security and population control in and near their home villages and hamlets. Given the strong family and ancestral ties of Vietnamese culture, this small investment of Marines capitalized on PF willingness to defend their own homes, while it avoided the likelihood that PF soldiers would desert if assigned elsewhere. General Walt initiated the program with seven CAPs in January 1966 based on similar successes by Lieutenant Colonel William Taylor's 3rd Battalion, 4th Marines around Phu Bai combat base in Thua Thien Province. By the beginning of 1967, there were 57 CAPs at villages and hamlets near Marine camps in South Vietnam.⁴¹

CAP Marines and PFs alike eschewed heavy firepower precisely because they placed such great value on the safety of homes and families. Captain Francis J. "Bing" West, Jr., who led an early CAP squad in Binh Nghia village, Quang Ngai Province, during 1966, recalled that his village was already marked as "out of bounds for harassment and interdiction artillery fire because Americans patrolled there." The villagers, West remembered, also knew that having Marines made them "safe from indiscriminate air

and artillery attacks.” Beyond this, the PF themselves preferred to accept a “rifle fight” in Binh Nghia if VC attacked, rather than to defeat the enemy with heavy firepower. The reason was simple: the PF “did not want to destroy their own homes” and “families huddled in their household bunkers.”⁴²

Personal tragedy involving misdirected heavy firepower led the Binh Nghia CAP to shun artillery in particular. During their 40th night patrol with the PF, the Marines observed approximately 30 Viet Cong in rice paddies near Binh Nghia. To engage the Viet Cong, the Marines used their radio to request a fire mission from nearby artillery, but the first round fell short of the target, unobserved, and the artillery fired a second round before the mission could be stopped. At least one of the two short rounds had landed near a hut in Binh Nghia, setting its thatched roof on fire. Of a family of five who were in the hut at the time, three were wounded, but the single fire mission left a mother and daughter “dead because of firepower gone awry.” The CAP could not forget this, since “the black ashes of the house could be seen by patrols coming and going from the fort, a constant reminder which for seventeen months affected, if it did not actually determine, the American style of fighting in the village of Binh Nghia.” West emphasized that “The Marines saw too much of the villagers, and lived too closely with them, not to be affected by their personal grief. Besides, the Americans had to patrol with the PFs, whose own families were scattered throughout the hamlets and who were naturally concerned about the use of any weapon which might injure their relatives.” Thus, West emphasized, “the rifle – not the cannon or the jet – was to be the primary weapon of the Americans in Binh Nghia.”⁴³

Although they preferred to use rifles near their villages, CAPs at Binh Nghia and elsewhere often appreciated artillery illumination when they made contact with the enemy. For example, Sergeant Calvin D. Brown, leader of Combined Action Platoon A3, requested illumination when his patrol encountered Viet Cong in a rice paddy near Thuy Phu village in Thua Thien Province on 6 July 1967. Sergeant Brown and his Marines had not realized it at first, but artillery illumination revealed they had caught the enemy “completely by surprise,” with Viet Cong “running all over the area” and “in great confusion.” Sergeant Brown’s team did not request heavy firepower, but instead asked to be reinforced by another CAP patrol. Together, these two patrols forced the Viet Cong to withdraw and the next Marine request for artillery illumination revealed five Viet Cong bodies and ten “distinct” blood trails leading away from the engagement area.⁴⁴ The CAP Marines at Binh Nghia likewise requested artillery illumination to discern Viet Cong sampans approaching their village and they, too, engaged the enemy with automatic weapons – not with artillery. Even when the Viet Cong attacked Binh Nghia or the PF fort itself, the Marines requested artillery illumination, but not explosive ordnance.⁴⁵

Away from friendly villages, CAP Marines sometimes accepted artillery like their more conventional counterparts. Corporal Robert A. Redden, III, leader of Combined Action Platoon H4 at Bac Toc Hamlet in Thua Thien Province, described how his Marines used intelligence to help plan artillery fires. Concerned that the Viet Cong might place mortars in the surrounding hills, Redden and his men relied on “woodchoppers,” men who cut down and gathered wood for lumber, to gather “any

information” about Viet Cong troop movements in the hills and to “come down and tell somebody else in the village, or in the hamlet, and finally it gets to the PF leader or the village chief or hamlet chief and he will keep us informed.” After forwarding such intelligence into Marine channels, the Marines “could get our artillery in on them or whatever the higher echelon wants to do to them – bomb them or airstrike them, or just plain artillery them.” This was a good system, Redden emphasized, because “The reliable sources that bring in this information have proved, time and time again, that the information that they have gathered and told us has been pretty close to true.”⁴⁶ Yet delayed reports of Viet Cong movements by “woodchoppers” could not constitute target observation even when they were accurate – subsequent artillery fire into the hills had little chance of killing the enemy.

CAPs exercised genuine firepower restraint in their villages and some historians have seized upon this effort to suggest that a feasible alternative American military strategy existed during the war. While acknowledging that only “a mere ten companies were involved in the CAP program during 1967,” historian Andrew F. Krepinevich contends in his book *The Army and Vietnam* that CAPs epitomized a Marine “challenge” to the Army’s firepower-intensive, conventional way of war. He suggests that Walt fought the war in a different way than the Army by issuing “stringent orders regarding the application of firepower, keeping it to an absolute minimum,” and directing “all Marine combat units to conduct vigorous patrols and ambushes from sundown to sunup, when insurgent activity was greatest.” Krepinevich highlights Westmoreland’s refusal to embrace CAPs and keys on Major General William Depuy’s sarcastic observation that

the Marine Corps was, as a whole, thus “involved in counterinsurgency of the deliberate, mild sort.”⁴⁷

Westmoreland chose not to embrace the CAP program for several reasons. Comparing South Vietnamese popular support for their own government to a house beset by insurgent “termites,” Westmoreland viewed NVA and main force VC units as “bully boys” bent on demolishing the termite-weakened structure by hurling massed combat formations armed with figurative “crowbars.” Convinced that he did not possess enough American troops to simultaneously strengthen and protect the South Vietnamese house and assessing comparative strengths and weaknesses, Westmoreland relegated the less tangible, yet culturally and linguistically demanding counterinsurgency, or “pacification,” responsibility to the South Vietnamese, although he asserted that “more American troops were usually engaged on a day-by-day basis, helping weed out local opposition and supporting the pacification process, than were engaged in the big fights.” Nevertheless, he believed that “Superior American firepower would be most advantageously employed against the big units, and using it in remote regions would mean fewer civilian casualties and less damage to built-up areas.” Moreover, he posited that “The fewer Americans in close contact with the people also meant that much less provocation of the xenophobia of the Vietnamese, that much less opportunity for unfortunate incidents between American troops and the people.” Thus, Westmoreland focused the Army on “eliminating” the “bully boys” or “at least, so harrying them as to keep them away from the building.” Convinced that he “never had the luxury of enough troops to maintain an American, Allied, or ARVN presence everywhere all the time,” he

believed that a CAP-like program “would have required quite literally millions of men,” while “the very existence of large enemy units made it essential that American troops be prepared on short notice to drop what they were doing and move against a developing big unit threat.” Thus, he saw no feasible alternative to a firepower-based “war of attrition” in which he sought and obtained Marine participation.⁴⁸

Westmoreland wanted a firepower-based war of attrition, yet his firepower directives resembled Walt’s. As early as 7 September 1965, Westmoreland published rules of engagement warning that overzealous unobserved fire could hinder the American war effort. On that date he issued “MACV Directive 525-3,” which sought to minimize non-combatant battle casualties and their impact. His directive emphasized that, to alienate the people from the government, “The VC exploit fully incidents of non-combatant casualties.” It posited that “the battle for Vietnam flows backward and forward across the homes and fields of the hapless rice farmer and small town inhabitant,” adding that “Whether, at any one time, he lives in a VC or GVN controlled hamlet depends to a large extent upon factors and forces beyond his control.” Therefore, “The use of unnecessary force leading to non-combatant battle casualties in areas temporarily controlled by the VC will embitter the population, drive them into the arms of the VC, and make the long-range goal of pacification more difficult.” Indeed, the directive declared that “Prestrikes in populated areas, reconnaissance by fire into hamlets and poorly selected harassing and interdiction fires are examples of military measures which will be counterproductive in the long run.”⁴⁹ Despite such pronouncements, the Army’s own inertia and Westmoreland’s emphasis on a firepower-based war of attrition

precluded any meaningful reduction of unobserved fire near or outside populated areas until budgetary pressure emerged in late 1967.

Thus, notwithstanding CAP firepower restraint, the Army and Marine Corps each pursued a firepower-intensive war of attrition during 1965-1967 that included large amounts of unobserved firepower. The Marine Corps may have conducted fewer large-scale search and destroy operations than their Army counterparts, but they did conduct them. General Walt's innovative CAP program remained comparatively tiny during this period, involving only a few hundred Marines. Most importantly, Marine rates of unobserved fire grew to match, and then to exceed, those of the Army during Westmoreland's firepower-intensive strategy of attrition. One should not overemphasize the CAP exception when considering Marine employment of unobserved firepower during the Vietnam War.

When searching for a service-wide exception to the high rates of unobserved firepower during 1965-1967, it is important to consider the 1st Australian Task Force. Responding to President Lyndon Johnson's call for "more flags" to give combat and non-combat assistance to South Vietnam, Australia dispatched an enhanced infantry battalion task force to join its few advisors and non-combat personnel who had been in South Vietnam at increasing strength since 1962. The task force arrived in June 1965, along with a signal troop, a logistical support company, and the 161st Artillery Battery that New Zealand deployed to support the Australians. Under tight restriction by the Australian government at first, this task force provided local security not more than 30-35 kilometers from Bien Hoa, in Bien Hoa Province, and focused on defense of that

base, without territorial responsibility for populated areas. The Australian government increased its commitment in August 1965, when it permitted operations in provinces contiguous to Bien Hoa Province, again in September, when it deployed an Australian artillery battery with more supporting troops, and again in March 1966, when it expanded the force to two infantry battalions.⁵⁰

With the March 1966 increases and Australian concurrence, Westmoreland moved the Australian Task Force to Phuoc Tuy Province, southeast of Saigon, where it served under the operational control of Westmoreland's II Field Force. The Australians became fully operational at Phuoc Tuy in June 1966, with a relatively small area of operations, but responsibilities that included both pacification and conventional dominance, including a specific mission to maintain open communications along Highway 15 – in all of this, the Australians could receive additional fire support from II Field Force Artillery upon request. By December 1966 the Australian responsibility grew to encompass half of the province and, when a third Australian infantry battalion in late 1967, the Australian Task Force formally requested that its area of responsibility expand to the province boundaries – a change that took effect in early 1968.⁵¹

The Australians participated in many engagements in Phuoc Tuy Province, including a significant battle that took place at Long Tan on 18 August 1966, when D Company of the 6th Battalion, Royal Australian Regiment encountered approximately 1,500 NVA and VC. Against odds of nearly 20-1, Captain Maurie Stanley, a New Zealand forward observer (FO), directed nearly 3,200 rounds of artillery explosives onto the enemy over a three-hour period, helping to kill at least 245 NVA and VC before the communist forces

disengaged. D Company, which nearly ran out of ammunition during the battle, received its decisive fire support from New Zealand and Australian artillery located at Nui Dat, augmented by Australian helicopter gunship support “under extremely difficult weather conditions,” a napalm strike that landed “some distance away” from the enemy, and the on-call fires of four U.S. 155mm self-propelled howitzers that were also in range.⁵²

Like the misguided McNamara line that stretched across the northern reaches of South Vietnam, the Australian Task Force later installed a barrier minefield and fence as a poor substitute for a third maneuver battalion during 1967, consuming much of their combat power. Intended to cut off enemy supply and courier routes that extended from east to west across the south-central portion of Phuoc Tuy Province, the barrier extended eleven kilometers from a prominent hilltop known as “The Horseshoe” to the coast. Inside a trace cleared of vegetation, the Australians laid two parallel rows of barbed wire, approximately 100 meters apart, accompanied by more than 22,500 anti-personnel mines and 12,700 “anti-lift” devices. The latter were needed, some Australian officers had insisted, because the minefield, if insufficiently observed by Allied forces, would actually serve communist logistical needs by providing explosives that communist insurgents could remove for use in booby traps – the number one killer of Allied soldiers in South Vietnam. This proved to be the case, as Australian and ARVN observation of the minefield proved insufficient, infiltration continued, and many mines went missing, underscoring Marine insistence that such barriers demanded too many men on too little terrain in this type of war. Yet, whereas Marines employed prodigious artillery in

unobserved “harassing and interdiction” missions as a substitute for direct observation, it is not clear that the Australians employed artillery for this purpose, or at least on an equivalent scale, even though the length of the barrier was within range of artillery batteries located at “The Horseshoe.”⁵³

Indeed, even though the Australian Task Force served under Westmoreland’s operational control and had both organic artillery and access to additional II Field Force firepower, available records indicate that the Australian Task Force expended artillery at rates lower than their American counterparts during this period. They did fire artillery as routine H&I, but Australia and New Zealand had signed agreements with the United States that the latter would provide nearly all administrative and logistical support, including ammunition and that Australia and New Zealand would *repay* the United States the cost of support received. The agreements further specified that the cost of ammunition and other items could be reimbursed by using either a constant, per-capita rate, or by using an actual rate. Since determining an actual rate required extensive audits and more intensive requisitions, New Zealand used the easier per-capita rate until late 1967, when the New Zealand Treasury demanded a change after noting that the average, per-capita rate for ammunition was more expensive than what its 161st Artillery Battery had actually been expending.⁵⁴ Australia signed a similar update to its Military Working Agreement on 30 November 1967.⁵⁵

Combat support to South Vietnam by another “Third Country,” the Republic of Korea (ROK), differed from the Australian Task Force experience in many ways. Behind the United States, the ROK provided the most troops to South Vietnam, nearly

ten times more than Australia and nearly twenty times more than the Philippines or any other nation that provided artillery or combat forces of any type. Like Australia, it responded to Johnson's "more flags" request almost immediately, deploying a "Dove Unit" of engineer and civic action troops in March 1965. In August, the ROK government dispatched its Capital Infantry Division and its 2nd Marine Brigade to South Vietnam, where these substantial forces provided security at the logistical hub of Cam Ranh Bay and at Qui Nhon beginning in November. By October 1966, yet another ROK division, the 9th ("White Horse") Division arrived to provide security in both the Tuy Hoa area and near Cam Ranh Bay. Thus, ROK troop strength totaled 45,566, or 87 percent of Third Country contributions, by the end of 1966. This figure included eight ROK artillery battalions.⁵⁶

Westmoreland assessed South Korean units as "effective," but too reliant on unobserved firepower as they operated "exactly as the U.S.," but in a more deliberate manner. He used the Koreans "primarily for area security, including keeping a long stretch of Route 1 open," where their deliberateness posed no significant operational disadvantage. Yet "Because of a dictum from President Park [Chung-hee], all ROK units were sensitive about keeping casualties down," Westmoreland emphasized, "which resulted in a deliberate approach to operations involving lengthy preparations and heavy preliminary fire."⁵⁷ During the South Korean presidential campaign of 1967, the ROK government began to require that its commanders "justify" any combat death in an elaborate report to be read by President Park himself.⁵⁸ This encouraged artillery preparations that consumed large amounts of ammunition against suspected targets.

Nearby Americans also remembered “noisy” ROK artillery firing “nearly every day,” like their own.⁵⁹ Describing efficient operations as a well-tuned orchestra, Westmoreland’s deputy and West Point classmate, General Creighton Abrams, complained during this period that “The Koreans ... play with one instrument: the bass drum.”⁶⁰

Korean ammunition consumption, already too high for Westmoreland, was likely exacerbated by their chronic scrounging for artillery shell casings. Westmoreland remembered their reputation for scrounging shell casings as so bad that it hindered the development of more integrated command relationships. Westmoreland explained, that “From time to time, I had to intervene to stop them from shipping brass from artillery shell casings back to South Korea to feed an industry in brass ornaments that had burgeoned during and after the Korean War.”⁶¹

Westmoreland and his Joint Command, MACV, spent much command and staff time, not only on shell casings, but also on troublesome allegations of ROK brutality.⁶² On 5 May 1967, Westmoreland wrote to Lieutenant General Stanley Larsen, about ROK forces having supposedly murdered an eighteen-year-old escapee, recaptured while convalescing in a hospital after his initial abuse, by placing a wire around his neck and dragging him along the ground until he died. South Vietnamese officials from sector chief to corps commander were very upset and pursued investigations.⁶³ Likewise, the Office of the Assistant Secretary of Defense for Systems Analysis (OASD-SA) recorded in 1969 that “When the Koreans first arrived in Vietnam, their conduct toward Vietnamese civilians was brutal. Numerous accounts of wanton execution and torture of

Vietnamese civilians by ROK soldiers substantiate this charge.” According to OASD-SA, this situation persisted until June 1968, when the ROK relations with the populace improved.⁶⁴ Thus, striving to operate “exactly like the U.S.” with U.S.-provided ammunition stocks, but comparatively less sensitive to the South Vietnamese populace, motivated to send home empty brass casings and given to firepower-intensive preparations, ROK units probably exercised the least firepower restraint of any service in South Vietnam during 1965-1967.

Artillery of the 1st Philippine Civic Action Group provided a counterexample during the Vietnam War, firing comparatively little. In fact, their very deployment had been arranged to preclude the need for combat. The newly elected President of the Philippines, Ferdinand Marcos, had promised in late 1964 that “I will not send, I will not permit the sending of any combat forces. But I will get behind the idea of sending a civic action force.”⁶⁵ During early 1966, Marcos obtained Philippine legislative approval to deploy such a task force organized around an engineer construction battalion, with complementary medical, civic action, and force protection personnel. Although he insisted on a civic action mission, he dispatched an artillery battery to protect his task force, believing that organic firepower could prove necessary in an emergency. He considered that his single battery provided inadequate safety, however, and Westmoreland soon authorized the supply of additional howitzers for the Filipinos, bringing their artillery to near-battalion strength. Westmoreland further assigned the Philippine Civic Action Group to Tay Ninh Province, where it never operated outside of the American artillery umbrella and where it received additional force protection from

the nearby 196th Light Infantry Brigade. In line with Marcos' intent, the Philippine Civic Action Group completed a host of civic action projects and protected its personnel during a few firefights, but its artillery largely avoided Westmoreland's firepower-oriented war of attrition.⁶⁶

During 1965-1967, Westmoreland relegated the growing South Vietnamese Army (ARVN) and its supporting artillery to the less tangible, yet culturally and linguistically demanding counterinsurgency, or "pacification," mission. Asserting that "Superior American firepower would be most advantageously employed against the big units, and using it in remote regions would mean fewer civilian casualties and less damage to built-up areas" and that "The fewer Americans in close contact with the people also meant that much less provocation of the xenophobia of the Vietnamese," he kept the ARVN closer to the population.⁶⁷

Meanwhile, ARVN artillery strength grew. By early 1965, the South Vietnamese Army (ARVN) fielded 23 battalions of artillery, each reorganized with American-built 105mm and 155mm howitzers.⁶⁸ By January 1966, the ARVN fielded another three artillery battalions, for a total of 26, but manpower constraints led to a moratorium on troop increases throughout most of the year.⁶⁹ By the end of 1967, the number of ARVN artillery battalions increased to 28, while the ARVN Airborne Division and the Vietnamese Marine Corps (VNMC) Brigade each possessed its own artillery battalion. Thus, up to 30 ARVN artillery battalions served together in Vietnam during the period 1965-1967.⁷⁰

Some ARVN artillery battalions remained intact as they supported ARVN divisions and corps, but other battalions dispersed to static, “territorial defense” positions near villages, hamlets, and other populated areas, regrouping only to support occasional operations. On 5 December 1960, the ARVN broke with U.S. advice to keep its artillery formations and fires massed. Believing in the psychological impact of even single howitzers, the ARVN began to emplace 105mm howitzers in one or two gun positions near population centers. This recalled the First Indochina War, in which artillery had protected long lines of communication with overlapping coverage provided by numerous one or two-gun positions. Focused on protecting the population in South Vietnam, the ARVN manned hundreds of such positions, believing that the reply, if not the accuracy, of at least one howitzer would likely drive off an attacking enemy force.⁷¹ Thus, rather than viewing large caliber firepower as inherently counterproductive to its counterinsurgency mission near populated areas, ARVN actually preferred an artillery response to nearby communist activity, even by one or two guns at a time.

In supporting both territorial defense and regular operations, the ineffectiveness of ARVN artillery expenditures rivaled that of Allied unobserved fire. After studying ARVN artillery practices for several months, the Army Concept Team in Vietnam (ACTIV) reported on 25 April 1965 that ARVN had placed 216 artillery “platoons,” each of one or two guns, in 227 positions that covered 27 percent of the 176,384 square kilometers in South Vietnam. ACTIV explained that “Of the total 4296 missions considered in the evaluation ... the number of tubes was known in 4232 missions. *In 4193 (99 percent) of these missions, 2 tubes or less were used.*” Yet “Only one tube was

used in 2069 (49 percent of missions)” and more than half of battalion operations were supported by “only 2 guns” anyway. Thus, ARVN expended virtually all of its 245,175 rounds piecemeal during the evaluation, sparing meaningful enemy casualties. This was compounded by the fact that, when the ARVN supported territorial defense units, “The lack of training of hamlet personnel in fire adjustment, infrequent use of techniques to insure accuracy of fires, and the complex and varying channels of control and communication tended to minimize artillery effectiveness.”⁷²

Like their Combined Action Platoon (CAP) counterparts, South Vietnamese territorial defense forces were located along the populated coastal plain, shielded by regular formations, and pitted against insurgents during 1965-1967, but unlike the CAP Marines, these Regional Forces (RF) and Popular Forces (PF) often wanted artillery support and could not obtain it. Lieutenant General Ngo Quang Truong explained in his postwar monograph that territorial defense operations “were of low profile and characterized by the absence or minimum use of large-caliber firepower. This was intended to prevent human losses and property damage.” Nevertheless, he clarified that RF and PF “usually depended on ARVN artillery sections of two pieces each which were permanently deployed in a number of districts,” but which provided a consistently “low level of combat support.” During October 1966 to March 1967 alone, the RF and PF requested, but did not receive, such combat support in nearly 200 of 234 friendly initiated actions. Because of this chronic need for more combat support, the South Vietnamese eventually expanded the territorial defense artillery in 1970.⁷³

In his debriefing report for August 1965 to January 1968, the U.S. Senior Advisor to the ARVN in IV CTZ, Brigadier General William R. Desobry, confirmed the ARVN desire for more territorial defense firepower. Explaining that “Since August of 1965, artillery structure in IV CTZ has remained relatively unchanged,” he added that “Both divisional and non-divisional battalions are emplaced in section or platoon firing positions located throughout the CTZ. From these positions, artillery covers approximately 16,000 of the 37,000 kilometers in IV CTZ (43% coverage).” This ARVN artillery had not only to support territorial defense units, province and district headquarters, and outposts, but it also had to displace to support occasional operations. The displacements left gaps in territorial defense artillery coverage, leading Desobry to recommend that “Foremost in any program to improve artillery in CTZ must be the consideration to furnish additional artillery support.” Indeed, this “would allow that artillery presently employed in a territorial defense role to continue supporting the pacification and revolutionary development activities without interruption caused by a requirement to support ARVN operations.” Furthermore, he added that “it would provide him the additional artillery assets necessary to restrict VC freedom of movement and deny him unrestricted access to base areas while supporting operations.”⁷⁴ To Desobry, if the ARVN had more territorial defense artillery, it would implement a robust unobserved fire program.

Thus, other than the 1st Philippine Civic Action Group and the CAP Marines, each Allied service and nation with artillery in South Vietnam either employed, or sought to employ, considerable amounts of unobserved fire from 1965-1967. Believing that

harassing and interdiction fires would hinder the enemy's freedom of movement while lowering his morale, more than 53 Army and nine Marine artillery battalions rivaled one another with rates of unobserved fire that frequently exceeded 90 percent of missions fired. With a higher regard for the local populace, the artillerymen of Australia and New Zealand employed slightly less unobserved fire, but ROK forces fired so much that even Westmoreland cringed. Only the CAP Marines shunned artillery support, as the Filipinos deployed it for their own protection and the ARVN desired ever more to conduct hardly effective, psychologically-oriented fires to support territorial defense forces. With many different perspectives on the balance between firepower and collateral damage in counterinsurgency, but with plentiful ammunition and widespread faith in conventional weaponry, the Allies overwhelmingly embraced unobserved firepower during the buildup phase of the Vietnam War.

Notes

1. Shelby L. Stanton, *Vietnam Order of Battle* (Washington, D.C.: U.S. News Books, 1981), 97-108. If one compiles Stanton's figures and defines conventional U.S. artillery battalions as those that possessed guns or howitzers of 105mm, 155mm, 175mm, or 8-inch caliber, then Stanton's end-of-year 1967 total precisely matches the battalion total recorded by Hq., U.S. Military Assistance Command, Vietnam (MACV), in its 3 January 1968 "Army Buildup Progress Report." It is also important to account for the 3 howitzer batteries of the 11th Armored Cavalry. See Hq., MACV, "Army Buildup Progress Report," 3 January 1968, p. 5, accessed 31 July 2012, available at http://www.ahco.army.mil/site/manuscript_.html. This excludes mortars and headquarters, anti-aircraft, target acquisition, searchlight, and aviation artillery formations.

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CHAPTER VI

COST CONTROLS: INFLATION, LIMITED WAR, AND U.S. ARMY CUTBACKS IN UNOBSERVED FIREPOWER DURING 1968*

On 30 January 1968, Viet Cong (VC) and North Vietnamese Army (NVA) troops launched their largest offensive of the Vietnam War, just weeks after the top American commander in Vietnam, General William C. Westmoreland, reprised his unprecedented 28 April 1967 address to a Joint Session of Congress with another visit to Washington, D.C., in which he proclaimed “cautious optimism” and a “phaseout” of American troops to closed-door Congressional audiences on 16 November 1967, dined with President Lyndon Johnson and all Democratic Representatives during that evening, taped an upbeat television interview with Steve Rowan of CBS News on the following day, offered his assessment of progress to NBC’s “Meet the Press” on 20 November and insisted to the National Press Club on 21 November that “We *are* making progress” in a complex war.¹ Yet, having husbanded their strength in secret for many months, the Communists attempted to spark a general uprising among South Vietnam’s population with a wave of simultaneous, but decentralized, surprise attacks throughout the republic. As “Tet,” the Lunar New Year, began, more than 80,000 VC and NVA staged attacks in five autonomous cities, 36 provincial capitals, and 64 district capitals. This offensive

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soon proved a disaster for the Communists, however. They quickly suffered between 40,000 and 72,000 dead at the hands of the Allies, who organized an effective response and whose losses paled in comparison. Other than battles at Khe Sahn and Hue, most military engagements ended within a few days.²

Westmoreland and the Chairman of the Joint Chiefs of Staff, General Earle Wheeler, precipitated significant changes on 28 February 1968 when, to take advantage of the weakened communist position and to reconstitute a depleted U.S. strategic reserve of forces, Wheeler asked, based on his earlier discussions with Westmoreland, that Johnson bring 206,000 more troops onto active duty. The *New York Times* wrongly reported on 10 March that all 206,000 troops were needed *in Vietnam* – Westmoreland had envisioned that only 108,000 of them deploy, but either number substantially increased the nearly 500,000 already in South Vietnam on 1 January 1968.³ Determined to avoid calling up the reserves, yet equally determined to avoid losing South Vietnam to communism, Johnson sought the advice of his new Secretary of Defense, Clark Clifford, who replaced a disillusioned Robert McNamara on 29 February 1968, three months after McNamara had announced his pending resignation and future appointment as president of the World Bank. Clifford had long supported the war and after reviewing the military prospects and considering the war's social, political, and economic costs to the United States, Clifford later explained, he “turned against the war” and began to encourage a group of presidential advisors “organized and dedicated to changing Lyndon Johnson’s mind” about staying the course.⁴ Clifford succeeded when most of the “Wise Men,” an informal group of elder statesmen and advisors who had supported the war in the past,

advised Johnson on 26 March 1968 that America must, in the words of former Secretary of State Dean Acheson, “take steps to disengage” from Vietnam. Acheson foresaw no solution in Vietnam, he emphasized, “at least not in any time the American people will permit.”⁵ Ultimately, Johnson authorized only 24,500 more U.S. troops in South Vietnam, announced that in June he would replace Westmoreland with General Creighton Abrams, herald of a new military strategy, and revealed on 31 March that he would not seek reelection. Yet the nine subsequent months included the “fiercest” and “bloodiest” fighting of the entire war.⁶

Despite heavy fighting during the remainder of the year and despite differing military strategies, both Westmoreland and Abrams reduced unobserved fire during 1968 to pursue ammunition efficiency and fiscal discipline because inflation threatened America’s un-mobilized economy and, by extension, domestic support for the war. Prompted by his own reflections and by fiscally-minded admonitions from the Army Chief of Staff, General Harold K. Johnson, Westmoreland instituted an ammunition cost analysis and control team in late 1967 that yielded unobserved firepower reductions throughout early 1968. Abrams added ammunition allocation controls in August, but continued to rely on the same cost analysis and control team that pursued ammunition efficiency as diligently as they had under Westmoreland. In other words, Abrams’ unobserved firepower cutbacks in 1968 did not represent a change in strategy, but rather an accelerated culmination of Westmoreland’s inflation-driven managerial reforms.

Inflation had emerged as a threat to the American economy soon after Johnson committed large-scale ground forces to South Vietnam in July 1965. Johnson had

successfully stimulated the economy during the previous year by enacting a tax cut that appeared to strike a fine balance between spending and revenues to promote growth.

Walter Heller, chairman of the Council of Economic Advisors (CEA), a group of economists chartered by the Economic Employment Act of 1946 to advise the president about the economy, informed Johnson in June 1964 that the economy was “showing new vitality and promise” and that there was “no inflation in sight.”⁷ Indeed, before the Vietnam buildup, industrial production rose while unemployment fell to less than five percent and the Consumer Price Index indicated that prices hovered only 2.8 percent higher than in 1957-1959. With robust employment and practically no inflation, the private sector had also had little excess capacity when large, military-related purchases stimulated investment, both directly and indirectly. Thus, the Vietnam buildup invoked distorted growth in late 1965 as real output increased from 5.5 percent to 8.5 percent and prices strained under pressure to rise.⁸

Ambivalent at first, Johnson began to confront the buildup’s distortions in August 1965, when he personally intervened to browbeat labor and industry to accept earlier wage and price guidelines to settle their disputes. The United Steel Workers of America had insisted on wage increases of nearly five percent, whereas industry offered slightly less than the 3.2 percent guideline established during the Kennedy administration. Masterful as a politician, skillful as a negotiator, intimidating, strong-willed and determined to hold the line on prices, Johnson persuaded both sides to accept an agreement near 3.2 percent by early September, but he could not repeat this virtuoso performance indefinitely, although he tried.⁹

The independent Federal Reserve, chartered by Congress in 1913 to pursue full employment, stable prices, and moderate long-term growth, increased the discount rate five basis points on 6 December 1965, from 4 to 4.5 percent. In its monthly review of January 1966, the Federal Reserve Bank of New York explained that “In preceding weeks, market participants had already begun to doubt the tenability of prevailing interest levels” and that “The vigorous performance of the economy, renewed concern over the mounting defense spending caused by the Vietnamese conflict, and the prospects of increased Treasury financing needs during the first half of 1966 were the primary factors contributing to market uncertainty.”¹⁰ The Federal Reserve’s move toward greater certainty made it more expensive for banks to obtain loans from the government and pressured banks to issue fewer loans themselves, thereby decreasing the overall money supply and slowing the economy, but with upward pressure on prices.

Rather than to finance the war through government debt and incur even more higher interest rates and prices increases, several important advisors to Johnson, including CEA members, recommended during 1966 that he propose a special surtax on personal and corporate incomes to pay for the war. Gardner Ackley, who had succeeded Heller as chairman, and Charles Schultze recommended a ten percent surtax to the President in May 1966. From May to August, Ackley attended several meetings by a group of Harvard and Massachusetts Institute of Technology (MIT) economists. He was joined by David Ginsburg, a Johnson advisor and former general counsel of the Office of Price Administration, by Henry H. Fowler, Johnson’s Secretary of the Treasury, and by Joseph A. Califano, Jr., Johnson’s Special Assistant. The economists, chaired by professor and

CEA member Otto Eckstein, recommended to Johnson on 23 August that “A personal and corporate tax increase was absolutely essential, and the sooner the better.” Ackley, Shultze, Ginsburg, Fowler, and Califano each endorsed this recommendation to Johnson on 2 September 1966, as did the Secretary of Defense, McNamara, and the Deputy Attorney General, Nicholas Katzenbach. Even the director of Johnson’s 1964 presidential campaign, Lawrence O’Brien, Jr., endorsed the surtax recommendation.¹¹

Johnson demurred on the surtax in 1966 because he believed that Congress would not pass a tax increase, because he perceived danger to his Great Society programs in the requisite Congressional debate, and because he took comfort whenever economic indicators fluctuated during inflation’s upward march. Indeed, Johnson recently had safeguarded civil rights in such landmark legislation as the Civil Rights Act of 1964 and Voting Rights Act of 1965, but he had also fought for and approved a host of expensive social programs, including national endowments for the arts and humanities, cultural centers, mass transportation initiatives, consumer protection and fair labor requirements, the Corporation for Public Broadcasting and, perhaps most significantly, Medicare and Medicaid, as well as his larger War on Poverty, driven by the Economic Opportunity Act of 1964. Estimating that conservatives would resist government spending to keep many of these new programs underfunded, and suspecting that his fellow liberals would question military spending for the war, Johnson welcomed temporary decreases in inflationary pressure, such as the brief drop in interest rates during April 1966, as an opportunity to shelve the surtax idea until pressure returned.¹²

Despite another downturn in inflationary pressure during late 1966, Johnson partly heeded the surtax advice and, in his State of the Union address of 10 January 1967, recommended that Congress levy an additional six percent on personal and corporate incomes. Observing that “we have been greatly concerned because consumer prices rose 4 ½ percent over the 18 months since we decided to send troops to Vietnam,” Johnson observed that prices had risen by 13.5 percent during the same period in World War II and by eleven percent during the same period in the Korean War, even under mandatory price controls that his administration had avoided. He explained that “Our greatest disappointment in the economy during 1966 was the excessive rise in interest rates and the tightening of credit,” because these “imposed very severe and very unfair burdens on our home buyers and on our homebuilders and all those associated with the home industry.” Suggesting that wholesale and retail prices “are lower tonight than they were in August,” while “Monetary conditions are also easing” and “Most interest rates have retreated from earlier peaks,” Johnson nevertheless pledged that “We shall continue on a sensible course of fiscal and budgetary policy that we believe will keep our economy growing without new inflationary spirals that will finance responsibly the needs of our men in Vietnam and the progress of our people at home.” He therefore recommended to Congress “a surcharge of 6 percent on both corporate and individual income taxes – to last for 2 years or for so long as the unusual expenditures associated with our Vietnam efforts continue.”¹³

In fact, Vietnam War expenditures during 1965-1966 were not just unusual, but also unclear due to the way in which Johnson and McNamara had obtained funding for the

buildup. Major General Leonard F. Taylor, director of the Army budget throughout most of the Vietnam War, remembered that, after Johnson's sharp troop increase in summer 1965, the military moved money between many accounts to make ends meet and "the use of different funds for various purposes [became] so intermingled as to defy identification." There was also a "charge it to Vietnam" mentality in which disparate, Vietnam-related expenses were bundled and submitted to Congress later. Worse, Johnson and McNamara came to rely on wartime "supplemental" budgets, each containing a substantial percentage of annual defense funding. Their standard budgets implausibly assumed that enemy activity would remain constant and that combat operations would end by 30 June, virtually guaranteeing the need for supplemental spending. Clearly, supplemental budgeting made sense at first, as an "emergency" measure to cover expenses that Army planners could not have programmed when they formulated the budget during the previous calendar year. Yet, even as this logic became less compelling as time progressed, Johnson and McNamara prepared such supplemental budgets for fiscal years 1966, 1967 and 1968.¹⁴

Hearings on the standard Department of Defense budget for fiscal year 1967 revealed growing Congressional frustration over the costs of Vietnam. On 18 July 1966, Senator Stuart Symington (D, MO) of the Senate Armed Services Committee asked Taylor, witness for the Army, if Taylor knew how much more money the Army needed than it had already requested for the fiscal year. Taylor replied "No, sir... We will know by the time Congress comes back, during the middle of the fiscal year." Pressing the case again later, Symington asked "In January [1966] you had no idea about this planned

increase in Vietnam operations?" Taylor responded that "we didn't have any concrete information on which to make a change," but the previous supplemental for fiscal year 1966 represented "our best estimate in December [1965]." When Symington later asked if Taylor knew "what the total cost is per month for the Vietnamese operations" and Taylor answered that he did not, Symington complained to the committee chairman that "What worries me ... is that one sees headlines about saving \$4 billion, \$3-1/2 billion, the same time you are heavily increasing the cost of the war." Symington was sure that "there will be some gigantic supplementals come up here incident to what we are doing. The people do not have any idea as to what the basic facts are incident to the cost in Vietnam."¹⁵

The next supplemental appropriation was indeed "gigantic" and arrived on 24 January 1967, just two weeks after Johnson's State of the Union address. As he introduced his budget proposal, Johnson acknowledged that "as [the] economy rapidly approached full capacity operation, inflationary pressures began to develop" between mid-1965 and mid-1966. He asserted, however, that his recent tax changes had "dampen[ed] those pressures" in late 1966, as had his efforts "to postpone, stretch out, or eliminate all but the most essential Federal expenditures." Emphasizing that "Cutbacks totaling over \$5 billion in program levels and \$3 billion in expenditures are being undertaken by Federal agencies during the current year," the President reiterated his request for the six percent surcharge, suggesting that "defense expenditures will continue to rise as we carry out our obligations in Vietnam," along with a "modest increase in domestic expenditures," including a substantial increase in social security benefits.

Johnson then requested another \$12 billion to supplement the \$58 billion already authorized by the defense budget for 1967, an increase of more than twenty percent.¹⁶

Congress scrutinized the 1967 supplemental defense expenditures closely, more than before, and sought to restrain unnecessary costs. Representative Glenard P. Lipscomb (R, CA) complained during the hearings that “As of the end of calendar year 1966 we [in Congress] were in the dark” about the true costs of the Vietnam War and that “we have lost all control as a Congress over the Department of Defense appropriation process.”¹⁷ Having served as the Army’s top budget officer, Taylor remembered the 1967 supplemental hearings as a turning point for financial management and responsibility. “The climate in Congress had definitely changed,” Taylor recalled, “and many of the Congressmen felt as if Mr. McNamara had overstepped his authority in administering the funds appropriated to the department.” From the 1967 supplemental hearings on, Taylor remembered, “the blank check was obviously gone. Service submissions since have been carefully scrutinized by the Department of Defense before submission to Congress, and more and more effort has been expended to control the costs. Financial management and responsibility in this conflict began here after the major buildup was accomplished.”¹⁸

When reviewing the 1967 supplemental, congressmen questioned the tremendous, vaguely justified, and increasing artillery expenditures in particular. When introducing the budget, McNamara had praised “the extensive use of artillery” by Allied ground forces, explaining that “United States and other free-world forces in South Vietnam during the September-November 1966 period consumed, on the average, about 1 million

artillery rounds and about 0.7 million mortar rounds per month.” McNamara had therefore programmed “considerably higher consumption rates” into both the 1967 supplemental and the regular budget for 1968 and therefore requested “a net addition of \$677 million of which 60 percent is for ground munitions and the rest is for air munitions.” Pointing out that “The largest single item of ground ammunition added to the fiscal year 1967 program is \$250 million for 105-millimeter artillery ammunition,” he added that this weapon was “used very extensively throughout Vietnam for a variety of purposes.” Thus, with the supplemental, total ammunition costs for fiscal year 1967 totaled “about \$4.6 billion, about \$600 million more than fiscal year 1966.”¹⁹ This equated to roughly one-third of Johnson’s overall supplemental.

Representatives Daniel J. Flood (D, PA) and Speedy O. Long (D, LA) wanted more detail about the high ammunition expenses in an exchange that foretold reductions in unobserved artillery fires. Flood asked McNamara “What about your ammunition? You give an artilleryman a gun and a lot of ammunition and he will have a ball day and night. He just keeps pulling that lanyard—whang, whang, whang. What about that?” When McNamara replied that there was no shortage of ammunition, Flood clarified that “It is just a question of waste” and emphasized that “There is such a thing as waste in war.” General Wheeler thought that “General Westmoreland can be trusted to keep a proper control over the assets given to him,” while McNamara insisted that “We have encouraged our commanders to request whatever they wanted in the way of ground ordnance and to use it freely.”²⁰

On top of increasing Defense costs matched by increasing Congressional scrutiny, inflationary pressures began to resurge in 1967. Labor union wage contracts increased an average of 4.9 percent during the first quarter. The Teamsters reached an agreement for a 5.5 percent increase during the second quarter, while carpenters and painters in Chicago received a 6.6 percent increase. Operating engineers in Connecticut received increases of between 7.4 and 9.2 percent. Meanwhile, the economy boomed and the Federal Reserve chairman, William McChesney Martin, publicly recommended a ten percent surtax.²¹ At least one perceptive congressman continued to warn of a deteriorating balance of payments. As early as 8 June 1966, Symington (D, MO) had observed that “our costs are growing,” while “our gold reserves continue to dwindle, mostly to Europe; and current U.S. government liabilities redeemable in gold and owned abroad, primarily by foreign central banks, continue to increase.”²² Naturally, the balance of payments problem grew worse with the prospect of higher inflation.

Johnson acknowledged that rising inflation posed serious financial risks on 3 August 1967 when he called for a ten percent surtax in a special message to Congress. He explained that the fiscal year 1968 budget, prepared in January 1967, had estimated \$135 billion in expenses and \$127 billion revenues, leaving a deficit of \$8 billion, but that “Since then much has happened to change these prospects.” Although he disliked revising the budget, the President explained that “The Nation faces these hard and inescapable facts for fiscal year 1968.” Expenditures would be between \$135 billion and \$143.5 billion, “depending upon the determination of Congress and the Executive to control expenditures.” Revenues would be “some \$7 billion lower.” The changes would

instead produce a deficit of \$23.6 billion. “Without a tax increase and tight expenditure control, the deficit could exceed \$28 billion,” not including \$700 million more because of higher interest payments on the debt. “A deficit of that size,” Johnson warned, “poses a clear and present danger to America’s security and economic health” that could produce “A spiral of ruinous inflation” that would “rob” those with fixed incomes, “Brutally higher interest rates and tight money which would cripple the homebuilder and home buyer, as well as the businessman,” an “unequal and unjust distribution of the cost of supporting our men in Vietnam,” and “A deterioration in our balance of payments by increasing imports and decreasing exports.” Thus, he demanded both “Expenditure restraint” and “Tax measures to increase our revenues,” specifically the ten percent surtax, rather than the six percent that he had previously requested.²³

Congress continued to debate the surtax for months, finally passing it in June, and this contentious fiscal environment framed, even prompted, U.S. Army cutbacks in unobserved artillery fire in South Vietnam. Indeed, Westmoreland had already started to investigate the potential waste associated with unobserved artillery fire when he received a 2 October 1967 cable from U.S. Army Chief of Staff General Harold Johnson. General Johnson pointed out that, during his July and August visit to South Vietnam, he gathered “the impression that approximately 6 per cent of artillery fires were observed.” The Army’s senior artilleryman and former Comptroller of the U.S. Continental Army Command, General Charles Brown, had subsequently corroborated this figure to Johnson after making a separate visit to South Vietnam. Johnson cautioned Westmoreland that “We are in the process of making our initial budget submission for

FY [Fiscal Year] 69. Today we are writing checks for a quarter of a billion dollars every month to pay for ammunition.” Briefly citing an idea of “silencing the battlefield,” General Johnson emphasized that “When one relates this enormous cost to the unobserved artillery fires it is obvious that a significant question is raised, especially in view of the domestic furor over the cost of the war, poverty programs, and tax increases. This is a problem that both of us share,” he added, “because of the essentiality of maintaining U.S. domestic support for the war effort in Vietnam.” Although the Chief of Staff repeated that he would “deplore and oppose any inclination from the Washington level to impose limitations on firepower application,” he concluded that it was “prudent” for Westmoreland “to undertake a very careful examination of the problem.”²⁴

Having already queried his subordinate commanders about unobserved artillery fires in August, Westmoreland expressed serious reservations to them on 22 October 1967 about harassment and interdiction (H&I) in particular. H&I constituted the bulk of unobserved artillery fire, but it proved very difficult to quantify H&I’s effectiveness, as H&I sought merely to hinder enemy movement and to lower enemy morale, rather than to inflict any appreciable enemy casualties. As many of his subordinates had defended the practice in August, Westmoreland offered that “When H&I missions are actually fired based on hard and timely intelligence they are useful,” but he admonished his subordinates that “the degree of usefulness depends on timing, intensity, and accuracy of fire.” The MACV commander added that “firing at the same point for an extended period without verification of the intelligence, however, is highly questionable” and he

directed an investigation of measures to reduce ammunition expenditures, including “the elimination of any quotas [for] H&I fires which may have occurred in the past” and the practice of “greater selectivity in H&I by making use of all intelligence means.”

Westmoreland was appalled that “Munitions expenditures are amounting to a quarter of a billion dollars a month, or *three billion dollars* a year,” and that artillery rounds comprised “a substantial portion of this cost.”²⁵

Even though Westmoreland called for timely, intense, and accurate H&I fires “based on hard and timely intelligence” in his 22 October memorandum, his own command continued to endorse some earlier, less restrictive methods. On 10 November, only three weeks after Westmoreland’s call for reform, MACV published “Counterinsurgency Lessons Learned No. 66: Countermeasures for 102mm, 122mm, and 140mm Rockets.” In this bulletin, MACV found it “readily apparent” that “the optimum method of preventing rocket attacks is to deny the enemy opportunity to occupy launching positions.” It therefore recommended the “Establishment of maximum number of specified strike zones and concentration of H&I programs on likely launch sites and avenues of approach.”²⁶ Indeed, MACV all but required these measures in a “Checklist for Rocket Defense of an Installation or Complex” that it attached to the bulletin. The first item on the checklist: “Have specified strike zones been established in all possible areas?” The second: “Is there a dynamic harassment and interdiction program?”²⁷

Yet Westmoreland’s guidance to critically review H&I generated immediate action in First Field Force Artillery, which supported the II Corps Tactical Zone (CTZ), one of South Vietnam’s four military subdivisions. Brigadier General William O. Quirey,

Commander of First Field Force Artillery, had adopted Westmoreland's skeptical appraisal of H&I as early as the 15 August 1967 conference. In a 10 September message, Quirey likewise directed his own subordinates to review ammunition expenditures. He called particular attention to H&I and wanted to ensure that these expenditures did not exceed tactical requirements.²⁸ In his 31 October debriefing report, Quirey derided H&I as a "piecemeal commitment of resources." Offering a thoughtful criticism, Quirey added that the Army and First Field Force Artillery had "substituted H&I fires for good targeting."²⁹

Westmoreland's 22 October 1967 memorandum in particular prompted a flurry of confusing but ambitious H&I restrictions in the First Field Force. On 24 October, Quirey directed his subordinate units to reduce H&I expenditures by 50 percent from August levels. On the same day, Lieutenant General William B. Rosson, who recently had assumed command of First Field Force, directed his artillery and maneuver units to reduce H&I fires by *60 percent*. Two days later, Rosson revised this guidance to a 52 percent reduction from August levels.³⁰ Quirey would have likely complied, but he had already approached the end of his command tour.

Quirey's successor as Commander of First Field Force Artillery, Brigadier General James G. Kalergis, wholeheartedly devoted himself to H&I reduction and on 9 November eliminated the confusion about reducing ammunition expenditures. Continuing to pursue Westmoreland's vision of ammunition efficiency, and reconciling his views with those of Rosson, Kalergis eschewed quotas within artillery mission categories and instead directed his units to reduce *overall* expenditures by 30 percent.

Using a detailed questionnaire, he concurrently gathered recommendations from his artillery group, division, battalion, and battery headquarters. His questionnaire considered targeting, accuracy and timeliness of fires, and battle damage assessment. Most of Kalergis' respondents agreed that greater specificity in USARV's target categories would enhance ammunition efficiency. They could not, however, agree on how to define the categories.³¹

Analyzing his subordinates' input, Kalergis developed and completed an improved artillery ammunition tracking system by December 1967. Previously, most artillery units throughout Vietnam had reported their ammunition expenditures to higher headquarters in three categories: "Observed," "Unobserved" and "H&I." Finding that this system did not accurately reflect expenditures, First Field Force Artillery directed its subordinate units to test seven new target categories in January 1968, most of which the units had recommended themselves. Reducing the potential to confuse H&I with otherwise "Unobserved" missions such as Landing Zone (LZ) preparations, it revised and expanded the three original categories to "Confirmed," "Acquired," "Counterbattery," "Preparation," "Interdiction," "Special Purpose," and "Other." First Field Force Artillery developed this system because it provided "an accurate indication as to effective use of fire support."³²

In February 1968, U.S. Army, Vietnam (USARV) adopted the new target categories that Kalergis had developed in First Field Force, along with an eighth category, "ARVN Support," marking the first of several successful initiatives to decrease overall Army artillery expenditures by reducing unobserved artillery fire. Throughout the Army in

Vietnam, more detailed artillery expenditure reports supported Westmoreland's fiscally-minded emphasis on ammunition efficiency to ensure that ammunition expenditures and unobserved fire percentages steadily declined – this drop was clearly visible in II CTZ throughout the first half of 1968. During the system's initiation in February 1968, First Field Force Artillery had fired 106,628 of 281,965, or 38 percent, of its total rounds as H&I, now simply "Interdiction," nearly matching the 39 percent it had fired in September 1967. This figure dropped to 36 percent in March, however, and to 34 percent in April. By May, First Field Force Artillery reduced its Interdiction expenditures to 28 percent, even as the communist "mini-Tet" offensive during that month caused overall ammunition expenditures to temporarily reverse their downward trend. By June 1968, however, Interdiction again resumed its decline, falling to 59,721 of 190,622, or 31 percent of overall expenditures.³³

Although First Field Force Artillery operated within II CTZ, its unobserved fire trend can be taken as representative of broader U.S. Army expenditures for several reasons. First of all, a July 1967 study by the Office of the Assistant Secretary of Defense for Systems Analysis, Southeast Asia Programs Division (SEA PRO) and other discrete data demonstrated that H&I remained relatively uniform throughout all four tactical zones from 1966 to 1967. First Field Force also managed a large volume of fire. With 281,965 rounds fired by its units in February alone, First Field Force artillery expenditures likely subdued fluctuations among subordinate units caused by localized activity, terrain, and standard operating procedures. Furthermore, MACV engaged in several broad initiatives to reduce H&I, or Interdiction, fire during the war and First

Field Force ammunition expenditure records clearly demonstrate the effectiveness of these efforts. Finally, available records addressing artillery expenditures from 1968 forward, whether from other corps tactical zones or in USARV as a whole, conform to the pattern visible in the First Field Force artillery expenditure data. Just as discrete battalion and division level data approximated SEAPRO's earlier findings, discrete and army-wide data approximated First Field Force expenditures from February 1968 forward.

Although MACV began to reduce unobserved fire during early 1968, it had not significantly altered its rules of engagement. MACV had not, for example, issued any changes to its 14 October 1966 edition of "Directive 525-3, Combat Operations: Minimizing Non-Combatant Battle Casualties." It published two changes to "Directive 525-18, Combat Operations: Conduct of Artillery/Mortar, and Naval Gunfire," but the first had little relevance to unobserved fire. Change 1 on 16 March 1967 regulated fire missions along the Cambodian border.³⁴ Change 2 on 2 November 1967 revealed a greater concern for the civilian populace, stipulating that units could no longer employ "incendiary type ammunition" near villages or hamlets "unless absolutely necessary in the accomplishment of the commander's mission."³⁵ This change also failed to address H&I since such missions rarely employed incendiary munitions. A new edition of 525-18, published on 21 January 1968, incorporated Changes 1 and 2 but otherwise remained identical to its 19 October 1966 predecessor.³⁶ By not limiting widespread unobserved fire in new rules of engagement, Westmoreland demonstrated that ammunition efficiency remained his greatest concern.

Neither had Army H&I doctrine significantly changed between July 1965 and April 1968. The Army published “Change No. 1” to *FM 6-20-1* on 11 December 1967, but this document merely corrected one typographical error in its text concerning H&I.³⁷ As it had in July 1965, and for most of the twentieth century, the Army continued to call for irregularly timed harassing and interdiction fires “based on studies of maps, terrain, and road nets available to the enemy, and all other target intelligence.”³⁸

The Communists’ large-scale offensive that began on 30 January 1968 did not reverse the U.S. Army’s downward trend in unobserved artillery fire. At the beginning of the Lunar New Year, “Tet,” Viet Cong (VC) and North Vietnamese Army (NVA) troops assaulted five autonomous cities, 36 provincial capitals, and 64 district capitals, surprising the Allies, but creating a tactical disaster for the Communists, who lost between 40,000 and 72,000 killed by Allied firepower.³⁹ Despite the increased enemy activity, however, February Army H&I expenditure rates actually *declined* by one percent from 39 percent of ammunition fired during 1967 to 38 percent. One artillery officer explained the previously large number of H&I missions in November: “In many areas of operations, there is more artillery ammunition available than there are valid targets to engage. This creates an inflationary pressure to attack the less valid, or possibly invalid targets.”⁴⁰ The fiscally-minded tracking system that USARV had implemented ensured that rates of unobserved artillery fire continued to decline despite such inflationary pressure.

The Tet Offensive did not influence the downward trend in unobserved artillery fire, but an economic crisis in March did influence the U.S. military’s response to Tet and,

later, funding for unobserved fire itself. As historian Robert M. Collins explains, “the economic crisis of 1968” sprang from three inter-related problems: the long-unfavorable U.S. balance of payments, continued Vietnam War spending, and an “assault on the dollar.” To Collins, deficit spending for social and wartime military programs yielded inflation that encouraged investors to exchange threatened dollars for safer gold, thereby adding even more inflationary strain to a heavily burdened U.S. financial system.⁴¹ The crisis arrived at the very moment that Johnson and his advisors debated American military strategy following the Tet Offensive.

Systems that the United States had sponsored to ensure sound money and financial probity had become the epicenter of the crisis. In 1944, seven hundred international delegates met at the Mount Washington Hotel in Bretton Woods, New Hampshire, where they created the International Monetary Fund (IMF), established the World Bank, pegged the dollar to the price of gold at a fixed rate, and pegged IMF member currencies to the dollar, which was redeemable in gold. This system worked well enough until America began to run persistent deficits in the 1950s, when foreign governments and banks became increasingly wary of holding dollars. As the Vietnam War buildup and its corresponding inflation began, foreign governments and central banks demanded to convert dollars into gold on a more frequent basis. This, in turn, stoked inflation by encouraging imports. All of this overheated the economy and, as the dollar grew weaker, it became increasingly vulnerable to speculative attacks, particularly after the British Pound suffered a 14.3 percent devaluation in the wake of similar speculative

attacks in November 1967.⁴² As the pillar of the international monetary system, the American dollar could not afford similar weakness.

Between November 1967 and March 1968, the “gold pool,” nine western industrial nations that pledged to defend the international monetary system by buying and selling gold to dampen fluctuations in supply and demand, suffered staggering financial losses in the process. Led by the United States, Belgium, Italy, The Netherlands, Switzerland and West Germany, the gold pool lost \$641 million when stabilizing the markets following the Pound’s devaluation in November. The markets had calmed by early December, but between 11 and 15 December, the gold pool lost another \$548 million. The Belgians, the Italians, the Dutch, the Swiss, and the Germans all wanted to abandon intervention at this point, but Johnson convinced them to continue by promising to address the U.S. balance of payments with a package of trade, investment and loan incentives, coupled with limits on American overseas spending and travel. Nevertheless, the pool soon lost another \$88 million in a single day on Friday 1 March. On Monday 4 March it lost another \$53 million. On Friday 8 March, it lost yet another \$179 million and, on Wednesday 14 March, its daily losses reached nearly \$200 million. When the pool lost nearly \$400 million on Thursday 14 March, Johnson asked Britain to keep its London gold market closed on Friday and he summoned all gold pool central bankers to Washington, D.C., for emergency weekend talks.⁴³ *Time* magazine described this market action as “the largest gold rush in history, a frenetic speculative stampede that ... threatened the Western world,” adding that “The country's continuing balance of payments deficit, its constantly out-of-balance domestic budget and its rising outflow of

money to finance the war in Viet Nam are basically responsible for global concern about the soundness of the dollar.”⁴⁴ Without a hint of exaggeration, former Secretary of State Dean Acheson explained to a friend that “The gold crisis” had brought “an atmosphere of crisis” to Washington, D.C.⁴⁵

U.S. monetary hemorrhaging and the related “atmosphere of crisis” coincided precisely with Westmoreland’s requests for additional troops, as amplified and forwarded to Johnson by Wheeler on 28 February 1968 and announced, however erroneously, by the *New York Times* on 10 March. Wheeler’s recommendation that Johnson to bring 206,000 more troops onto active duty was clearly unrealistic, as was Westmoreland’s request for 108,000 of these in South Vietnam, given the economic strains of a war in which 500,000 American servicemen were already serving there on 1 January 1968.⁴⁶ An increase of between 20-40 percent in America’s war effort was preposterous and Johnson refused to activate the reserves in any case, rightly preferring to continue a limited war in South Vietnam. By submitting a 206,000 troop request anyway, Wheeler’s generalship demonstrated an inability to perceive U.S. economic and political limits on the military domain – he also made an unintentional but substantial contribution to America’s disengagement from South Vietnam.

Secretary of Defense Clifford, having been an advisor to several presidents and a former military officer, did not share Wheeler’s deficient appreciation of economic reality and he, too, prompted fundamental change after Johnson asked him to review Wheeler’s request. After reviewing the military prospects and considering the war’s social, political, and economic costs to the United States, Clifford later recalled that he

“turned against the war” at this point and began to encourage a group of presidential advisors who were “organized and dedicated to changing Lyndon Johnson’s mind” about staying the course.⁴⁷ To persuade Johnson, Clifford helped to arrange another meeting of the “Wise Men,” an informal group of elder statesmen and advisors, most of whom had supported the war in the past. When they met on 26 March 1968, most of the Wise Men advised Johnson that America had to start disengaging from Vietnam.⁴⁸ On 31 March, Johnson publicly announced that he would not seek or accept his party’s nomination for that fall’s presidential election. Only nine days earlier, Johnson had announced that Abrams would replace Westmoreland in June.

By the time Abrams assumed command of MACV, Westmoreland and Kalergis had already altered the U.S. Army’s approach to unobserved fire in South Vietnam. Whereas H&I, in particular, had proven both widespread and relatively unquestioned until late 1967, even the U.S. Army Artillery School began to reign in the practice. In the January 1968 edition of *Artillery Trends*, the school felt compelled to emphasize that “We teach students, during fire planning classes, to plan harassment and interdiction (H&I) fires based on hard intelligence rather than just terrain features.”⁴⁹ Westmoreland and Kalergis had responded to the fiscal implications of unrestrained H&I, but their emphasis on ammunition efficiency had started to influence the larger artillery community.

Before Westmoreland departed Vietnam in June 1968, Kalergis further streamlined his ammunition tracking system. He automated his system using punch cards and an Air Force computer, replacing the manually operated calculating machines that had

consumed “several man-days” of computations for each report.⁵⁰ Kalergis and his staff fed the information into the computer daily, categorizing “the types of artillery fires by area where the fire was being delivered, by the degree of contact and by the type of ammunition, [and the] number of rounds fired.” Reviewing these computer printouts each morning, he would “pick out the outfits” that were “properly supporting [their maneuver] units” or “wasting ammunition.” Kalergis then took “managerial action” to “reinforce or subdue the trend as appropriate.”⁵¹

Kalergis introduced his computerized tracking system to First Field Force maneuver commanders at a conference on 21 June 1968. He announced its 1 June inception and provided attendees with a briefing packet that contained earlier data, along with a computer printout that already included II CTZ artillery expenditures of the previous week, 8-14 June. During the first two weeks of June, H&I fires had remained steady throughout First Field Force at roughly 30 percent of expenditures.⁵² Referring to this printout, Kalergis found and emphasized “Two mutually related and favorable long range trends.” They included “a shift of fires from the interdiction to the confirmed and acquired categories, and an overall reduction of expenditures.” As he had at least twice before, Kalergis sent a copy of his briefing packet to the assistant commandant of the Field Artillery at Fort Sill, Oklahoma.⁵³

Major General William R. Peers, the commander of First Field Force, approved of Kalergis’ computerized tracking system and demanded even greater progress toward reducing H&I in II CTZ. He deemed Kalergis’ lower Interdiction figures “encouraging,” but remained “totally unconvinced that the 330,000 rounds fired on

interdiction targets in the last four months inflicted casualties on the enemy or disrupted his operations to the extent that similar expenditures on confirmed or acquired targets would have.” He therefore emphasized that “Progress in transferring expenditures from interdiction fires to an increased number of confirmed and acquired enemy targets must continue.”⁵⁴ Like Westmoreland, Peers demanded greater scrutiny of Interdiction missions, but stressed that an overall reduction of ammunition expenditures did not constitute his primary objective.⁵⁵

Following the June 1968 commander’s conference at which Peers and Kalergis stressed ammunition efficiency and introduced the computerized tracking system, First Field Force H&I expenditures plunged to eighteen percent in July.⁵⁶ Like Westmoreland in late 1967, Peers had implicitly pursued cost effectiveness, even as he refused to call for an outright reduction in overall expenditures. Both men decided that unobserved fire was wasteful. Neither emphasized the other counterproductive aspects of unobserved fire, such as its potential to alienate Vietnamese civilians through fear, needless violence, property destruction, and noncombatant casualties. Thus, fiscal concerns continued to drive unobserved fire cutbacks across II CTZ.

In the United States, an “abominable” fiscal situation persisted even after the gold crisis peaked in March 1968. Ackley’s replacement as CEA chairman, Arthur Okun, warned Johnson on 23 May 1968 that inflationary pressures had reached dangerous levels. He explained that “Many interest rates are at their highest level in nearly fifty years. Rates have jumped 1 ½ to 2 percentage points since late 1965” and added that mortgage rates had risen to 7-8 percent and might rise to 10. Annual price increases now

stood at 4 percent, which was “the worst performance in 17 years.” Furthermore, Okun emphasized, the related international trade deficit had risen to a record level in March 1968 and all of this encouraged flight from the dollar with the attendant threat of worldwide financial disruption.⁵⁷ Perhaps, recognizing the growing threat, Congress finally approved a ten percent surtax compromise in June that sacrificed much Great Society spending, but inflationary pressures persisted even after even after Johnson signed the bill into law on 28 June 1968.

Just after Congress and the President saddled American individual and corporate incomes with a direct share of the war’s costs, Abrams accelerated unobserved firepower cutbacks on 24 July 1968 by establishing a program that reduced the amount of artillery ammunition delivered to units throughout Vietnam. With this program, which he called his “Five-by-Five Plan,” Abrams sought “to effect dollar savings through reduced expenditures of ground ammunition.” The plan established controls on 105mm, 155mm, and 175mm artillery ammunition by setting the amount available for issue at “10% below the current consumption rate.” Units would have to select their missions more carefully and this would naturally lead to fewer H&I missions. USARV had “achieved the 10% goal” in September. It proudly reported saving 7.9 million dollars in August and 8 million dollars in September, respectively.⁵⁸ Abrams’ “Five-by-Five Plan” not only saved money by decreasing overall Army artillery ammunition expenditures between August and October 1968, but it also reduced Army H&I from over 21 percent of ammunition fired in August to eleven percent by November 1968, when USARV ended the program.⁵⁹

Yet USARV continued to implement Abrams' "Five-by-Five Plan" in spirit, if not in name, after November 1968, as Abrams used its principles to maintain H&I near ten percent of artillery ammunition expended by USARV well into 1969. As Colonel W. M. Hales, Jr., the USARV Assistant Chief of Staff, G4 [Combat Service Support], noted in a memo titled "Class V [Ammunition] Savings," that USARV had ensured "During the January [1969] allocation month each of the former Five by Five Plan Class V items was issued in an amount less than its original overall allocation, even though several increased supplemental allocations for certain major commands were approved during the period." The decrease in artillery allocations, different from expenditures, between December 1968 and January 1969 had saved two million dollars, but Hale worried that Army interdiction rates had increased slightly during the same period.⁶⁰

Without mentioning civilian casualties, property damage, or other concerns about South Vietnamese "hearts and minds," Lt. Gen. Frank T. Mildren, Abrams' Deputy Commander, explained in a memorandum to Abrams that "To reverse this unfavorable trend [of a slight increase in interdiction expenditures from December 1968 to January 1969], I have had by DCS (P&O) [Deputy Chief of Staff for Plans and Operations] talk to the commanders of those units whose interdiction rate is above 20%."⁶¹ Mildren's memorandum, which accompanied Hales' packet through the DCS (P&O) to Abrams, even included a memorandum from Brigadier General F. J. Roberts, Commander of II Field Force Artillery, in which Roberts offered that it was "difficult to fault" his divisions' attitudes toward firepower employment, which were "best characterized by the dictum 'expend ammunition, not lives.'" Roberts even listed some supposed

advantages of H&I without mentioning its counterproductive effects. Thus, with hardly a word in these discussions about potential civilian casualties, property damage, or other counterproductive aspects of unobserved fire, the reduction of Army H&I remained mostly a financial concern to Abrams, Mildren, and other senior Army leaders.⁶²

Like Westmoreland before him, Abrams reduced unobserved fire to save money, but he also professed his intent to focus more on the South Vietnamese population than Westmoreland had. In his 4th Quarter 1968 operational guidance, for example, Abrams admonished his commanders that the enemy realized “this is just one, repeat one, war. He knows there’s no such thing as a war of big battalions, a war of pacification, or a war of territorial security.” Allied commanders would also have to “recognize and understand the one war concept,” Abrams demanded, so that they could “carry the battle to the enemy, simultaneously, in all areas of the conflict.” Whereas Westmoreland had fought a war of big battalions, leaving the bulk of pacification to his South Vietnamese counterparts’ neglect, Abrams intended to fight a balanced war. He would “simultaneously, aggressively, persistently, and intelligently” direct both conventional and irregular Allied forces, not only against the Viet Cong and North Vietnamese Army, but particularly against “the VC infrastructure.”⁶³

Emphasis on population security and an aggressive Allied campaign against VC infrastructure were the heart of Abrams’ new strategy. In the operational guidance that he issued after assuming command, Abrams explained that “The enemy has no rear push supply system. He gets his supplies stored along his axes of advance well ahead of time.” To Abrams, this represented an enemy vulnerability because “Once supplies are

in forward locations controlled by the VC, the enemy then advances on his supplies.” Indeed, the enemy “has not attempted to advance his forces without these supplies being in place.”⁶⁴ Thus, Abrams sought to eliminate the enemy’s logistics “nose” in South Vietnam while establishing “positions sited to protect populated areas from invading forces.”⁶⁵

While Abrams desired to strengthen pacification, he continued to rely on Kalergis’ computer-based tracking system to pursue ammunition efficiency. Indeed, he used it to *maintain* H&I at or near ten percent of ammunition expended throughout 1968 and most of 1969.⁶⁶ Kalergis himself understood that this was Abrams’ intent. In a postwar oral history interview, Kalergis described his ammunition tracking system and remembered that “Abe saw that as a tremendous management tool.” He explained that Abrams was “interested in seeing to it that we used the resources that we had properly. And if there is one resource that we didn’t use properly and effectively in Vietnam, it was the firepower that we had.” To Kalergis, Abrams “was interested in results being produced by each round being fired and to get maximum effectiveness. He also saw that this would be a very useful tool in forcing changes to be made.” Although Kalergis shared Westmoreland’s emphasis on artillery effectiveness, it is interesting to point out that he mentioned no comments by Abrams concerning the rest of H&I’s counterproductive nature. Kalergis remembered Abrams as primarily interested in ammunition economy.⁶⁷

On 13 July 1968, less than two weeks before launching his cost-oriented “Five-by-Five Plan,” Abrams had praised one of his subordinate commanders for already cutting back on H&I. Mildren commented to Abrams during MACV’s weekly intelligence

estimate update meeting that “up in the 4th Division, and throughout I Field Force, commanders are taking a good look at these so-called H&I fires. I looked at a week’s result up there where H&I fires have practically disappeared in the 4th Division.” Hearing this, Abrams immediately concurred, adding that the commander of the U.S. Army’s 4th Infantry Division, Major General Charles P. Stone, had been “philosophically against” H&I from the start. Yet, at the same time, Abrams lauded Kalergis for having established “the *best* system” to track and thereby reduce unobserved artillery missions.⁶⁸

When Stone later explained his opposition to H&I, he emphasized ammunition efficiency and noticeably omitted its other potentially counterproductive effects on the population. On 3 October 1968, Stone explained to the 3rd Brigade of his 4th Infantry Division that “I would guess that the reason we now are on the job of not firing H&I is because I had said I wouldn’t fire H&I. That was such a change – a monumental thing to say,” Stone continued, “that the J3 of MACV came up and wanted me to give a speech at the MACV conference in April on not using harassing and interdiction fires.” Stone claimed that “when I came here [10 months earlier] I found that the typical way of employing artillery was we fired about 80 percent of it harassing and interdiction” and emphasized that “I don’t know why we did it.” With even 40,000 enemy soldiers in a 12,000 square mile area, he posited, “Who are you going to hit? The only thing it does is it complicates your ability to cut down trees because they have all these things in them. So we no longer fire harassing and interdiction.”⁶⁹

Yet Stone was no apostle of unobserved artillery fire's abolition. Indeed, he readily acknowledged that his command continued to fire *interdiction* missions, explaining that "I occasionally employ interdiction fires to deny the enemy unrestricted use of a given *area* if firm intelligence indicates that he is operating there."⁷⁰ By employing interdiction fires to "deny the enemy unrestricted use of a given area" because intelligence confirmed that he was operating in the vicinity, Stone actually met earlier definitions of harassing fire. Just as MACV had suddenly switched from the term "Free Strike Zones" to "Specified Strike Zones" in December 1965 as a semantic change intended to make the term more palatable, Stone and other Army leaders had adopted the new target categories that Kalergis promoted and Westmoreland standardized throughout USARV in February 1968.⁷¹ Since the Army had previously based H&I on target intelligence, however poor, if "harassing" fire ceased, then the intelligence that justified so-called "interdiction" missions remained a concern. Given that the Army ultimately moved toward "Confirmed" observation and sensor-"Acquired" missions of the strongest target certainty as its overall artillery ammunition expenditures declined, Stone and other Army leaders did not likely hide "H&I" type fires by moving them into any other target category, but the name change from "H&I" to "Interdiction" remained largely semantic. Indeed, the Army realized cost-savings by reducing this dubious practice until June 1970 (see Appendix C).

Nevertheless, unobserved fire remained near ten percent of ammunition expended by First Field Force as Kalergis' successor, Brigadier General Richard A. Edwards, Jr., continued employ the computer-based tracking system throughout 1968. In January

1969, an enthusiastic Edwards even pointed out Kalergis' system to the Assistant Commandant of the Field Artillery School at Fort Sill, reporting that "The Ammunition Expenditure Analysis Program in effect in II CTZ since February 1968, has provided detailed data which has proven useful in increasing artillery effectiveness." Edwards explained that "The computerized system developed and initiated on 1 June 1968 has extended the scope of the numerical analysis, provided greater assurance of accuracy and reduced the time required for preparation." To Edwards, "These advantages have provided more thorough and timely subjective analysis of raw numerical output to discover favorable or unfavorable expenditure trends. Command action, where appropriate, has been taken to reinforce or subdue these trends."⁷²

In August 1968, as Abrams' "Five-by-Five Plan" took hold, the entire Second Field Force Artillery also began to implement the controls developed by its First Field Force counterparts. It started to employ its own computerized system, seeking to "greatly reduce the total processing time" and to ensure "a greater degree of accuracy in compiling data." Like Kalergis, Westmoreland, and Abrams, the Second Field Force Artillery believed that the associated database would "eventually provide a variety of pertinent statistics, e.g., number of rounds by type target a particular unit fired for a given period of time, which will be a valuable management tool."⁷³

While visiting South Vietnam during the same month, the Commander in Chief, U.S. Army Pacific, General Ralph E. Haines, Jr., projected to Abrams and the MACV staff how continued U.S. fiscal difficulties would soon impact the Vietnam War. Having served as the Army Vice Chief of Staff in the Pentagon as recently as July, Haines

explained during a MACV weekly intelligence update on 24 August that “In the Department of Defense right now there’s a great exercise going on, the so-called 69-3, which is fiscal ’69 budget, give up \$3 billion for blackmail to Mr. [Congressman Wilbur] Mills [D, AR, Chairman of the House Ways and Means Committee] and company. And that impact will be felt *even* here. Today you can’t touch anything that is Vietnam or Vietnam related, but the name of the game has changed a little bit, because there’s just not enough in the service budgets.” Haines added that “Right along with this is the gold flow exercise. The president’s economists are telling him the country’s bleeding to death from this outflow of gold. So there’s great thrashing about to reduce *here*.” Haines projected that fiscal 1970 would be “another austere year just like ’69,” concluding that “I don’t think there’s going to be another FY ’69 supplemental to bail us out, regardless of *who* is elected.”⁷⁴

Thus, prompted to take action by finances that started to deteriorate during the Johnson administration, both Westmoreland and Abrams cut back substantially on the U.S. Army’s unobserved artillery fire during 1968. Westmoreland initiated the cutbacks, but the downward trend in unobserved fire owed much to the efforts of one man, Brigadier General James G. Kalergis, and the tracking systems that he created and shared. Continuing to rely on Kalergis and his systems, Abrams accelerated the downward trend with his “Five-by-Five Plan” and its ammunition allocation controls in August, but he allowed unobserved fire to stabilize near ten percent of ammunition expended. Nevertheless, as Taylor remembered about Congress during the 1967 supplemental hearings, “the blank check was obviously gone.... Financial management

and responsibility in this conflict began here after the major buildup was accomplished.”
During the watershed year of 1968, inflation-driven cost controls reached the battlefields
of South Vietnam.

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CHAPTER VII

TO CUT AND TRY: WITHDRAWAL, FINANCIAL CONSTRAINTS AND U.S.

ARMY REDUCTIONS IN UNOBSERVED FIREPOWER, 1969-1970*

During 1969 and 1970, the United States withdrew considerable combat power from the Vietnam War. Authorized U.S. military strength in South Vietnam peaked at 549,500 in early April 1968 when President Lyndon Johnson authorized only 24,500 more U.S. troops in South Vietnam following the Tet Offensive. This was far fewer than the 108,000 additional troops that General William C. Westmoreland, commander of the U.S. Military Assistance Command, Vietnam (MACV), wanted deployed, and it was only a fraction of the 206,000 additional troops that the Chairman of the Joint Chiefs of Staff, General Earle Wheeler, requested that Johnson call to active duty on 28 February 1968.¹ Actual strength did not press against the 549,500 cap until early months of 1969, when it triggered MACV concern and peaked at 543,482 in April 1969 before President Richard Nixon announced the first drawdown of authorized strength after a conference in Midway on 10 June. He soon announced two more withdrawal increments, reducing authorizations by 40,500 on 15 September and by another 50,000 on 15 December, leaving not more than 484,000 U.S. military personnel in South Vietnam by the end of 1969.² Authorized strength fell by another 140,000 during the

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following year and 335,794 U.S. troops remained in South Vietnam on 31 December 1970 – less than 62 percent of strength that had peaked twenty months earlier.³ This significant withdrawal perhaps lent credence to the idea that “Vietnamization” – a term that Nixon’s Secretary of Defense, Melvin Laird, coined just days into the new administration on 28 January 1969 to describe the process of handing the war over to the South Vietnamese – was moving forward, apparently with good prospects.⁴

Yet financial constraints impelled Vietnamization faster than the commander of MACV, General Creighton Abrams deemed appropriate. Nixon himself linked American withdrawal to two related lines of effort: “strengthening the armed forces of the South Vietnamese in numbers, equipment, leadership and combat skills and overall capability,” and “the extension of the pacification program in South Vietnam,” but Laird clarified to Abrams that fiscal considerations would accelerate cutbacks in U.S. troop numbers and support.⁵ Visiting South Vietnam from 6-10 March 1969, Laird explained that recent U.S. elections had temporarily satisfied the demand to disengage – indeed, Nixon had campaigned on a promise to end the war, but renewed discontent would soon require that “we have a program to reduce the United States contribution, not only in the form of men, but in casualties and matériel and in dollars, that will be available to move forward with at the time this time period of ours runs out.” Laird added that the Department of Defense was already scaling down “expensive” B-52 strikes that comprised “a very important part” of the current budget and that the Fiscal Year (FY) 1970 budget would impose further constraints.⁶ Given Laird’s focus on monetary savings and withdrawal, Abrams commented upon Laird’s return to the United States

that the Secretary “certainly had not come to Saigon to help us win the war.”⁷ Indeed, after available air support had decreased substantially by October 1969, Abrams emphasized to General Wheeler: “I think we have to say that the reduction in B-52s and tactical air support has been *entirely* a budgetary motivated thing and has not considered the tactical situation in South Vietnam.” Wheeler agreed.⁸

Fiscal pressure not only decreased available U.S. air support and shifted the burden of combat to the South Vietnamese faster during 1969, but it also prompted Abrams to initiate a second round of unobserved artillery cutbacks in June 1970. Abrams had pushed to reduce unobserved artillery firepower once before, when he initiated a budget-minded plan to control ammunition allocations during August 1968. To regulate unobserved artillery fire, he had also continued to rely on ammunition analysis and control teams that his predecessor, General Westmoreland, had sponsored to address inflation-driven admonitions by the Army Chief of Staff, General Harold K. Johnson, beginning in October 1967. Just as Westmoreland strongly questioned the cost effectiveness of harassing and interdiction (H&I) fire – a particularly prevalent form of unobserved artillery fire – during his command and reduced it from 39 percent of ammunition expended to 28 percent before his departure in June 1968, Abrams combined Westmoreland’s systems with additional allocation controls to reduce H&I to ten percent of ammunition expended by August 1968, yet he maintained this rate for more than a year until a sudden resurgence of fiscal pressure prompted the U.S. Army to virtually eliminate the practice in early 1970. Thus, Abrams did not cut back on unobserved firepower to realize a change in military strategy. Rather like

Westmoreland, Abrams implemented unobserved artillery firepower reductions to achieve ammunition efficiency and fiscal discipline.

Westmoreland expressed the basic fiscal case against unobserved artillery fire in a 22 October 1967 memorandum to his subordinate commanders. H&I constituted the bulk of unobserved artillery fire, but it nearly always proved very difficult to quantify its effectiveness, as H&I sought merely to hinder enemy movement and to lower enemy morale, rather than to inflict any appreciable enemy casualties. As many of his subordinates had previously defended the practice, Westmoreland offered that “When H&I missions are actually fired based on hard and timely intelligence they are useful,” but he admonished his subordinates that “the degree of usefulness depends on timing, intensity, and accuracy of fire.” He added that “firing at the same point for an extended period without verification of the intelligence, however, is highly questionable” and he directed an investigation of measures to reduce ammunition expenditures, including “the elimination of any quotas [for] H&I fires which may have occurred in the past” and the practice of “greater selectivity in H&I by making use of all intelligence means.” He was appalled that “Munitions expenditures are amounting to a quarter of a billion dollars a month, or *three billion dollars* a year,” and that artillery rounds comprised “a substantial portion of this cost.”⁹

Prompted by Westmoreland’s fiscal admonitions, the Commander of First Field Force Artillery, Brigadier General James G. Kalergis, developed and completed an improved artillery ammunition tracking system by December 1967. The new system increased the number of reporting categories from three to seven, to include

“Confirmed,” “Acquired,” “Counterbattery,” “Preparation,” “Interdiction,” “Special Purpose,” and “Others.” To First Field Force Artillery, this system provided “an accurate indication as to effective use of fire support,” since it captured more detail than the previous “Observed,” “Unobserved” and “H&I” categories.¹⁰ Kalergis subsequently introduced a computerized version of this tracking system to First Field Force maneuver commanders at a conference on 21 June 1968.¹¹

Staff at USARV appreciated the new system, believing that the added detail would promote more efficient ammunition expenditures by more clearly delineating the amount of H&I that its units fired, USARV standardized these categories throughout Vietnam in February 1968, adding an eighth category, “ARVN Support.”¹² This standardization of more detailed target categories represented the first of several broad, but successful, USARV initiatives to reduce unobserved artillery fire.

By the time Abrams had implemented a cost-oriented “Five-by-Five Plan” to reduce unobserved artillery fire in August 1968, the semantic nature of the February 1968 change from “H&I” to simple “interdiction” had become muddled within MACV. On 13 July 1968, Abrams had praised one of his subordinate commanders for already cutting back on H&I. Lieutenant General Frank T. Mildren, Abrams’ Deputy Commander of USARV, commented to Abrams during MACV’s weekly intelligence update meeting that “up in the 4th Division, and throughout I Field Force, commanders are taking a good look at these so-called H&I fires. I looked at a week’s result up there where H&I fires have practically disappeared in the 4th Division.” Hearing this, Abrams immediately concurred, adding that the commander of the U.S. Army’s 4th Infantry

Division, Major General Charles P. Stone, had been “philosophically against” H&I from the start. At the same time, Abrams lauded Kalergis for having established “the *best* system” to track and thereby reduce unobserved artillery missions.¹³

Yet Stone continued to fire something that resembled H&I in concept, if not in name. Indeed, he readily acknowledged that his command continued to fire *interdiction* missions, explaining that “I occasionally employ interdiction fires to deny the enemy unrestricted use of a given *area* if firm intelligence indicates that he is operating there.”¹⁴ In doing this, Stone actually met earlier definitions of harassing fire. Just as MACV had suddenly switched from the term “Free Strike Zones” to “Specified Strike Zones” in December 1965 as a semantic change intended to make the term more palatable, Stone had adopted the new target categories that Kalergis promoted and Westmoreland standardized throughout USARV in February 1968.¹⁵ Since American units had previously based H&I on target intelligence, however poor, if “harassing” fire ceased, then the intelligence that justified so-called “interdiction” missions remained a concern.

While USARV had reduced H&I as a percentage of artillery missions fired, it remained widespread and relatively unchanged well into 1969, despite Stone’s efforts, Westmoreland’s semantic name change, and Abrams’ “Five-by-Five Plan.” U.S. Army soldiers, non-commissioned officers, and officers at the battery level still referred to Interdiction missions as “H&I” and noticed little change in its execution. With targets assigned at battalion and division level, nightly H&I missions kept gun crews awake and firing on frequently changing targets. When plotting these targets hours in advance, fire direction personnel would typically find them on various trails, intersections, and

abandoned villages. They would sometimes wonder about the long odds of actually hitting anyone when a few rounds landed on their targets later in the night.¹⁶

H&I also remained MACV's preferred method for trying to deter enemy rocket and mortar attacks. In November 1967, MACV had published "Counterinsurgency Lessons Learned No. 66," calling for the "Establishment of maximum number of specified strike zones and concentration of H&I programs on likely launch sites and avenues of approach."¹⁷ In its first two questions, MACV's attached "Checklist for Rocket Defense of an Installation or Complex" had asked "Have specified strike zones been established in all possible areas?" and "Is there a dynamic harassment and interdiction program?"¹⁸ When it published a new edition of this document in March 1969, MACV only incorporated one change regarding H&I fire. The checklist still called for "a dynamic harassment and interdiction program," but now added "Is this based on suspected enemy action from past experience as well as intelligence gathering?"¹⁹ Nevertheless, the value of H&I (now "Interdiction") remained doubtful, as Peers emphasized in his June 1969 debriefing report that "situations continue to develop wherein large amounts of ammunition are wasted in harassing or interdictory type fires."²⁰

The Army's continued employment of H&I and Kalergis' earlier success at tracking artillery ammunition expenditures prompted Kalergis to establish another innovative program during his tenure as First Field Force chief of staff. On 6 September 1968, shortly after assuming this new capacity, Kalergis established an office of Command and Analysis Programs (CAP) as an adjunct to his staff. Eventually composed of four Command and General Staff College graduates with business degrees and two enlisted

clerks, the office employed computers to transform large amounts of raw data into detailed staff recommendations for improving resource efficiency. It improved accident reporting, artillery, mortar, and naval gunfire expenditure reporting and developed analysis programs for artillery and tactical air support. Lieutenant Colonel Paul Raisig, who directed the office for Kalergis, explained in February 1969 that his officers were “managers first, analysts second, and data processors third.” They reported directly to Kalergis to maintain their objectivity. At the field force level, Raisig believed that his was “probably the first such office that’s been established in the Army.” According to Raisig, Kalergis based CAP not only on his own experience as First Field Force Artillery commander, but also on his earlier Pentagon service for the Army’s Assistant Vice Chief of Staff.²¹

Raisig’s studies suggest Abrams’ continued emphasis on cost controls during 1969. In one of CAP’s first studies, Raisig remembered discovering that “although interdiction fires were overall being reduced ... the cost per rounds fired was increasing. In fact, it was increasing considerably, and this was because the heavier calibers were being used on interdiction targets.” Raisig recommended to Kalergis that “in many cases the lighter calibers would have been in range and could have been used.” First Field Force “immediately took action to correct the situation, and we noticed that since then the average cost per rounds of interdiction fired had either remained the same or had actually been reduced.” Even with tactical air support, he initially found that “the average tonnage per sortie flown against suspect enemy locations was quite high, as opposed [to] against the average tonnage flown against confirmed enemy locations.”²²

Like his superiors, Raisig did not suggest eliminating either unobserved artillery or tactical air support missions to respect the population, rather he merely sought to manage their costs within reasonable levels.

Abrams' use of Kalergis's systems to maintain H&I at or near ten percent of artillery ammunition expenditures during early 1969 supports the contention by some historians that Abrams' operational guidance hardly influenced the U.S. Army's conduct of the war during the first year of his command. Andrew Krepinevich acknowledges that Abrams tried to redirect American strategy, but asserts that "it took Abrams nearly a year to fabricate this new approach." Meanwhile, Army units conducted operations as usual, pursuing high body counts consistent with Westmoreland's war of attrition. Indeed, Krepinevich asserts, "in late 1968 and 1969 the 'kill VC' syndrome reached new heights, particularly in the 9th Division."²³ For his part, Gunther Lewy considers the unconventional nature of Abrams' first MACV Campaign Plan to have been "a significant change in strategy," but contends that Abrams' subordinates refused to abandon their conventional methods of waging war. To Lewy, Abrams' reforms proved "a paper exercise" because of the strong "doctrinal and organizational rigidities of the military institution."²⁴ Conceding that large-scale conventional battles such as Hamburger Hill may have been "anomalous" under Abrams, Richard Hunt contends that "Abrams viewed the war differently, but he was responding to changes in the nature of the war itself," rather than altering the Army's conduct.²⁵ Like Hunt, Lewy finds Abrams to be "an almost tragic figure who had to assume the thankless task of liquidating the American combat role."²⁶

Abrams did revise MACV's artillery rules of engagement in October 1968, but an examination of this revision supports Hunt's thesis that few substantive changes took place. Abrams' new rules of engagement placed additional restrictions on American firepower and the autonomy of subordinate commanders. MACV Directives 525-18 and 95-4 had previously governed artillery and airpower, respectively. On 12 October 1968, MACV combined these previous directives into a single document: Directive 525-13, *Combat Operations: Rules of Engagement for the Use of Artillery, Tanks, Mortars, Naval Gunfire, and Air and Armed Helicopter Support*. Directive 525-13 incorporated several important changes regarding unobserved fire. First, its introduction declared that "[All] practicable means will be employed to limit the risk to lives and property of friendly forces and civilians." Major John R. McQueney, Jr., a student of the Army's rules of engagement in Vietnam, explains the significance of this change: previously, "these sorts of statements were found only in directives covering general tactics and techniques." As McQueney explains, the new "order to limit civilian casualties is more specific and less likely to be misinterpreted or ignored by ground force commanders." Furthermore, the new directive stated that it "will not be modified by subordinate commanders nor will directives modifying or interpreting substantive rules in the directive be published by subordinate commands." Thus, McQueney correctly infers, Abrams intended to force his subordinate commanders into compliance with his rules of engagement.²⁷

Directive 525-13 moved beyond general restrictions, however, placing detailed limitations on the use of unobserved fire as well. McQueney explains that Abrams

defined “what exactly a specified strike zone [SSZ] was, who could authorize one, for how long, and who could authorize fire into one.” These terms had remained ambiguous in previous editions. Under the new directive, only the South Vietnamese government could declare an area free of enemy combatants, and then only for a limited time period. American commanders had previously declared their own SSZs, informing the South Vietnamese later. More importantly, McQueney points out, American units could no longer fire unobserved missions into such zones without “informing their [own] chain of command.” This differed markedly from earlier practices, wherein any artillery unit could fire H&I and other unobserved missions at will into a Specified Strike Zone. Furthermore, unobserved missions outside SSZs now had to receive approval from the Province Chief or District Advisor *and* the American commander involved. Finally, all fire into villages and hamlets now had to receive approval “from a battalion or higher-level unit commander.”²⁸

Despite Abrams’ intentions, the revisions contained in the October 1968 edition of Directive 525-13 did not necessarily translate into new imperatives for reducing H&I fire. The 9th Infantry Division, for example, had already operated under many of these constraints. The Mobile Riverine Force’s *Interim Training Text*, published in 1967, had dictated that fire direction officers “coordinate with host country advisors and local officials before shooting harassing and interdiction (H&I) fires.” It further directed that “H&I fires generally will not be authorized within 500 meters of a friendly village.” It suggested submitting H&I targets to local officials in advance, but hedged by declaring that “the need to prevent disclosure of prospective areas of operation may preclude this

coordination until the operation commences.” It even placed restrictions on H&I missions fired over roads and canals to prevent civilian casualties.²⁹

Just as earlier rules of engagement proved malleable, so did Abrams’ new requirements for clearing unobserved fire. First, the terminology remained imperfect. MACV had substituted “inhabited area” for “villages and hamlets” throughout its rules of engagement.³⁰ McQueney writes that “MACV believed that changing the term from ‘villages and hamlets’ to ‘inhabited area’ more closely defined” what the rules meant. “Units could no longer claim that an isolated hut or house or two did not constitute a hamlet or village.”³¹ Unfortunately, however, MACV had long employed the term “populated area” when delineating its restrictions on unobserved fire. Since American commanders had rationalized H&I fire in or near thinly populated areas for most of the war, the term “inhabited area” added little clarity to this situation.

More importantly, the essential dilemma concerning H&I fire remained unresolved: were Specified Strike Zones and other targeted areas entirely free of noncombatants? Abrams’ new rules of engagement could not answer this question. Units seeking to fire H&I simply needed to gain approval from their South Vietnamese counterparts. No one would visually clear the target area prior to these missions as they remained unobserved. Second Field Force demonstrated that American units would “check target grids against [population] overlays in order to insure the validity of GVN clearances.” Even with the twenty-first century’s instant communications and computerized databases, such map overlays could never account for all Vietnamese civilians, much less those away from their homes. MACV had merely shifted the burden of verification onto the Vietnamese.

Thus, Abrams' former deputy commander could tell McQueney that he did not remember any commanders disobeying Abrams' new rules of engagement, without actually meaning anything.³² Like Westmoreland, Abrams had voiced his concern for the population, while allowing H&I to continue.

Whether or not Abrams substantively changed the U.S. Army's conduct of the war during the first year or more of his command, First Field Force Artillery's H&I rate dropped precipitously from seventeen percent to five percent in August 1969 and remained there until early 1970, but the Army demonstrated that this had little to do with either ammunition efficiency or the counterproductive nature of "Harassment" fire. Noticing that enemy forces withdrew just beyond the range of artillery to establish their base camps and sanctuaries, First Field Force had established an Enemy Area Harassment Program on 1 March 1969. Monitoring up to thirteen areas for frequent enemy activity, First Field Force would target the seven most concentrated areas with harassing airstrikes. First Field Force would reevaluate the areas every five days.³³ As late as 15 November 1969, it found that "The Area Harassment program continues to be an effective means of harassing the enemy in those sanctuaries and base areas which are out of range of friendly artillery."³⁴

The concept of "Harassment" fire had lingered into 1970 within First Field Force, Vietnam, but the return of Lieutenant General Arthur S. Collins virtually ended it in March 1970 when, having served as the U.S. Army Assistant Chief of Staff for Force Development from January 1967 to January 1970, he assumed command of the First Field Force. Upon his return, Collins was astonished to find that "H&I fire was common

throughout the First Field Force, including the 4th Division.” He told his men “that when they were firing that heavy ammunition that it be observed and that they knew what the results were.” His influence ensured that H&I plunged from three percent of ammunition fired to 0.2 percent between March and April 1970 within First Field Force and thereby saved his command “several million dollars a month.” Collins assessed that “We cut the cost of operations considerably and I don’t think it hurt our fighting capability one bit; maybe it made us a more effective force.” During his first South Vietnam tour as the Commander of the 4th Infantry Division from late 1966 to early 1967, Collins had complained extensively about the inefficient and counterproductive nature of H&I and had immediately forced his units to cut back on the practice. During this second tour, Collins needed no prodding to restrict H&I fire once again, this time in a much larger command.³⁵

Meanwhile, other U.S. Army, Vietnam (USARV), units continued to practice H&I. Colonel Richard Biondi, who had served as an operations officer and an executive officer for two artillery battalions from June 1969 to June 1970, remembered that each of his units fired a “substantial” amount of H&I, though it made up less than ten percent of ammunition expended, well into 1970. He did not remember any guidance to reduce H&I expenditures, nor did he remember any efforts to conserve ammunition prior to the Cambodian operation. He remembered firing very little H&I when participating in that operation. Biondi departed Vietnam in June 1970, just before MACV implemented Abrams’ second round of allocation controls.³⁶

The ammunition tracking systems that Kalergis had developed for Westmoreland before June 1968 helped U.S. Army data collectors to precisely record the degree to which USARV practiced unobserved artillery fire from July 1968 to June 1970. To help analyze American progress and “to establish a basis for estimating expected equipment losses and ammunition expenditures in future potential counterinsurgency conflicts,” the U.S. Army Combat Developments Command (CDC) determined in 1966 to collect background information about every piece of U.S. Army equipment or ammunition lost or expended during the Vietnam War. Having sent a planning team to South Vietnam in November 1966 to coordinate its data collection effort, the CDC at first categorized artillery expenditures during Fiscal Year (FY) 1968 (July 1967 to June 1968) by the maneuver missions and/or situations of base camp defense, clear and secure, not under attack, reconnaissance in force, and security. The CDC preserved these categories during FY 1969 and FY 1970, but added a “target” code that recorded for each type of artillery mission one of the expanded ammunition categories that Kalergis had developed in December 1967 and that MACV had standardized in February 1968: “Confirmed,” “Acquired,” “Counterbattery,” “Preparation,” “Interdiction,” “Special Purpose,” “ARVN Support” and “Others,” while adding an additional category, “NA/ Loss,” to account, by target category, for most artillery rounds that USARV lost or expended in South Vietnam during each year that the program continued.³⁷

By using consistent definitions and methodology from July 1968 to June 1970, the CDC compiled most U.S. Army ammunition expenditures into a single source, “Combat Operations Loss and Expenditure Data – Vietnam (COLED-V),” an electronic database

stored on magnetic reel tapes that the National Archives and Records Administration preserved and later made publicly accessible on the internet in 2005. In more than 218,000 artillery records, COLED-V confirmed that 65 of 69 traditional Army artillery battalions fired “interdiction,” or H&I, during or after July 1968, the first month of Abrams’ command, that many fired considerable amounts of H&I into mid-1969, and that some even continued to fire H&I into 1970. Indeed, USARV collectively fired over 29 percent of its artillery rounds as interdiction during July 1968 alone. These initially high expenditures were soon mitigated by Abrams’ “Five-by-Five Plan,” as USARV interdiction dropped to approximately ten percent of ammunition expended by January 1969, yet USARV interdiction remained near that level until after June 1969. It is true that USARV-wide interdiction rates subsequently dropped to just over seven percent of ammunition expended during the final months of 1969, but USARV interdiction persisted near this seven percent level into early 1970 and only dropped below five percent of ammunition expended in May 1970. Thus, both the prevalence and the persistence of U.S. Army unobserved artillery fire are readily apparent in the relatively comprehensive COLED-V data, as is the final decline of interdiction during early 1970 (see Appendix C).³⁸

Resurging fiscal pressure prompted the U.S. Army to virtually eliminate H&I fire during early 1970. The CDC observed that Army H&I or “Interdiction” fell from 53,369 of 733,675, or seven percent, of rounds expended in January 1970 to 21,236 of 665,660, or three percent, in June 1970.³⁹ MACV meeting transcripts compiled for the collection *Vietnam Chronicles: The Abrams Tapes* reveal the budgetary pressure that drove H&I’s

final decline. During his visit to Vietnam in June 1970, Secretary of the Army Stanley Resor informed the MACV staff that army-wide budget reductions would significantly impact U.S. withdrawal and MACV's prosecution of the war during Fiscal Year 1971. "As far as the army is concerned," Resor explained, "there isn't any money in non-Southeast Asia accounts that can be reprogrammed. There will have to be trade-offs, paid for within the army by, say, reduced ground ammunition consumption...." He bluntly added that "you've got a limited amount of dollars to spend on the war here, and if you need them in one area – say to slip your redeployment schedule, you'll have to watch immediately the dollar cost of that and be ready to fund it yourself out of a saving of some other program." He even suggested that MACV might further "reduce sortie levels."⁴⁰

General William B. Rosson, Abrams' Deputy Commander, then advocated to Resor the "cut and try approach" that Abrams and MACV had used to balance Vietnamization's progress with fiscal constraints and the pace of withdrawal in the past. Rosson explained:

As you know, Mr. Secretary, we don't approach the problem this way out here. We're still using this 'cut and try' approach wherein we have to look at the enemy, we have to look at the progress of improvement and modernization on the RVNAF [Republic of Vietnam Armed Forces] side, our own posture, and keep an eye out on the state of the economy and pacification, all of these factors, and come in with what we consider our

best professional judgment on the military pros and cons, and then we come down to a solution.⁴¹

Resor added that the Secretary of Defense had another principal concern: “There’s the money problem, and then there’s the problem of how you calculate domestic support.” To Resor, Laird would be “the best judge of ... whether from a point of view of domestic support for the war it isn’t almost essential to keep a sort of steady withdrawal [of troops from South Vietnam.]” Resor explained that “the effect of the Cambodian operation has sort of catalyzed bringing together all the opposition, resulting in the Cooper-Church amendment and the McGovern-Goodell amendment.” With steady troop withdrawals, Resor thought that anti-war energy was now “on the back burner,” but that “we’ve got to avoid any *other* event that catalyzes” the opposition. If U.S. troop withdrawals slowed or stopped, he thought, “there would be a very *serious* problem.” When Rosson pointed out that MACV had no redeployment directive beyond 15 October, Resor’s response was “*Other* than to stay within the budget.”⁴² In other words, MACV could troops home sooner if it wanted to avoid budgetary pressure in other areas.

Resor explained why the budget, in particular, had become so much more important to military operations than it had been before. “Mr. Laird has a very real world problem,” Resor said, “he can’t *get* any more money. In fact, he’s going to get a billion dollars less than he asked for.” Resor pointed out that “Up to now it’s been, whatever was needed out here we somehow got the money from Congress and you got it. But the climate in Congress is *so* different now that it’s just – it would be putting our heads in

the sand, really, to make that assumption anymore.” And budgets had already dropped substantially, Resor underscored: “We’ve been spending – in ’69 it was \$22 billion, in ’70 it’s \$17 billion, and we’ve got in ’71 about \$11 billion budgeted now. I’m sure we can’t do all the bombing that everybody asks for, but one would hope that with that ratio of overall contribution of resources, we would have enough to do an adequate job.”

Before Resor departed, he reminded the MACV staff that “How long we can continue here, how many man-years we can put in from here on out, is a function, in a large measure, of two things ... One, our casualty rates. And secondly, our costs.”⁴³ Abrams had to find new places to “cut and try,” while maintaining a steady troop withdrawal and staying within his budget.

Abrams and his staff had already advocated “cut and try,” with little success, to counter arbitrary troop reductions several months earlier. In November 1969, it appeared certain that Nixon would soon announce that more U.S. troop withdrawals would take place during the early months of 1970. Nearly 65,000 troops had already been deployed in two major increments since Vietnamization began in mid-1969. Abrams and his staff favored redeploying no more than 35,000 more U.S. troops as a third increment until the tactical situation further stabilized, bringing total redeployments to 100,000 by early 1970. Yet Thieu, President of South Vietnam, had already indicated that 100,000 was an acceptable number, while he considered 150,000 to be a maximum. Given American domestic pressure for withdrawal, Abrams and his staff worried that Nixon would announce a number higher than 35,000. In November, Abrams informed Deputy Secretary of Defense David Packard that MACV could not

recommend a date, a time frame, or a quantity for the upcoming withdrawals but “urged that we stick with MACV’s ‘cut and try’ approach when it came to anything between 100,000 or 150,000.”⁴⁴

On 15 December 1969, Nixon announced plans to withdraw 50,000 troops before 15 April 1970, 15,000 more than Abrams had included in his “cut and try” recommendation, bringing total reductions to 115,000 instead of 100,000.⁴⁵ When Nixon added more redeployments during the early months of 1970, troop withdrawals eventually reached 140,000 by April 1970, approximating Thieu’s earlier “maximum.” Nixon further spurned Abrams’ “cut and try” recommendation by stating “We have now reached a point where we can confidently move from a period of ‘cut and try’ to a longer-range program for the replacement of Americans by South Vietnamese troops.”⁴⁶ Here, perhaps, were the “salted peanuts” about which Secretary of State Henry Kissinger warned Nixon in a 10 September memorandum – “the more troops we withdrew,” Kissinger later summarized, “the more would be expected, leading eventually to demands for total unilateral withdrawal, perhaps within a year (this in fact happened.)”⁴⁷ Like a salty snack that provoked an urge to eat more, the taste of the first significant troop redeployments prompted a political desire for more, despite the unhealthy long-term consequences for American military operations in South Vietnam.

Ironically, as the Nixon administration withdrew from South Vietnam, funding for the military operations competed with further expansion of domestic social spending, recalling the earlier struggle between Johnson’s Vietnam buildup and the Great Society programs that started in 1964. As historian Joan Hoff explains in *Nixon Reconsidered*,

Nixon has often been “remembered most for Watergate, next for foreign policy, and least for domestic reform,” but “this order should be reversed” because he sought to expand social programs, whether cynically or not. Most notably, Nixon proposed the Family Assistance Plan (FAP), which editorials nationwide hailed as a “genuine revolution” equal to President Franklin Delano Roosevelt’s Social Security program, since it sought to provide direct income, rather than services, to needy families, perhaps sparing many from potential discrimination, denial of service, or needless bureaucratic delay. Nixon announced FAP in August 1969 and the House of Representatives approved it in April 1970, but it failed to clear the Senate.⁴⁸

Although Congress did not pass FAP, social spending remained expensive during the Nixon administration and Wheeler discussed the military implications with Abrams as early as October 1969. Congress had imposed a \$3 billion reduction in Defense spending that, Wheeler insisted was “unrelated to the Vietnamization program in a very real sense.” He believed that it stemmed from “an effort by the Congress, or some portions of the Congress, to do two things.” The first, he explained, was “to impose an expenditure limitation on the government, which they have already done by legislation - \$198 billion. Then, within this limitation, disregarding the president’s budget, they have voted add-on programs.” The latter included an additional “\$1.2 billion to the president’s program in the health, education, and welfare area, and there’re going to be other add-ons by the Congress in different areas. To get the money to finance the programs, these social programs[,]” Wheeler explained, “many of the younger elements” had voted for the extra \$3 billion in Defense spending cuts.⁴⁹

Thus, immediately after Resor announced even more cuts during his June 1970 visit, MACV shifted its “cut and try” approach, in spirit if not in name, from troop withdrawals to unobserved artillery fire. Here, at least, MACV could realize immediate savings by cutting back on a program of long-debatable effectiveness. Major General Charles M. Gettys, Abrams’ chief of staff, explained in his 31 July USARV operational report that “During June 70, 986,838 rounds of artillery were expended. This level was the highest since Nov 69 when USARV expended 1,062,743 rounds.” In response, Gettys continued, “A thorough evaluation of artillery expenditures was conducted at the end of June. As a result of strong command emphasis, expanded allocation controls, and a return to the principles of sound artillery management, July expenditures decreased 45% from the June expenditure level.”⁵⁰ Thus, the Army readily complied with more fiscally-driven controls that Abrams implemented as the simultaneous commander of both MACV and USARV.

It is important to emphasize the scope and reliability of the COLED-V data with which CDC documented USARV artillery ammunition expenditures from July 1968 to June 1970. In its COLED-V data, CDC did not manage to account for every round that USARV expended. Whereas USARV reported having expended 1,062,743 rounds during November 1969 and 986,838 rounds of artillery during June 1970, CDC recorded that USARV expended 863,567 in November 1969 and 665,660 rounds in June 1970.⁵¹ Indeed, USARV reported that artillery ammunition expenditures during July, August, and September 1969 had totaled 2,957,677 rounds, of which “7.2 percent, or 215,755 rounds were expended on interdiction targets” and that these interdiction expenditures

had decreased from nearly 10 percent during the previous quarter, while CDC recorded 2,474,794 USARV rounds expended during April-June, 236,002 or 9.5 percent of which were interdiction, and 2,499,864 USARV rounds expended during July-September, 201,397 or 8.1 percent of which were interdiction.⁵² Although CDC data remained imperfect, it routinely captured between 67 and 85 percent of total USARV expenditures and reliably documented USARV trends not only in overall ammunition consumption, but also in artillery expenditures by target category.

In their Research and Analysis Corporation (RAC) report of August 1971, Connerat, Miller, Sardella and Todd also address the reliability of COLED-V data. Noting that the data were relatively comprehensive, but imperfect, they explain that “Available data were insufficient to provide a ‘closed-loop’ audit of ammunition issues and dispositions.” Furthermore, they added that although “a check of the units in the theater revealed that all combat and combat support units in the theater were submitting COLED-V reports,” sometimes “reports were submitted, but not necessarily every month, for each of these units.”⁵³ Thus, the difference between COLED-V data and USARV quarterly reports can be attributed to unit-level failure to always comply with the CDC’s redundant system for reporting ammunition expenditures – Army paperwork requirements were indeed tremendous during the Vietnam War!

USARV’s ammunition managers confirmed that Abrams established expanded allocation controls on artillery ammunition as a direct response to Secretary Resor’s June 1970 visit. In his October 1970 exit interview, Lieutenant Colonel Tommy G. Lindsey responded to the following question: “During the latter part of June, Secretary Resor

mentioned the budgeting of ammunition here [in Vietnam]. Could you go into detail on some of the ramifications of his visit?" Lindsey, Chief of the Materiel Branch in USARV's Ammunition Division, remembered that "At the time of Secretary Resor's visit, ammunition consumption was very high, due to the Cambodian operation. We were told that if consumption remained at that level, it would cost the army in other programs. He impressed on us the need to reduce the cost of the war." Therefore, continued Lindsey, "We decided to try and reduce the consumption of ammunition through better management. From that decision came the current operation of allocating to the commanders certain quantities of ammunition."⁵⁴ Likewise, the Chief of the Programs Branch in USARV's Ammunition Division remembered that "as a result of Secretary Resor's visit, [an] allocation was placed on our 12 high dollar items in an effort to have a close control on what was being used."⁵⁵ USARV's twelve high dollar items naturally included each of the three major classes of artillery ammunition: 105mm, 155mm, and 8-inch projectiles.⁵⁶ Just as the allocation controls of Abrams' "Five-by-Five Plan" had reduced H&I to approximately ten percent of ammunition fired by January 1969, these new allocation controls naturally forced artillery commanders to avoid the least efficient missions and H&I offered few quantifiable benefits.

Even before Abrams implemented his June 1970 controls, MACV chose to starve its aerial form of harassment fire. Beginning in April, MACV no longer provided airstrikes for First Field Force's Enemy Area Harassment Program. First Field Force officially ended it on 15 July 1970, specifically citing MACV's lack of support during the quarter. First Field Force had realized that MACV would not renew the program.⁵⁷

After Abrams instituted his June 1970 controls, the Second Field Force Artillery enthusiastically adopted its own allocation controls in order to save money. Its commander, Brigadier General Edward F. Gudgel, conducted an “extensive examination” of artillery expenditures following the Cambodian operation and found that “positive management of artillery expenditures could result in significant dollar savings.” Like Kalergis, he focused on “unnecessary expenditures,” seeking to reduce “non productive firing in target categories of questionable value such as interdiction.” He emphasized accurate target location and advocated massed artillery fire while instituting his own internal allocation controls.⁵⁸ From June 1970 to December 1970, the Second Field Force Artillery reported that it maintained H&I as a negligible percentage of rounds expended as the total number of non-H&I rounds decreased.⁵⁹

The civilian who led U.S. pacification efforts in South Vietnam from 1966 to 1968, Robert Komer, claimed in a May 1970 study for the RAND Corporation that Abrams deserved credit for reducing H&I because he “very discreetly started cutting down the ammo allocations to conserve ammunition, which automatically meant cutting down H&I fire.” He added, however, that “H&I was NOT really what caused most civilian damage. It was not aimed primarily at populated areas but more at routes of approach.” Instead, Komer emphasized, “Abe cut down H&I because primarily it was *expensive* and *wasteful*, not because of damage.”⁶⁰

Komer’s perceptive remarks capture the budgetary motivation behind Abram’s efforts to reduce unobserved fire in South Vietnam. As explained earlier, Abrams had pushed to reduce H&I in August 1968 “to effect dollar savings through reduced

expenditures of ground ammunition.”⁶¹ Afterward, he had maintained H&I at roughly a ten percent level throughout the remainder of 1968 and most of 1969. His expansion of allocation controls in June 1970 likewise responded to budgetary pressure. Much like Westmoreland, Abrams had sought to save money by choking off a questionable and controversial practice that consumed vast amounts of expensive ammunition with few quantifiable results.

As he had during 1968, Abrams pressured MACV to reduce unobserved fire during 1969 and 1970, but without emphasizing new reasons for doing so. Instead, like Westmoreland’s efforts to reduce unobserved fire, Abrams’ attempts to reduce H&I during this period sprang primarily from concerns over ammunition efficiency and MACV budget parameters. Further, when discussing and implementing Abrams’ guidance to reduce H&I fire, subordinates such as Kalergis, Peers, and numerous Army ammunition managers consistently invoked dollar savings and ammunition efficiency rather than civilian casualties, property destruction, or alienation of the populace. While both Abrams and Westmoreland struggled with the dilemma of civilian casualties during the war, available evidence does not suggest that either commander viewed H&I as inherently counterproductive to their pacification efforts. In fact, the evidence suggests otherwise. Westmoreland, after expending nearly 40 percent of all artillery ammunition as H&I for nearly two years, implemented modest reductions after expressing concern over the program’s cost. Abrams, after reducing H&I and overall artillery expenditures through his “Five-by-Five Plan” allocation controls, employed Kalergis’ tracking system to maintain H&I near ten percent of ammunition fired for nearly a year. When he again

expanded artillery allocation controls in June 1970, Abrams primarily responded to Secretary Resor's revelations concerning MACV's declining budget. Thus, Collins' consistent zeal to reduce H&I within First Field Force notwithstanding, a desire to save money prompted each of MACV's initiatives to reduce H&I during the Vietnam War. No radical shift toward pacification and population security had driven this process.

Notes

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11. Hq., First Field Force Artillery, "Ammunition Expenditure Analysis," p. 15.
12. Hq., Second Field Force Artillery, "Operational Report – Lessons Learned Quarterly for Period Ending 30 April 1968," 16 May 1968, pp. 7, 28, accessed 21 January 2012, available at <http://www.dtic.mil/dtic/>, document ad392310.
13. Abrams to Mildren, Transcript of Weekly Intelligence Estimate Update, 13 July 1968, in Sorley, ed., *Vietnam Chronicles*, 18. Emphasis in the original.
14. Maj. Gen. Charles P. Stone, "Senior Officer Debriefing Report," 15 November 1968, p. 28, Folder: SODR: Stone, Charles P., MG, 4th Inf. Div., Senior Officer Debriefing Reports, Headquarters, United States Army Vietnam, RG 472, NARA College Park (italics added for emphasis).
15. Without changing doctrine or rules of engagement, MACV began referring to "Free strike zones" as "Specified strike zones" on 20 December 1965 in "MACV Directive Number 95-2, Aviation." The motivation for this change was simple – "Specified strike zones" did not sound as reckless to the media and other laymen. A MACV fact sheet later confirmed that Westmoreland made the change to avoid the impression of "uncontrolled indiscriminate firing" in these zones. Indeed, as early as 15 September 1965, Westmoreland had stated to a joint board called to improve tactical air support that "The term 'Free Bomb Zone' implies indiscriminate bombing. A suggested substitute could be 'Special or Designated' Bomb Zone." See Hq., MACV, "Directive Number 95-2, Aviation: Employment of and Operational Restrictions on US Military Air Delivered Firepower in RVN," 20 December 1965, p. 1, Folder: MACV AG, Directive 95-2 w/ Changes, 20 December 1965, Reference Library, Administrative Services Division, MACV Adjutant General, RG 472, NARA, College Park; Lewy, *America in Vietnam*, p. 106; Hq., MACV, "Fact Sheet, Subject: Specified Strike Zones," 11 May 1971, p. 2, Records of MACV, Part 1, Reel 8, Frame 957; Hq., MACV, "Joint Board to Study Tactical Air Firepower – Briefing by General W. C. Westmoreland," 15 September 1965, p. 2.
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22. Raisig, Interview by Cochran, pp. 14-16, VNIT Collection, CMH, Washington, D.C.
23. Andrew F. Krepinevich, Jr., *The Army and Vietnam* (Baltimore: Johns Hopkins University Press, 1986), 253-254.
24. Lewy, *America in Vietnam*, 138-139.
25. Hunt, *Pacification*, 232-233.
26. Lewy, *America in Vietnam*, 138-39; Hunt, *Pacification*, 232-233.
27. Maj. John R. McQueney, Jr., "MACV's Dilemma: The United States and the Conduct of the War on the Ground in Viet Nam" (M.A. Thesis, University of Maryland, College Park, 2002), 85-86; The language quoted by McQueney remained the same in the subsequent version. See Hq. MACV, Directive 525-13, "Rules of Engagement in the RVN for Use of Artillery, Tanks, Mortars, Naval Gunfire, Riverine Forces, and Air and Armed Helicopter Support," 9 March 1969, p. 1, Box 38, Folder: "MACV Directive 525-13 w/changes, 9 Mar 1969," RG472, NARA, College Park.
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CHAPTER VIII
UNOBSERVED FIREPOWER BY U.S. MARINES AND ALLIED GROUND
FORCES, 1968-1970*

From 1968-1970, after the Tet Offensive, the United States began to slowly disengage from the Vietnam War while most of its Allies continued to deploy additional forces. Authorized U.S. military strength in South Vietnam peaked at 549,500 in early April 1968 when President Lyndon Johnson authorized only 24,500 more U.S. troops in South Vietnam following the Tet Offensive. This was far fewer than the 108,000 additional troops that General William C. Westmoreland, commander of the U.S. Military Assistance Command, Vietnam (MACV), wanted deployed, and it was only a fraction of the 206,000 additional troops that General Earle Wheeler, Chairman of the Joint Chiefs of Staff, requested that Johnson call to active duty on 28 February 1968.¹ Large portions of the Filipino contingent began to depart South Vietnam during 1968, while Thailand deployed two additional maneuver battalions, Australia added one, and the Republic of Korea added nearly 200 troops, bringing total “Third Country,” or “Free World Military Assistance Forces” to 65,802 by the end of 1968. Third Country contributions reached 68,889 in December 1969, not long after actual U.S. troop strength peaked near its cap in April. Following President Richard Nixon’s “Vietnamization”

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announcement in June 1969, however, U.S. troop strength plunged to 474,819 by December 1969 and to 335,794 by December 1970, whereas Third Country strength continued to hover near its peak at 67,444.²

During Vietnamization and withdrawal, Allied artillery strength increased as U.S. contributions diminished. U.S. Army artillery strength peaked at 61 battalions plus four separate batteries from November 1968 to June 1969. There remained 53 U.S. Army artillery battalions in December 1969 and 33 in December 1970.³ The U.S. Marines kept nine battalions and five separate batteries in South Vietnam's four northern provinces of Da Nang, Chu Lai, Phu Bai, and Dong Ha throughout 1968, but the 2nd Battalion, 13th Marine Regiment increased this total from February-September 1968, as did Battery K, 4th Battalion, 13th Marines from November 1968 to October 1969 and all Marine artillery withdrew from South Vietnam during 1969-1970.⁴ The Republic of Korea continued to support its Capital Division ("Tigers") in Binh Dinh Province and its 9th Infantry Division ("White Horse") at Ninh Hoa with four artillery battalions each throughout the entire period. The 1st Australian Task Force, operating southeast of Saigon in Phuoc Tuy Province, determined to keep its two Australian batteries and a single Royal New Zealand Artillery unit, the 161st Artillery Battery as well. The Philippines' single battalion departed during 1968, but the Thais added four artillery battalions and actual South Vietnamese Army (ARVN) artillery strength reached 55 regular battalions and 100 "sector artillery platoons" by the end of 1970, representing 20,194 ARVN artillerymen.⁵ Thus, despite U.S. withdrawals and notwithstanding sector

artillery platoons, more than 101 U.S. and Allied artillery battalions served in South Vietnam during December 1970 – as many as had served in early 1968.

Overall artillery strength in South Vietnam remained relatively constant from 1968-1970, but rates of U.S. and Allied unobserved artillery fire diverged, not only because the ground forces had evolved different approaches to unobserved fire, but also because some ground forces chose to reduce unobserved fire sooner than others when MACV, the U.S. joint command during the Vietnam War, pursued monetary savings during America's withdrawal. Since Westmoreland and Abrams commanded not just MACV, but also the U.S. Army, Vietnam (USARV), the Army naturally embraced MACV's ammunition cost control efforts and reduced unobserved artillery fire from nearly 40 percent of ammunition expended in late 1967 to nearly zero in late 1970. The U.S. Marines, on the other hand, reduced unobserved fire comparatively little and increasingly outpaced U.S. Army expenditures during the American withdrawal. The artillery of most other Allied ground forces proved even less responsive to MACV influence, underscoring how funding authority, rather than strategic change, drove unobserved firepower reductions during the Vietnam War.

During their successive commands of MACV, Westmoreland and Abrams implemented three major initiatives to reduce unobserved artillery fire, each of which registered significant impact among U.S. Army artillery formations throughout South Vietnam. Before 1968, the U.S. Army fired up to 91 percent of artillery missions and 85 percent of artillery ammunition against unobserved targets and expended nearly 40 percent of artillery ammunition as harassment and interdiction fire (H&I) – a form of

unobserved fire that sought merely to hinder enemy movement and to lower enemy morale, rather than to inflict any appreciable enemy casualties. Prompted by Army Chief of Staff General Harold K. Johnson's warnings about increasing financial pressures during the Johnson administration, Westmoreland and his subordinates developed and implemented an ammunition tracking system by December 1967 that progressively reduced H&I, or "interdiction" after a semantic name change in February 1968, to just over 29 percent of ammunition expended in July 1968, the first full month of Abrams' command. Abrams accelerated this downward trend in August 1968 with a "Five-by-Five Plan" that established ammunition allocation controls, yet he allowed interdiction to stabilize near ten percent of ammunition expended by January 1969, where it remained until after June 1969. U.S. Army interdiction rates subsequently declined to approximately seven percent of ammunition expended during the final months of 1969, but they persisted near this level into early 1970 and only dropped below five percent in May 1970, when recurring financial pressure prompted Abrams to implement another round of allocation controls that virtually ended this type of unobserved artillery fire by the Army in South Vietnam.⁶

Before 1968, Marine unobserved artillery fire matched, or even exceeded, that of the Army. The Army had fired up to 91 percent of its missions unobserved during 1966 and the Marines had fired up to 94 percent. Whereas from June 1965 to July 1967, the eight artillery battalions of the 11th and 12th Marine Regiments averaged 75 percent H&I, the Marines continued to average 86 percent of all missions unobserved, with 76 percent of

all missions as H&I, from August to December 1967, the period in which Westmoreland and the Army began to consider cutting back on wasteful ammunition expenditures.⁷

Marine unobserved fire *eclipsed* that of the Army during 1968, as most Marine artillery battalions continued earlier, less economical practices despite MACV's attempts to reduce wasteful and expensive unobserved artillery expenditures. Whereas the Office of the Assistant Secretary of Defense for Systems Analysis (OASD-SA) had studied multiple Army divisions and reported in July 1967 that unobserved fire constituted nearly 85 percent of Army artillery ammunition expended, mostly H&I, Westmoreland and his subordinates reduced Army H&I, now simply "interdiction," to just over 29 percent of ammunition expended by July 1968. Abrams further reduced interdiction to just over thirteen percent of ammunition expended by December 1968. Yet Marine unobserved artillery fire continued near its peak and, while Marine interdiction averaged 44 percent of missions during 1968, overall Marine unobserved fire remained high, nearly unchanged at 81 percent of missions.⁸

Rates of Marine unobserved artillery fire hardly dropped relative to the Army during 1969. Overall Army interdiction expenditures declined slightly during Abrams' second year in command, from about ten percent of ammunition expended to approximately seven percent during the final months of 1969. Marine artillery expenditures, on the other hand, continued to average 78 percent of missions unobserved and 33 percent of missions as interdiction throughout 1969. In December 1969, Marine interdiction dropped to 27 percent of missions fired, but overall Marine unobserved artillery *expenditures returned to 89 percent* of missions fired, nearly regaining an all-time high.⁹

Army and Marine interdiction expenditures diverged almost completely during 1970. The Army fired seven percent of artillery ammunition as interdiction during the final months of 1969 and persisted near this level into early 1970. Army interdiction dropped below five percent in May 1970, when recurring financial pressure prompted Abrams to implement another round of allocation controls that virtually ended Army interdiction fire in South Vietnam. As late as August 1970, two months after Secretary of the Army Stanley Resor paid a budget-oriented visit to MACV, Marine unobserved artillery expenditure rates once again exceeded the Army's all time high of 91 percent. At the same time, Marine *interdiction* rates rivaled historic levels for either service, reaching 86 percent of missions fired. Thus, Marine interdiction changed little from 1968-1970, even as the Army virtually eliminated the practice due to budgetary constraints.¹⁰

The divergence of Army and Marine artillery interdiction expenditures was possible because, while Abrams commanded both MACV and USARV, the Marines retained considerable autonomy over their own operations and logistics, particularly the provision of Marine ammunition. The Commandant of the Marine Corps managed Marine ammunition procurement, Marine ammunition delivery, or logistics, in coordination with the Navy, and Marine policy concerning ammunition employment worldwide. For Marines in South Vietnam, the Commandant's line of authority and ammunition resupply program passed through the Commander of Fleet Marine Force Pacific to the Commander of III Marine Amphibious Force (III MAF) and then to subordinate Marine units. As a Joint Logistics Review Board explained in December 1970, "Headquarters,

Marine Corps (HQMC), established [its own] expenditure rates, effected procurement, provided shipping directives and monitored expenditure reports” through the war.¹¹

The Marines had no ammunition procurement capacity of their own, but they relied on Army contracts to provide their ground firepower needs and reimbursed the Army using Military Interdepartmental Purchase Requests (MIPRs). The Navy, which also possessed a self-sufficient ammunition logistic system, supplied all ordnance employed by Marine aircraft. Abrams, as Commander of MACV, the joint or multi-service command in South Vietnam, possessed directive authority to prevent logistical inefficiencies such as the duplication of storage facilities and movement and distribution functions, but he possessed no clear authority to restrict Marine ammunition expenditures on his own, whether or not he desired to do so. Thus, the Marines continued to determine not only their own ammunition needs, but also the appropriate employment of the ammunition resources available to them.¹²

The divergence of Army and Marine interdiction from 1968 to 1970 is noteworthy since some historians have seized upon Marine methods, particularly the use of Combined Action Platoons (CAPs), to suggest that the Marines favored a *less* firepower-intensive alternative American military strategy during the war. While it is true that the Marine Corps advocated population-centric American operations and even pioneered the use of CAPs – Marines who lived among South Vietnamese villagers – historian Andrew F. Krepinevich contends that CAPs epitomized a Marine “challenge” to the Army’s firepower-intensive, conventional way of war. He suggests that the Marines fought the war in a different way than the Army by issuing “stringent orders regarding the

application of firepower, keeping it to an absolute minimum,” and directing “all Marine combat units to conduct vigorous patrols and ambushes from sundown to sunup, when insurgent activity was greatest.” Krepinevich highlights Westmoreland’s refusal to embrace CAPs and keys on Major General William Depuy’s sarcastic observation that the Marine Corps was, as a whole, thus “involved in counterinsurgency of the deliberate, mild sort.”¹³

CAPs shunned most artillery and air support, but they remained relatively few and confined to their home villages and hamlets, even as the CAP program grew from 1968 to 1970. The Commander of the III Marine Amphibious Force, General Lewis Walt, had initiated the program with seven CAPs in January 1966 based on similar Marine experiments during 1965. By the beginning of 1967, there were 57 CAPs at villages and hamlets near Marine camps in South Vietnam and these expanded to over 100 by the end of 1968.¹⁴ CAP squads, each of approximately fifteen Marines, helped platoons of South Vietnamese Popular Forces (PFs) to provide security and population control in and near their home villages and hamlets. Given the strong family and ancestral ties of Vietnamese culture, this small investment of Marines capitalized on PF willingness to defend their own homes, while it avoided the likelihood that PF soldiers would desert if assigned elsewhere. CAP strength peaked in January 1970, when nearly 2,100 Marines and 128 Navy personnel were serving in 114 platoons, mostly near Marine bases along the populated coastal plain throughout each of the five northernmost provinces of South Vietnam.¹⁵

The expanded Marine CAP program embodied firepower restraint and respect for the South Vietnamese population, but it is important not to overemphasize CAP influence on Marine artillery employment during the war. CAP Marines avoided most artillery, and even air support, near their discrete villages and hamlets throughout I Corps, but nearly every Marine artillery battalion in the region employed unobserved fire, and even interdiction, at rates higher than the Army during 1968-1970. Only the 4th Battalion, 12th Marine Regiment, located at Dong Ha, stopped firing interdiction for a time, dropping from more than 61 percent of missions in April 1968 to zero by August 1968, but its overall unobserved missions remained above 90 percent well into 1969 and it began to fire interdiction again during August of that year.¹⁶ If a Marine desire to reduce firepower-intensive operations had been restrained by Westmoreland, as Krepinevich suggests, then Marine unobserved artillery expenditures should have remained below those of the Army, but they did not – during Abrams’ command, the Marines continued to practice unobserved artillery fire much as they had before.

Despite CAP firepower restraint, Marine doctrine continued to sanction the extensive use of unobserved artillery fire in counterinsurgency. *FMFM-9, Field Artillery Support*, published in 1963, had prescribed unobserved artillery fire based on “all available counterguerilla intelligence and information” that would “interfere with the guerilla plans by denying use of communication routes, selected areas and terrain features, disrupt and demoralize the guerilla, destroy his confidence and will to fight.”¹⁷ As it had in the 1963 edition, the December 1967 edition of *FMFM 8-2, Operations Against Guerilla Units*, acknowledged that “Related to the total guerillas killed, ammunition

expenditures by artillery may appear excessive,” and advised ways to solve this “complex logistical problem” that *did not include* reducing unobserved fire. Indeed, the 1967 edition even recommended *expanding harassing fires* into daytime hours “when circumstances warrant.” It continued to prescribe artillery fires against potentially “unoccupied” targets including “communications routes” and for “harassing” fires intended “to disturb the rest of the guerilla, to curtail his movement, and by threat of loss, to lower his morale.”¹⁸

Although Marine artillery continued to employ harassment and interdiction fire, the Marines considerably increased the overall effort that they devoted to counterinsurgency, or pacification, during Abrams’ command. Abrams explained how this was possible during a briefing to Lieutenant General Ferdinand J. Chesarek, Army Assistant Vice Chief of Staff, at MACV Headquarters on 22 January 1969. Praising Major General Raymond G. Davis, Commander of the 3rd Marine Division, as a “*brilliant, professional tactician*” and “*really good*,” Abrams related how Davis had closed “big bases,” such as Camp Carroll, and moved artillery from them to new fire support bases located on “real razorback ridge[s], steep rock formations, or just some crag that sticks up on top of one of these peaks,” where “it only takes a platoon of infantry to protect it.” Abrams emphasized that “this has freed up, this has created for [Davis], a lot more mobile forces, and forces that he can put into the pacification area in Cam Lo.” Indeed, Davis’ forces “are *mobile*, so you can concentrate them where the problems are and so on, and you can use them in a variety of ways and so forth.” Davis had put “a *maximum* of his rifle strength” into “a mobile role,” Abrams continued, whereas “*last year at this time, when*

you got these fights in Hue and Quang Tri, all these battalions that were bunkered up in here – not available for the *fight!* The enemy went and staged it somewhere else. And all the battalions we had at Khe Sanh – bunkered up and so on.” Impressed, Chesarek concluded “That’s just a *fabulous* demonstration of how just a change in the course of action with the same resources can bring about such a change in the military situation.”¹⁹

The Marines continued to employ significant amounts of unobserved artillery fire during 1968-1970, but a few Marine publications began to acknowledge trouble with the practice, even if they did not yet recommend cutting back. The Marine bulletin “Professional Knowledge Gained from Operational Experience in Vietnam” had insisted in April 1967 that “The daily thunder of artillery engaged in harassing and interdiction missions is not without its merits,” and in August 1967 that “Harassing and interdiction (H&I) fires based on an understanding of the current intelligence situation can be very effective in demoralizing the enemy both day and night.”²⁰ By February 1968, however, the same bulletin recognized that “Dud munitions such as artillery and mortar shells, aircraft bombs, rockets and naval shells are providing the VC with a lucrative source of practically readymade landmines and boobytraps.” Emphasizing that “By employing a simple firing device with the salvaged munition, the VC rig landmines and boobytraps which result in death or injury to hundreds of Marines,” the bulletin only advised the proper use of fuses.²¹ Likewise, in March 1968, the bulletin warned that “Intelligence reports indicate that the enemy usually remains in place when receiving artillery fire which they believe to be H&I fires, but will generally flee if they consider that they are receiving observed artillery fire.” The bulletin missed this opportunity to question a

fundamental assumption of H&I and instead recommended that, since illumination or white phosphorous (WP) rounds were “indicators of observed fire,” Marine artillerymen should “Adjust artillery fires with HE [high explosive rounds] and avoid the use of WP and illumination whenever possible. In this manner the enemy is likely to become confused and as a result of his confusion, he becomes a casualty.”²²

Articles in the *Marine Corps Gazette* also began to question unobserved fire, however circumspectly, during 1968 and 1969. Maj. Frank Zimolzak, for example, published a February 1968 article, titled “Fire Discipline Saves Ammo,” in which he attributed occasional Marine ammunition resupply problems to a systemic lack of “controlled,” or disciplined, firing. Concerning “the ammunition problem in Vietnam,” Zimolzak postulated that “Perhaps our programs of training overemphasize the need for delivering large volumes of area fire to counter guerilla tactics. Perhaps the program fails to make abundantly clear the fact that well aimed fire is the secret to gaining and maintaining superiority in combat.”²³

In the December 1969 edition of the *Marine Corps Gazette*, Maj. Wallace M. Greene, III, attempted to justify H&I while criticizing some aspects of its use. While serving in the 1st Marine Division’s G-3, or operations branch, he had developed a program of countermeasures for mines and booby traps – devices which had previously inflicted up to 64 percent of division casualties. Greene observed that the “Constant physical presence of Marines in the AO [area of operations] is the most effective measure to counter emplacement of booby traps,” but explained that, “in terms of troop employment, the cost is prohibitive.” He instead recommended intelligence-driven,

intermittent physical presence, such as widespread patrolling, verification of intelligence reports, “Scout-Sniper killer teams,” and “small unit cordon and search operations with Vietnamese National Police in villages near high density booby trap areas or in villages suspected of harboring enemy munition shops or sappers [mine-layers].”²⁴

Despite his intelligence-driven and hands-on approach to this aspect of counterinsurgency, Greene also suggested that unobserved artillery fire could compensate for a lack of troops. He stated that, “At night, periodic H&I and illumination fires over roads” helped to prevent mines and booby trap emplacement. Greene believed, however, that such H&I carried “the disadvantage of increasing the metal content of roads, and diluting the detection ability of metallic mine detectors” and that Marines should therefore consider “White phosphorous H&I fires,” since their remnants would not build up a strong metallic trace. Adding that “Artillery and mortar fires, near and in the area of operations ... will also neutralize devices by sympathetic detonation,” Greene cautioned that “Careful control of friendly duds and abandoned munitions is an essential countermeasure, as these items provide the enemy with 90% of the mines and material for surprise firing devices used against U.S. forces.” He gave no practical measures on how to achieve this control, other than to avoid abandoning excess ammunition at firing locations when moving in haste.²⁵

It is worth noting that the Marines rarely employed white phosphorous ammunition during H&I missions of any type, a fact which may have prompted Greene’s concern about metal accumulation along roadbeds. The 4th Battalion, 11th Marines fired 122,413 rounds as H&I during this period, a total that averaged between seventeen and

50 percent of all ammunition expended. Of these, they fired only 335 white phosphorous (WP) rounds as H&I, hardly 0.3 percent of ammunition fired as H&I and barely more than 0.1 percent of the total ammunition that they expended. The overwhelming majority of ammunition, 76 percent, was high explosive (HE). Greene's prescription of WP H&I to avoid metal clutter along roadbeds was innovative, but probably impractical – the Marines apparently continued to substitute HE ammunition for troops on most of the occasions during which they employed H&I.²⁶

The Marines continued to use unobserved artillery fire to compensate for a lack of troops in another way that MACV approved, by employing H&I to deter enemy rocket and mortar attacks. Marine doctrine already supported unobserved countermortar fire in conventional terms, explaining that “normal countermortar techniques are utilized in target accumulation, target selection, and target attack” and stipulating that “Plans are prepared on active locations.”²⁷ In November 1967, however, MACV had published “Counterinsurgency Lessons Learned No. 66,” calling for the “Establishment of maximum number of specified strike zones and concentration of H&I programs on likely launch sites and avenues of approach.”²⁸ In its first two questions, MACV's attached “Checklist for Rocket Defense of an Installation or Complex” asked “Have specified strike zones been established in all possible areas?” and “Is there a dynamic harassment and interdiction program?”²⁹ When it published a new edition of this document in March 1969, MACV simply added the question: “Is this based on suspected enemy action from past experience as well as intelligence gathering?”³⁰ Underscoring the semantic nature of MACV's name change from “H&I” to simply “interdiction” in

February 1968, such unobserved fire on active enemy mortar locations satisfied the Marine definition of interdiction: “fires placed on an area or point to prevent the enemy from using the area or point,” even if most Marine battalions continued to call it H&I.³¹

Even when based on past experience and intelligence gathering, however, firing unobserved artillery against specific points could still result in tragedy. Lieutenant William Hardwick, who served as a forward observer with the 11th Marines and provided fire support to the 3rd Battalion, 7th Marines, of the 1st Marine Division near Da Nang, experienced this soon after arriving in South Vietnam 27 September 1968. After a night that was “punctuated only by our H&I fire,” two Marines from another battalion approached Hardwick and informed him that “One of your H&I fires last night killed my corpsman [a Navy medic], and I wanted someone to know. He was a very good man.” Following them to the site of the incident and checking his records, Hardwick found that on the previous day he had approved an H&I mission to be fired on a hilltop that contained a historical “fighting hole that had a broad field of fire overlooking the stream.” Unfortunately, the other Marines “had moved in at about 1600, two hours after we had cleared H&I targets.” Hardwick “felt sick” because his H&I had unintentionally caused the death of another Marine and regretted that “nothing could ever change that fact.”³²

Only rarely did Army or Marine artillerymen assess H&I as counterproductive in a comprehensive way. Major General Arthur S. Collins, Jr., commander of the Army’s 4th Infantry Division in 1966, asked his officers to “Consider the troops, trucks, and fuel that we use” to transport H&I ammunition, adding that those troops and trucks were

sometimes ambushed. “Then if you carry this back to the ships,” he continued, “the number of rounds that have to be loaded and unloaded, have to be stored and protected, and even go back to the manufacturing, think what a waste this is of our national resources.” Collins emphasized that “none of it is observed and you have no indication of any effect at all on the enemy.”³³ He took significant action and reduced unobserved fire within the 4th Infantry Division, citing not only the need for “economical use of resources,” but also the danger for “loss of life or damage to [Vietnamese civilian] property.”³⁴ He told his men that unobserved artillery fire probably killed animals and even civilians from time to time, but “We have no way of knowing and we’re not going to find out and it doesn’t help our image.”³⁵ Yet H&I raged elsewhere and when Collins returned in February 1970 to command the Army’s First Field Force after having served as the U.S. Army Assistant Chief of Staff for Force Development from January 1967 to January 1970, he found that “H&I fire was common throughout the First Field Force, including the 4th Division,” before he eliminated it again.³⁶

It is difficult to find other senior Army and Marine Corps leaders who acted upon, or even shared, Collins’ comprehensive disdain for unobserved artillery firepower *before* the Army eliminated interdiction, or H&I, in June 1970. Since it had its own doctrine, its own ammunition logistic system and budget, and a strong degree of institutional autonomy, the Marine Corps was free to continue firing large amounts of H&I, long after MACV had forced USARV to cut back on the practice. It did so at historically high rates into the final months of 1970.³⁷ Thus, Abrams’ budget-minded controls hardly influenced Marine unobserved artillery fire.

Like the Marines, the 1st Australian Task Force (1ATF) in South Vietnam possessed strong budgetary and institutional autonomy that allowed them to defy MACV trends in unobserved fire. Serving under the operational control of the American Second Field Force inside the III Corps Tactical Zone (III CTZ), the 1ATF area of responsibility comprised most of Phuoc Tuy Province, while the Commander, Australian Force Vietnam (COMAFV) in Saigon retained authority to direct its operations and the Australian Army headquarters in Canberra, Australia, monitored 1ATF operations as well.³⁸ The three Australian infantry battalions of 1ATF and the three artillery batteries that supported them, two from Australia and one from New Zealand, had employed unobserved artillery fire at rates lower than their American counterparts before 1968 because Australia and New Zealand had signed agreements with the United States that the latter would provide nearly all administrative and logistical support, including ammunition, but that Australia and New Zealand would *repay* the United States the cost of support received. The agreements further specified that the cost of ammunition and other items could be reimbursed by using either a constant, per-capita rate, or by using an actual rate. Since determining an actual rate required extensive audits and more intensive requisitions, New Zealand used the easier per-capita rate until late 1967, when the New Zealand Treasury demanded a change after noting that the average, per-capita rate for ammunition was more expensive than what its 161st Artillery Battery had actually been expending.³⁹ Australia had signed a similar update to its Military Working Agreement on 30 November 1967.⁴⁰

Thus, the U.S. Joint Logistics Review Board could observe in December 1970 that, unlike other Allied ground forces, “Funding for Australia and New Zealand troop costs in Vietnam has been accomplished by financial working agreements that entail no appreciable cost to the United States.”⁴¹ Like the Marines, the 1ATF remained largely immune to MACV budgetary constraints. Free to determine its own ammunition needs, it could also balance its own resources available.

The fact that Australia financed its own ammunition had generated some economizing within 1ATF before 1968, but this independence soon produced the opposite effect, as persistently high rates of Australian “Harassing Fire” exceeded declining Army and Marine expenditures by late 1970. Well supplied by the U.S. Army logistic system, the Australians continued to fire large amounts of H&I on routine basis from 1968 to 1970, both day and night.⁴² During November and December 1969, Australian artillerymen fired 43.6 percent of ammunition and 46.6 percent of missions as “H&I,” a figure already higher than declining Army expenditures, but roughly equivalent to those of the Marine Corps.⁴³ Yet, after the Army ended interdiction in June 1970, and while Marine H&I rates dropped below twenty percent of missions for the first time in October 1970, rates of Australian Harassing Fire remained well above twenty percent of ammunition expended from June to December 1970. Indeed, the Australians consumed an average of nearly 10,000 rounds each month, yet the amount of ammunition that 1ATF devoted to Harassing Fire *increased* to nearly 60 percent of ammunition expended from September to December 1970.⁴⁴ MACV budgetary imperatives during American withdrawal had no impact on 1ATF H&I fires.

Republic of Korea (ROK) forces also possessed a great deal of independence, but not as much as 1ATF. Still threatened by communist aggression and aided by Allied assistance at home after having fought North Korean and Chinese communists to a standstill barely a decade earlier, the Republic of Korea had responded quickly to President Lyndon Johnson's "more flags" request and deployed 47,872 troops to South Vietnam in four major increments. After sending medical and engineer troops starting in 1964, it dispatched its Capital Infantry Division and 2nd Marine Brigade to South Vietnam in August 1965, where they provided security at the logistical hub of Cam Ranh Bay and at Qui Nhon. It sent a second division, the 9th ("White Horse") Division, which also provided security in both the Tuy Hoa area and near Cam Ranh Bay from October 1966. ROK troops, including eight batteries of ROK artillery, could count on the United States to provide transportation, artillery ammunition, extra artillery support, construction and extra engineering support, aviation support, communications support, hospital supplies, food, overseas allowances, and funds to cover any legitimate claim against ROK forces in Vietnam that did not result from ROK negligence.⁴⁵ These generous arrangements led some observers to argue, somewhat unfairly, that the United States had traded "money for men" and simply "bought the South Korean expeditionary force to South Vietnam."⁴⁶

ROK reliance on American finances and logistical support might have aligned ROK unobserved artillery fire with American practices, but this was not initially the case. Westmoreland assessed South Korean units as "effective" during his command, but too reliant on unobserved firepower as they operated "exactly as the U.S.," but in a more

deliberate manner. He used the Koreans “primarily for area security, including keeping a long stretch of Route 1 open,” where their deliberateness posed no significant operational disadvantage. Yet “Because of a dictum from President Park [Chung-hee], all ROK units were sensitive about keeping casualties down,” Westmoreland emphasized, “which resulted in a deliberate approach to operations involving lengthy preparations and heavy preliminary fire.”⁴⁷ During the South Korean presidential campaign of 1967, the ROK government started to require that its commanders “justify” any combat death in an elaborate report to be read by President Park himself.⁴⁸ This encouraged artillery preparations that consumed large amounts of ammunition against suspected targets. Nearby Americans remembered “noisy” ROK artillery firing “nearly every day,” like their own.⁴⁹

Collins remembered that, during his command of First Field Force from February 1970 to January 1971, he looked over ROK ammunition expenditure reports and found that ROK artillery consumed “every round that they were authorized every day,” but that there were “weeks and months at a time where they didn’t get involved in any fight at all” and “There were periods when absolutely nothing was going on.” Knowing that there were days in which “there wasn’t much firing in their area,” Collins was sure that ROK artillery units “weren’t wasting their ammunition on H&I,” and instead believed that some of this “ammunition were back-loaded out of Vietnam onto ships going to Korea.”⁵⁰ Indeed, Army logistical records indicate that, between November 1969 and May 1970, ROK artillery expended nearly every round allocated to them – an average of nearly 93,000 rounds per month, or about 11,600 rounds per battalion.⁵¹ Collins pointed

out that “the Koreans put on very few operations” during his command of First Field Force, but when they did conduct an operation, “I had to commit to them more helicopters, more artillery, more trucks, more anything than any of our own forces ever got.”⁵² Thus, infrequent ROK operations during 1968-1970 remained firepower-intensive, while ROK artillery apparently expended less firepower on a daily basis than Army logistical records indicated.

ROK forces had struggled with troublesome allegations of brutality before 1968, but this situation improved during 1968-1970. In an undated pamphlet for the American Friends Service Committee, Diane and Michael Jones, who had served as Peace Corps volunteers in Southeast Asia, detailed at least 43 incidents of ROK brutality in South Vietnam.⁵³ Whether these were substantiated or not, such allegations did consume considerable amounts of MACV staff officer work. On 5 May 1967, Westmoreland wrote to Lieutenant General Stanley Larsen, about ROK forces having supposedly murdered an eighteen-year-old escapee, recaptured while convalescing in a hospital after his initial abuse, by placing a wire around his neck and dragging him along the ground until he died. South Vietnamese officials from sector chief to corps commander were very upset and pursuing investigations.⁵⁴ Likewise, the Office of the Assistant Secretary of Defense for Systems Analysis (OASD-SA) recorded in 1969 that “When the Koreans first arrived in Vietnam, their conduct toward Vietnamese civilians was brutal. Numerous accounts of wanton execution and torture of Vietnamese civilians by ROK soldiers substantiate this charge.” According to OASD-SA, this situation persisted until June 1968, when the ROK relations with the populace improved.⁵⁵

There exists a correlation between improved ROK relations with the populace and decreasing unobserved artillery fire to support ROK forces after June 1968. Although expenditure records of the eight ROK artillery battalions are difficult to find by target category, if they still exist, COLED-V data is available for the U.S. Army's 6th Battalion, 32nd Artillery (6/32 Artillery), which, as Shelby Stanton observes, transferred to First Field Force Artillery in January 1968 and there "primarily supported the two Korean divisions in Vietnam."⁵⁶ During July, August, and September of 1968, 6/32 Artillery fired up to half of its ammunition as interdiction, with only a minority of rounds observed. From October 1968 until June 1970, however, COLED-V recorded that 6/32 Artillery virtually ended its interdiction expenditures, as almost every 6/32 mission was categorized as a form of observed fire, whether Confirmed, Acquired, or Counterbattery.⁵⁷

Although it recorded an impressive shift from interdiction to observed fire by 6/32 Artillery, the U.S. Army unit that supported both ROK divisions, COLED-V data was not perfect. COLED-V recorded, for example, that 6/32 Artillery fired a total of 22,614 rounds during the three month period of November 1968 to January 1969. In its quarterly operational report that covered the same period, however, 6/32 Artillery recorded having fired 22,119 rounds during 5692 missions, mostly for the two ROK divisions, but also for ARVN and the U.S. Army 4th Battalion, 503rd Infantry and 173rd Airborne Brigade. Of all missions between November 1968 and January 1969, it had expended seven percent of rounds and thirteen percent of missions as interdiction.⁵⁸ One year later, COLED-V still recorded zero interdiction, but 6/32 Artillery recorded having

fired 110 rounds during 58 interdiction missions, or 1.0 percent of ammunition during 1.4 percent of missions.⁵⁹ The lack of ROK artillery expenditure data by target category and the imperfect nature of COLED-V data notwithstanding, U.S. Army unobserved artillery expenditures to support ROK forces had eventually aligned with budget-driven reductions elsewhere in USARV.

Whereas Westmoreland had been uncomfortable with ROK over-reliance on firepower, Abrams was pleased with ROK performance soon after he took command in June 1968. On 13 July 1968, he told the MACV staff that “The ROKs have 4 percent of the friendly strength in-country, and they’ve accounted for 6 percent of the enemy killed in-country. They’ve got a kill ratio of 1:11, something like that, which is of course pretty good.” He emphasized that “In all the things that *count*, the ROKs look very good” and “You’ve got to give them *credit* for the things that really *count* here – control of the population, establishment of GVN control ... and killing the enemy.”⁶⁰ In October 1968, after having implemented his budget-oriented “Five-by-Five Plan,” he commented to his staff that Lieutenant General William R. Peers, commander of the First Field Force, was “convincing the ROKs to join the [ammunition expenditure reduction] program,” but that it should not be difficult because “there’s so little enemy left down there that it’s getting really difficult to justify the shooting.”⁶¹ In August 1969, Abrams heaped praise upon ROK forces, emphasizing that “They’re excellent fighters. Their troops are in splendid condition. First class. They’re well led. They’ve got excellent company officers, NCOs.” Overall, he found them to be “very professional in the fighting that they do,” but regretted that they still pursued operations that were too

deliberate and expensive in terms of support.⁶² By this time, however, ROK forces had at least joined MACV's cutbacks in unobserved artillery fire.

Abrams was particularly pleased with the performance of Thai artillery. Between 1967 and 1969, Thailand had deployed six maneuver battalions and 11,586 troops, including four artillery battalions, to South Vietnam. Thai artillery started to arrive in 1968. These troops belonged to the "Royal Thai Army Volunteer Force" (RTAVF), which first consisted of the "Queen's Cobra Regiment" and eventually included the "Black Panther Division." The RTAVF was based at Bearcat, an area of relatively low enemy activity in Bien Hoa Province near Saigon. Despite their quiet area, the Thais conducted numerous small-scale offensive operations, in which they preferred helicopters and fixed-wing gunships for close-in troop support, rather than artillery or air-delivered firepower. Like the ROK forces, the Thais relied on the United States for nearly every financial and logistic consideration, but unlike the Koreans, the Thais did not find reason to expend large amounts of unobserved artillery fire, even for basecamp defense.⁶³

The Thais retained artillery for defensive purposes, however, and Abrams found the Thais to be "excellent *defensive* fighters." Indeed, Abrams deemed Thai artillery to be "as good as any artillery" and, having visited a Thai fire support base in 1969, Abrams "felt that it was the best fire support base I had visited in South Vietnam," including those of American forces. Thai standards of excellence, including accuracy, precision, speed, firing techniques and control, fire base construction and layout, cleanliness and sanitation so impressed Abrams that he emphasized: "I can tell you that, in the great

Order of Saint Barbara, they are rather deeply steeped in artillery doctrine as it is known all over the world.”⁶⁴ Abrams mentioned no need for Thai artillery “to join the [ammunition expenditure reduction] program,” as he had concerning ROK artillery during 1968. The Thais had limited their own artillery ammunition consumption – they relied on ammunition that was supplied and funded by the U.S., but unlike their American and Allied counterparts, they chose to avoid extensive, unobserved fires.

To foster security around their basecamp, Thai forces invested their energy in non-combat operations, rather than firepower employment. In the process, they developed a bond with the local populace that reinforced the quiet nature of their sector. Richard Ruth, one of the few historians to study Thai soldiers in the Vietnam War, explains that “Thai contact with the South Vietnamese was predominately nonmilitary,” involving interactions with the “civilians from the villages and market towns around the camp,” who were predominately Buddhist and female, as two decades of war had killed or otherwise enlisted most military age males, regardless of allegiance. To Ruth, “The lack of contact with Vietnamese men and, conversely, the preponderance of contact with Vietnamese women caused the Thai soldiers to develop and harbor paternalistic and protective feelings for most of the Vietnamese civilians they encountered.” Furthermore, nearly every Thai soldier who Ruth interviewed remembered sharing “friendship and admiration” with the South Vietnamese around their camp. “Many of the Thai soldiers went even further,” Ruth observed, “and believed that their adversaries – the communist guerillas – had welcomed their presence in the war” as a benevolent force, compared to the supposedly wanton violence of their Allied counterparts. This

recollection was partly substantiated, not only by communist propaganda leaflets, but also by the comparatively tranquil nature of the Thai sector.⁶⁵ It would have been difficult for anyone to claim that Thai soldiers did not care for the local population.

Buddhism strongly influenced how Thai soldiers approached the threat posed by their enemy – Viet Cong insurgents. When donating leftover food to civilians around their camp, some Thai soldiers welcomed the idea that it sometimes helped Viet Cong who lurked outside the villages, hungry or emaciated, but near their families. This generous and non-absolutist view approximated the Buddhist concept of *metta*, a form of mercy in which demonstrated “loving kindness” can serve as “a beneficial force” to “overpower hostile forces.”⁶⁶ Most Thai soldiers also subscribed to another tenet of Buddhist doctrine that prohibited the unnecessary harming of any living animal.⁶⁷ Such principles aligned with the insights that Collins provided to his American soldiers concerning the senselessness of most unobserved artillery fire during the Vietnam War: such firepower killed animals and probably civilians who happened to be in the wrong place at the wrong time, but “We have no way of knowing and we’re not going to find out and it doesn’t help our image.”⁶⁸ Although Thai soldiers suffered hundreds of casualties from land mines, booby traps, and mortar attacks during their time in South Vietnam, their *metta*, their disdain for needless violence, and their focus on non-combat operations produced a level of firepower restraint that was, like that of the Marine CAPs, stronger than the firepower restraint observed by most Allied ground forces.⁶⁹

The South Vietnamese Army (ARVN), on the other hand, considerably expanded its artillery strength from 1968-1970. The number of ARVN artillery battalions had

increased to 28 by the end of 1967, while the ARVN Airborne Division and the Vietnamese Marine Corps (VNMC) Brigade each possessed its own artillery battalion, for a total of 30 ARVN artillery battalions.⁷⁰ By the end of 1970, however, ARVN artillery strength reached 55 regular battalions and another 100 “sector artillery platoons,” representing 20,194 ARVN artillerymen.⁷¹

In some ways, the growth in ARVN artillery strength from 1968-1970 accorded with Abrams’ assessment of ARVN firepower needs during this period of Vietnamization and American withdrawal. Addressing weak ARVN kill ratios relative to U.S. and other Allied ground forces, Abrams had long insisted that “The ARVN doesn’t have the firepower, it doesn’t have the mobility” to carry the fight to the enemy in the strongest way. Soon after he assumed command of MACV, he told Robert Komer, the civilian who led U.S. pacification efforts in South Vietnam from 1966 to 1968, that “the Vietnamese have been given the lowest priority [for fire support, supplies, etc.] of anybody that’s fighting in this country! And that’s what we’re trying to correct.”⁷² Indeed, Abrams emphasized to the MACV staff, “Because the ARVN does not get the wealth of air support, nor the wealth of artillery support, nor the wealth of gunship support that the U.S. units do,” he suspected that ARVN performance had sometimes been more favorable than its weak kill ratios suggested. Several units, such as the 21st ARVN Division, had been rated “very poorly” by their American advisors, but in the case of the 21st ARVN Division, “its *performance* – in terms of killed and that sort of thing – its performance has been one of the *good* divisions.”⁷³

Yet during Vietnamization and American withdrawal, much of the increase in ARVN artillery strength went to support “territorial defense” units that hardly fired at all. Territorial defense forces comprised Regional Forces (RF), Popular Forces (PF), and People’s Self Defense Forces (PSDF) – poorly trained irregulars who sometimes requested artillery support, but could not obtain it. Some ARVN artillery battalions remained intact as they supported ARVN divisions and corps, but, in long-standing ARVN tradition, “territorial defense” artillery went to RF, PF or PSDF-protected villages, hamlets, and other populated areas, and regrouped only to support occasional operations. Lieutenant General Ngo Quang Truong, who had commanded the 1st ARVN Division, explained in his postwar monograph that territorial defense operations “were of low profile and characterized by the absence or minimum use of large-caliber firepower. This was intended to prevent human losses and property damage.” Nevertheless, Truong clarified that territorial defense forces “usually depended on ARVN artillery sections of two pieces each which were permanently deployed in a number of districts,” but which provided a consistently “low level of combat support.” Truong added that a need existed from a South Vietnamese perspective: during October 1966 to March 1967, territorial defense forces had requested, but did not receive, artillery or other combat support in nearly 200 of 234 friendly initiated actions, helping to prompt the expansion of territorial defense artillery in 1970.⁷⁴

Some American officers explicitly supported expanding the South Vietnamese territorial defense artillery concept. In his debriefing report for August 1965 to January 1968, the U.S. Senior Advisor to the ARVN in IV CTZ, Brigadier General William R.

Desobry, complained that artillery displacements to support conventional operations left gaps in territorial defense artillery coverage. He argued that “Foremost in any program to improve artillery in CTZ must be the consideration to furnish additional artillery support.” More artillery “would allow that artillery presently employed in a territorial defense role to continue supporting the pacification and revolutionary development activities without interruption caused by a requirement to support ARVN operations.” Furthermore, this would provide “the additional artillery assets necessary to restrict VC freedom of movement and deny him unrestricted access to base areas while supporting operations.”⁷⁵

As a student at the U.S. Army War College during 1968, Lieutenant Colonel Frank A. Athanason challenged his colleagues “to seek and perfect techniques” to improve territorial defense artillery, so that the ARVN could better pursue pacification. An artillery officer who had served with the Army Concept Team in Vietnam (ACTIV), for whom he published an evaluation titled, "Employment of Artillery in Counterinsurgency," Athanason argued that “The Vietnamese method of employing artillery to protect populated areas -- unconventional at times, and contrary to US artillery methods -- has led to unfair condemnation by US artillerymen,” because the ARVN focused on two missions, conventional and territorial defense, while U.S. artillery remained strictly conventional.⁷⁶

Yet Athanason’s discourse inadvertently highlighted the futility of unconventional, and supposedly counterinsurgent, territorial defense artillery. Athanason acknowledged that “In order for artillery to be truly effective, it must respond immediately and with

extreme accuracy,” that “One ‘short round,’ dropped on a church, school, or hamlet can wreck months of pacification efforts,” and that “The extreme accuracy essential for territorial defense, can only be achieved by meticulous application of all possible gunnery corrections.” Athanason explained that “No number of guns, regardless of caliber, will have much effect on the enemy unless there is an observer who can see the enemy,” and that “It would be impossible for the [ARVN] artillery to provide the hundreds of observers that are required,” while “the low educational level of the rural population makes it extremely difficult to teach them adjustment procedures.” The latter fact was “particularly true in some areas of the country where even the Vietnamese language is foreign to the people, much less an understanding of yards, meters, coordinates, and fire adjustment techniques.” Athanason implausibly recommended that an “Artillery Target Indicator” (ARTI) board, “a simple circular board, about two feet in diameter, on which is drawn the outline of the area being defended,” could be used to train “hamlet and outpost personnel” to make rudimentary requests for artillery support and thereby overcome the unavoidable shortage of school-trained artillery observers.⁷⁷

The PF were expanding rapidly by early 1970, prompting Abram’s concern about their training and diminishing their potential to provide effective territorial defense artillery observers. Perceiving an improved threat environment, the South Vietnamese Joint General Staff (JGS) sought to release all ARVN units from pacification support not later than 30 June 1970 and, between October and November 1969 alone, 591 new PF platoons had finished training and deployed, while ARVN responsibility for pacification dropped by nearly one-third.⁷⁸ Abrams, however, complained to the MACV Staff on 18

February 1970 that “You can brag about how you’ve got almost double the artillery in ARVN, you’ve got four Huey squadrons flying around in VNAF, you’ve got all these boats turned over and the crews are functioning well and they’re aggressive and so on....” But, Abrams continued, “when you come to the end of ’70 and you’ve still got half of the PF that are really unsatisfactory, and three-fourths of the PSDF couldn’t find their way to the outhouse – I’ll tell you, all that other stuff, the boats and helicopters and the M16s and the artillery, is for *nothing*.”⁷⁹

Whether or not poorly trained irregulars controlled its fire, territorial defense artillery already counted for practically nothing, at least in a conventional sense, because PF operations “were of low profile and characterized by the absence or minimum use of large-caliber firepower.” Thus, destined to be largely inaccurate and conventionally ineffective when distributed in weak one or two-gun positions, the utility of territorial defense artillery hinged on its supposed value as a psychological deterrent, yet this dubious assumption dismissed the determination of the communist enemy and, in reality, hardly justified its employment. While it consumed little ammunition in relation to conventional artillery, South Vietnamese territorial defense artillery represented a considerable waste of resources during the Vietnam War.

Regular ARVN artillery, on the other hand, was sometimes excellent. By late 1969, Abrams was pleased with the artillery of the 1st ARVN Division, in particular. Having visited Camp J. J. Carroll, a former Marine base in Quang Tri Province, Abrams reported to the MACV Staff that the 1st ARVN Division “just looks *better* every time you *go* there,” adding that “Camp Carroll out there is probably the *finest* constructed fire

base in all of South Vietnam.” He found it “*quite* noticeable – any one of their fire bases you go to, there’s *no* garbage, there’s *no* crap, it’s *neat*,” with excellent defensive preparations, including compartmentalization, interwoven wire, “*real stout*” bunkers, etc. To Abrams, the 1st ARVN Division’s artillery was “all business” and “Camp Carroll’s the strongest fire base we’ve got in South Vietnam – of *anybody*, U.S. or anything else. It’s safer than the *Pentagon*.”⁸⁰ Abrams had, however, long viewed the 1st ARVN Division as “*clearly* the best troops they’ve got in-country.”⁸¹ The 1st ARVN Division was indeed exceptional and the ARVN needed more regular artillery like it – capable stewards of missions and resources, with great discipline and high standards.

Yet, regular or territorial defense, ARVN artillery fired fewer rounds than its U.S. counterparts. While records of ARVN artillery battalions are even harder to find than those of ROK artillery, U.S. advisory reports nevertheless establish the trend. Brigadier General Donald D. Dunlop, who served as Deputy Senior Advisor (DSA) to the ARVN in the III Corps Tactical Zone (III CTZ) from June 1968 to May 1969, noted in his Senior Officer Debriefing Report that “With few exceptions, ARVN Artillery is employed territorially and seldom moves,” but that it also lacked enough observers. Whereas “Each US battalion has its own Arty LNO [liaison officer] and forward observer teams are with each company,” Dunlop explained, “The ARVN battalion has only one Arty LNO who also acts as a forward observer. In the normal battalion contact situation, it is estimated that the US battalion receives at least three times the artillery firepower that the ARVN battalion receives.”⁸² For his part, Brigadier General Gordon J. Duquenin, who served as DSA to ARVN in II CTZ, from December 1969 to July

1970, observed that “ARVN artillery is often employed in two tube platoons firing from relatively fixed positions.” Adding that some of his ARVN artillery units had “occupied the same static position for several years because they are being used as LOC [lines of communication] protection,” he insensibly hoped for improvement because “RF/PF artillery platoons are being trained to replace the ARVN units performing static missions along LOC’s.” This, he believed, would free up the ten ARVN artillery battalions in II CTZ to focus on more effective massed fires, which they had not been able to do “because of the dispersal of tubes.”⁸³

Although ARVN artillery consumed proportionally less ammunition than its U.S. counterparts, it fired higher rates of H&I than the U.S. Army during Abrams’ command. Brigadier General Carleton Preer, Jr., who had served as Deputy Senior Advisor to the ARVN in III CTZ from May to November 1969, recorded in his Senior Officer Debriefing Report that the fourteen ARVN artillery battalions in III CTZ had together fired 885,141 rounds between December 1968 and November 1969, an average of more than 5,200 rounds per battalion per month. While this average was lower than that of most U.S. artillery battalions during the same period, ARVN H&I rates far exceeded those of the U.S. Army, as the fourteen ARVN battalions in III CTZ fired 93,375, or 42.3 percent, of their rounds as H&I.⁸⁴ It is important to note that, although these ARVN H&I rates resembled those of the U.S. Army during Westmoreland’s command, *before* he and Abrams implemented budget-minded cutbacks, neither Preer nor Abrams criticized the high H&I rates that Preer presented.

Thus, Abrams pursued dollar savings and not a radical shift in strategy when he pressed MACV to reduce harassment and interdiction from 1968-1970. Abrams' "Five-by-Five Plan" of August 1968 had stated, and then realized, this objective by reducing the Army's artillery interdiction expenditures to nearly ten percent of ammunition by January 1969.⁸⁵ Yet Abrams allowed Army interdiction to stabilize near this level until after June 1969, when it dropped to approximately seven percent, but it subsequently persisted at that level until June 1970, when recurring financial pressure prompted Abrams to virtually eliminate artillery interdiction throughout USARV.

Other than those for the Republic of Korea and Thailand, Marine and Allied H&I expenditures defied both MACV budget imperatives and Army interdiction reductions, underscoring Abrams' emphasis on monetary, rather than strategic, considerations about unobserved artillery fire. The Marines fired H&I at historically high rates into the final months of 1970, while Australian "Harassing Fire" surpassed Army and Marine Corps totals during the same period. ARVN artillery continued to fire H&I as well, albeit with lower overall ammunition consumption than their Marine or Allied counterparts, but at comparable rates. The Thais eschewed artillery in their quiet area of operations and the ROKs abandoned H&I as the Army did, but only after several months of Abrams' command and only under pressure to join MACV's expenditure reduction program. Budgetary pressure, and not strategic change, drove MACV's reductions in unobserved firepower during the Vietnam War.

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82. Brig. Gen. Donald D. Dunlop, Senior Officer Debriefing Report, 30 April 1969, p. I-3, accessed 22 January 2012, available at <http://www.dtic.mil/dtic/>, document 513376.

83. Brig. Gen. Gordon J. Duquenin, Senior Officer Debriefing Report, 15 September 1970, pp. 27-28, Microfiche File 1, DS 557 A6A2 Duquenin, MSTL, Fort Sill.

84. Brig. Gen. Carleton Preer, Jr., Senior Officer Debriefing Report, 1 January 1968, pp. 36-37, accessed 22 January 2012, available at <http://www.dtic.mil/dtic/>, document 506706.

85. Hq., United States Army, Vietnam (USARV), "Operational Report of Headquarters, United States Army Vietnam for Period Ending 31 October 1968," 15 November 1968, p. 14, accessed 22 January 2012, available at <http://www.dtic.mil/dtic/>, document ad500291.

CHAPTER IX

USING AND LOSING THE THEATER COMMANDER'S ARTILLERY:

AIRPOWER IN SOUTH VIETNAM, 1968-1970*

When General Creighton Abrams, Commander of the Military Assistance Command, Vietnam (MACV), and his staff officers briefed Secretary of the Navy Paul R. Ignatius on 5 October 1968, an officer of Abrams' J-3, or Joint Operations staff, described U.S. Air Force B-52 bombers as "the theater commander's artillery" in South Vietnam. Abrams did not disagree, observing that "Where we are convinced that [the communist enemy] is ganged up – you know, has really got serious intentions, then we really go after it, around the clock," pointing out that MACV had used nearly 2,600 B-52 sorties to assist Marines at Khe Sanh during the 77-day siege that began just before the Tet Offensive in January 1968, that "we put 1,000 sorties in" to defend Kontum in April and May 1968, and that "we have already put in in excess of 3,600 sorties of B-52s" to stop the most recent enemy push toward Saigon that had begun in August 1968.¹ During a subsequent briefing to Secretary of Defense Melvin Laird in March 1969, Major General Phillip Davidson, the MACV J-2 (Assistant Chief of Staff for Intelligence), offered that "I can say from interrogation of the PWs [prisoners of war], sir, that the B-52 is the most feared weapon in the country." General Wheeler, the U.S. Army Chief of

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Staff, then interjected that “In effect General Abrams operates with no reserves, no ground reserves. This is a new situation in warfare so far as I am aware. Now he can pull units and move them from one area to another, but he has no such thing as a division sitting in reserve, or a regiment of a division sitting in reserve. His reserve, basically, is *firepower*,” mainly in the form of B-52 strikes. Abrams concurred, stating “that’s right,” but that “You have to add tac air [tactical air support]. There’s nothing really as responsive as the B-52 and tac air. It only takes a couple of hours to change the whole weight and put it where you want it, in whatever quantity you want it.”²

Abrams’ predecessor, General William Westmoreland, set the precedent for using B-52s as tactical fire support, employing them to achieve tremendous physical and psychological effects against massed Viet Cong (VC) insurgents, North Vietnamese Army (NVA) regulars, and their suspected base areas. He pushed for B-52s to defend Khe Sahn like other tactical fire support when, in February 1968, he revised troop safety zones from 3,000 to 1,000 meters and delivered 110,000 tons of bombs in Khe Sanh’s defense, nearly doubling around that single perimeter what the U.S. had expended against Japan during both 1942 and 1943.³ Westmoreland had dispatched B-52s against selected VC base areas in South Vietnam since 18 June 1965 and B-52s had struck North Vietnamese infiltration routes many times after April 1966. By December 1966, B-52s had dropped nearly 130,000 tons of bombs in 800 missions that normally included between six and 30 sorties, or individual aircraft per mission, with each sortie costing approximately \$30,000. Nearly half of B-52 missions were requested by Westmoreland’s field commanders.⁴ MACV even employed six consecutive days of B-

52 strikes to carpet bomb NVA positions on the Chu Pong massif after 1st Cavalry Division troopers departed the first Ia Drang battle-site, LZ (Landing Zone) X-Ray, on 15 November 1965.⁵ Traditional U.S. and Allied artillery battalions remained too dispersed to rival the B-52's destructive effects, but they employed widespread harassment and interdiction (H&I) fire – frequent, unobserved, randomly timed, one or two-gun missions intended to hinder enemy movement and to lower enemy morale, rather than to inflict any appreciable enemy casualties, that accounted for nearly 29 percent of U.S. Army artillery ammunition expenditures when Abrams assumed command in June 1968, but that Abrams virtually eliminated by June 1970.

In many ways, B-52 strikes were analogous to unobserved artillery fire during the Vietnam War, but on a larger scale. When intelligence indicated that enemy troops or headquarters operated in a given area, Abrams frequently employed B-52 missions like H&I – not only to destroy the enemy, but also to impede enemy movement and to inflict psychological pressure. Unlike randomly timed fire by one or two guns, however, the sheer volume of B-52 delivered munitions were much more likely to achieve such effects, but at an extraordinarily high cost per application. The staggering cost of ammunition consumption led the United States to reduce the availability of both B-52 and tactical air support faster than Abrams wanted, and on timelines that resembled his own budget-driven reductions in unobserved artillery fire. Despite the perceived and demonstrated effects of airpower, fiscal constraints, rather than strategic or tactical concerns, drove MACV's reductions of both air and artillery-delivered firepower from 1968-1970.

The B-52 had been designed as a strategic platform to carry atomic weapons against area targets deep within enemy territory, but President John F. Kennedy's emphasis on limited war and contingency plans developed by the Strategic Air Command (SAC) in 1964 led the United States to employ B-52s during the Vietnam War, where each bomber carried scores of large, conventional bombs against communist troop formations, headquarters, and logistical centers. The B-52F used by the Air Force in 1965 carried up to 51 conventional, 750-pound demolition bombs, or nearly 19 tons of explosives per aircraft. The Air Force replaced the "F" model with the B-52D in 1966. The newer model, upgraded with a high-capacity bomb bay, carried up to 108 500-pound bombs, or 27 tons of explosives, per aircraft.⁶

As General Davidson, who served as intelligence chief for both Westmorland and Abrams, emphasized, the B-52's capacity for unexpected, cataclysmic destruction indeed made it "the most feared weapon in the country." And, as Abrams observed, the B-52's psychological effects were "one of those things that doesn't come out in systems analysis."⁷ Truong Nhu Tang, a Viet Cong veteran, published a memoir in which he explained that "for all of the privations and hardships, nothing the guerillas had to endure compared with the stark terrorization of the B-52 bombardments." He remembered suffering through a B-52 strike and compared it to being "caught in the Apocalypse. The terror was complete. One lost control of bodily functions as the mind screamed incomprehensible orders to get out."⁸

Even a single B-52 carried tremendous destructive power, but to achieve greater physical and psychological effects, Abrams massed them like artillery and made them

available to his subordinate commanders – a practice that they welcomed from the outset of his command. An inclusive commander, Abrams convened a meeting with his principal MACV lieutenants on 4 July 1968 to ask “what should we now be doing? *Are* we doing what we *ought* to be doing?” General Frederick Weyand, Commander of the Second Field Force, appreciated that Abrams allocated B-52 sorties “in advance a couple of days so we could plan ahead and use them in mass.” Concerned about finding and killing enemy formations before they reached populated areas, Weyand found that “what’s been happening in *my* area is the B-52s have been getting on his *head* – not his *tail* at all. These things have been tremendously effective.” Lieutenant General William Peers, Commander of the First Field Force, observed that the enemy had been “hurt, and hurt badly [along the border] with those B-52s in particular” and stated that “It seems to me the way you’ve been using them, in *mass*, is the way they *ought* to be used.” Major General George Eckhardt, Commander of the Delta Regional Assistance Command, likewise affirmed that “[the enemy’s] great fear is B-52 strikes. They don’t know when and where they’re going to come. This is bait we use to get the ARVN into the base areas, and we won’t use one unless they’ll go in after it.” General William Rosson, Abrams’ Deputy Commander, emphasized that “as to what we ought to be doing – we’ve got to use all our assets all the time. There can’t be any reserves – we don’t have the luxury of that” and “I’m a great believer in the mass use of the B-52.” Abrams clarified that he had been trying to “avoid shifting forces, that is maneuver battalions, from one corps to another. I’ve also been trying to permit the JGS [the South Vietnamese Joint General Staff] to keep their general reserve, the airborne battalions and

four of the marine battalions here in Saigon.” To do this, Abrams sought “to *shift* the air effort, which is a fairly *painless* process compared to moving a brigade from III Corps to II Corps, or I Corps,” so that he could “make up where the real *heat* is” with “B-52s and the tac air.”⁹ In this sense, B-52s and tactical air indeed served as the theater commander’s artillery.

B-52 strikes achieved effects not only as massed area weapons, but as firepower platforms driven by credible MACV intelligence about significant enemy troop concentrations or elusive headquarters locations. In June 1968, for example, Abrams praised Major General Charles Stone, Commander of the U.S. Army 4th Infantry Division, for having directed many deliberate B-52 strikes while “on all those peaks” that the enemy had to fight for during November 1967. Stone’s control of terrain in the 4th Infantry Division’s area of operations allowed him, in Abrams’ assessment, to know where B-52 strikes “ought to be *put*. And that derived directly out of being *out there in* the damn thing,” Abrams continued, “And, as you know, they were – the enemy was *around* them – you know, they were all out there *together*. Except Charlie Stone had the B-52s, and they just had some – few mortars, few rockets. It was a mismatch.”¹⁰ In September 1968, on the other hand, when Abrams heard that a recent defector had claimed, perhaps credibly, to know the location of the B-3 Front Headquarters (the communist headquarters responsible for enemy operations in South Vietnam’s Central Highlands), Abrams was ready to strike with maximum firepower if confirmed: “If we’re talking about the *B-3 Front* here, I don’t want anybody monkeying around that thing with a few *squads* or companies or something. I want the *whole* B-52 fleet, the

whole tac air fleet, and one brigade of the 4th Division! So let's not let this thing fritter away here. Now, we haven't got much *time*, because they're going to find out that this guy has *quit*.”¹¹

Yet Abrams would not permit massed B-52 strikes in the absence of strong target intelligence. When South Vietnamese forces requested B-52 support in March 1970, Abrams refused. Indeed, he considered that approving the B-52s would be “wasting” them, because “In order to do anything you've got to have targets, you've got to have intelligence,” he said. “[The South Vietnamese] haven't got enough influence anywhere on the battlefield up there to get any intelligence.”¹²

Abrams lauded intelligence-driven strikes by Navy and Air Force airpower, particularly B-52s, against the Ho Chi Minh Trail, an ever-expanding logistical network of roads, trails, and base areas that supported communist infiltration from North Vietnam, through Laos, into South Vietnam. As Abrams explained in January 1969 to Lieutenant General Ferdinand Chesarek, Commander of the U.S. Army Materiel Command, the enemy had been making “a fantastic effort ... to move logistics through Laos.” They had “gone to extraordinary means to get [supplies] through” and had simultaneously committed more engineer and anti-aircraft resources to support the effort. In response, America was sending “The weight of tac air, and the weight of B-52s” against two base areas, target numbers 604 and 611, “to try to bust up these supplies on the ground.” Stockpiles were sometimes so large that one particular strike caused a fire that B-52 crews could see for 100 nautical miles. “We're trying to get on the back of this [enemy] tonnage,” Abrams continued, “and stay with it” because “We

have enough force so we don't need to give them the luxury of *any* free ride." Abrams emphasized that "we try our best to work on the system" and "It doesn't necessarily mean killing trucks." Abrams continued that "Once you get the rationale of his system, then you go ahead and work on the best parts of that system, the ones that are most susceptible to destruction."¹³ U.S. airstrikes against the Ho Chi Minh trail in Laos, code-named "Commando Hunt," had continued even after President Johnson ended all bombing of North Vietnam, code-named "Rolling Thunder," at the end of October 1968, while hoping to bring the Communists to serious negotiations.¹⁴

B-52 strikes against the Ho Chi Minh Trail were necessary, as communist infiltration from North to South Vietnam otherwise remained both substantial and sustained. Brigadier General George J. Keegan, the Seventh Air Force Deputy Chief of Staff for Intelligence, summarized this to Abrams in a 2 November 1968 update. Observing that there had been a steep rise in enemy truck traffic before the Tet Offensive of January 1968 and again before the post-Tet offensive of May 1968, Keegan explained the "attempt to prevent the traffic buildup which we saw for the first two offensives." Seeking to impede enemy traffic at several "non-bypassable" interdiction or "choke" points, rather than on "killing" enemy trucks, the Air Force had bombed six water crossings, including a bridge, an underwater rock causeway, a cable ferry, and a cable bridge. Sorties, which increased from 3,000 in May to 6,500 in July, to 8,000 in August, to 6,400 in September, had achieved an estimated "closure" percentage of between 39 and 90 percent along various routes. This approach had choked off enemy truck traffic along "the entire system," from 1,289 to 43 trucks per day. Observing that "We have

very few non-bypassable points in Laos,” however, Keegan asserted that “We are trying the best we can” and estimated that Commando Hunt could achieve a final net “throughput reduction” in Laos of about 90 percent.”¹⁵

The accuracy of such sensor-derived measurements remains debatable, but the Air Force even measured the deleterious effects of President Johnson’s most recent bombing halt. In a MACV update on 9 November 1968, a Seventh Air Force briefer explained that the 1 November bombing halt had been “accompanied by a sharp rise in sensor-detected traffic.” It had subsided in the three days before the briefing, but overall movement of enemy trucks and watercraft had increased dramatically. One of seven interdiction points in Laos, the Ban Laboy ford had reopened on 2 November, after having been closed by interdiction strikes for 32 consecutive days.¹⁶ Later in the month, the Air Force confirmed that “In the first seven days after the bombing halt, there were 262 trucks detected by sensors in Route Package 1 and 778 trucks by sensors in the Laotian panhandle,” 165 of which “were seen visually.” The increase in overall traffic was particularly “sharp” during the third week of November, “with 2,220 sensor detections and 1,651 air observations in Laos.”¹⁷ Clearly, the communist enemy had been able to step forward its heavy logistics activity into Laos in the time since North Vietnam had become a virtual safe haven.

Despite the ongoing interdiction effort by U.S. airpower in Laos, the communist logistical buildup there eventually became so great that it prompted both the Air Force and Abrams to recommend B-52 strikes against particular Laotian villages that harbored significant military depots. In a 29 March 1969 update to Abrams, an Air Force officer

complained about “a double standard” concerning the military use and targeting of particular Laotian villages. “The Tchepone [Laos] case is a classic one,” he insisted, adding that “One year ago December, sir, through reconnaissance we uncovered the fact that China was building a major road through Dien Bien Phu into the heart of northern Laos.” Furthermore, he continued, “Tien Quan and Khang Khay, these two great big city centers that they refused to let us attack until a few weeks ago, were being developed as the largest Chinese—North Vietnamese military depots in all of Laos” and “storing enough for one or two seasons of offensive activity.” Air Force intelligence officers had “built, very laboriously, large [photographic] mosaics” of the communist military activity and gave them to William H. Sullivan, the U.S. ambassador to Laos, with a recommendation “that 60 B-52s be then applied,” accompanied by hundreds of tactical air sorties and that this “would remove that entire logistics threat that would affect northern Laos for the next year, or two.” Unfortunately, the Air Force officer asserted, “we were treated like we had leprosy.” Abrams, in response, demanded “Let’s move in on this thing. And let’s get all the old skeletons right out of the closet. And I want to get after that [Base Area 604] in a *big* way. It’s the biggest damn complex.... And it should be without *any* restrictions.”¹⁸

Earlier, Ambassador Sullivan had complained that the Air Force dropped too much ordnance for too little effect. As General George S. Brown, Abrams’ Deputy for Air Operations and the Commander of the Seventh Air Force, explained during a 16 January 1969 briefing at MACV Headquarters, Sullivan had indicated “that we haven’t really got a handle on assessing the effectiveness of our effort.” Indeed, Sullivan wanted the Air

Force “to concentrate on many things that we can’t [accurately] measure,” particularly to “count trucks destroyed and damaged.” This was difficult because the U.S. could never collect more than partial photo evidence and visual claims could be easily exaggerated, particularly at night. “On the other hand,” Brown observed, the possibility of such exaggeration might balance the current measure of effectiveness that counted “reactions,” or secondary explosions, which were sometimes obscured by foliage. Yet, the current system had one indisputable advantage, Brown emphasized, because “there’re only two things moving through there that’ll burn and explode – that’s ammunition and POL [petroleum, oil and lubricants], and we’re getting a *lot* of secondary effects.”¹⁹ Months later, Abrams perceptively summarized Sullivan’s resistance to bombing and other overt action to stop the flow of enemy supplies through Laos: “The point *is*, can you ever *hope*, in dealing with the Communists, in the long haul can you ever hope to play a game like that and have *anything except complete ultimate loss?!’*”²⁰

Budget-driven reductions of Air Force firepower ultimately proved more damaging than either Sullivan’s resistance or Johnson’s bombing halts, a prospect that began to emerge in mid-1968. General Ralph E. Haines, Jr., the Commander in Chief, U.S. Army Pacific, predicted the reductions to Abrams during a MACV weekly intelligence update on 24 August 1968, not long after Abrams had taken command. Having served as the Army Vice Chief of Staff in the Pentagon as recently as July, Haines explained that “In the Department of Defense right now there’s a great exercise going on, the so-called 69-3, which is fiscal ’69 budget, give up \$3 billion for blackmail to Mr. [Congressman

Wilbur] Mills [D, AR, Chairman of the House Ways and Means Committee] and company. And that impact will be felt *even* here. Today you can't touch anything that is Vietnam or Vietnam related, but the name of the game has changed a little bit, because there's just not enough in the service budgets." Haines added that "Right along with this is the gold flow exercise. The president's economists are telling him the country's bleeding to death from this outflow of gold. So there's great thrashing about to reduce *here*." Haines projected that fiscal 1970 would be "another austere year just like '69," concluding that "I don't think there's going to be another FY '69 supplemental to bail us out, regardless of *who* is elected." Haines also commented that he had recently asked U. Alexis Johnson, a career diplomat and former deputy ambassador to South Vietnam then serving as ambassador to Japan, to "lay off a little" on pressing to reduce B-52 availability to save money and that Johnson "wasn't making any judgments whether the B-52s were required at the level of 1,800 sorties, but he was just saying that if they are *not* required absolutely that he would hope that due consideration would be given to pulling the B-52s out of Okinawa [Japan]" Yet, Haines observed, "Mr. [Paul] Warnke [Assistant Secretary of Defense for International Security Affairs, perhaps the third most influential position within the Department of Defense] and others keep thrashing around about it" in Washington.²¹

Haines' prognosis about budget-driven reductions in Air Force firepower availability echoed what Army Chief of Staff General Harold Johnson had said to Westmoreland concerning expenses associated with unobserved artillery fire nearly one year earlier. Recognizing the extent of unobserved artillery fire during his visit to MACV in July and

August 1968, Johnson cabled Westmoreland on 2 October 1968, saying that he “came away with the impression that approximately 6 per cent of artillery fires were observed,” an approximation that the Army’s senior artilleryman and former Comptroller of the U.S. Continental Army Command, General Charles Brown, had closely corroborated after a separate visit to South Vietnam. Johnson had then cautioned Westmoreland that “We are in the process of making our initial budget submission for FY [Fiscal Year] 69. Today we are writing checks for a quarter of a billion dollars every month to pay for ammunition.” Briefly mentioning an idea of “silencing the battlefield,” Johnson emphasized that “When one relates this enormous cost to the unobserved artillery fires it is obvious that a significant question is raised, especially in view of the domestic furor over the cost of the war, poverty programs, and tax increases. This is a problem that both of us share,” he continued, “because of the essentiality of maintaining U.S. domestic support for the war effort in Vietnam.” Johnson thought it prudent that Westmoreland “undertake a very careful examination of the problem.”²² Having already started such an examination, Westmoreland subsequently reduced H&I fire, which comprised nearly 40 percent of artillery ammunition expended by the Army before 1968, to 29 percent in July 1968, the first full month of Abrams’ command.

Abrams’ response to the prospect of increased budgetary pressure was to stress that soldiers should not sense a loss of combat support while fighting the Vietnam War. “Of course, we must take every economy measure that’s practical,” he told Haines. “But one thing we’re going to have to be very careful about is that, through inadvertence or misunderstanding, we don’t carve into something that the *soldier* sees.” Abrams insisted

that “We’ve got to be careful what we put out here on saving money and saving expenditures.” He estimated that there were many soldiers in South Vietnam to whom “that doesn’t *sound* very good.” He pointed, in particular, to “Guys at a fire support base, you know, they don’t think very much about this saving of money. They want to feel they’ve got *full* support.” Abrams “hope[d]” that it wouldn’t “get to the point where there’s a clear competition between the priority to economize and the priority to support the forces in Vietnam,” he said, because “I can’t see how the army, or the country, can afford to get into that kind of an argument.”²³ Abrams was committed to searching for practical economy measures that soldiers would not perceive as a loss of full support.

Perhaps related to the situation in Washington that Haines had observed in July, but certainly related to the painful and extended national debate over a ten percent surtax to pay for the war that Congress finally approved and President Lyndon Johnson signed into law on 28 June 1968, Abrams had recently accelerated Westmoreland’s unobserved firepower cutbacks on 24 July 1968 with a program to reduce the amount of artillery ammunition delivered to units throughout Vietnam. Called the “Five-by-Five Plan,” it explicitly sought “to effect dollar savings through reduced expenditures of ground ammunition” by establishing controls on 105mm, 155mm, and 175mm artillery ammunition and setting the amount available for issue at “10% below the current consumption rate.” The controls forced units to optimize the effects of their artillery ammunition expenditures and thereby encouraged a decrease in unobserved artillery fire, particularly H&I fire, the physical effects of which hardly existed by design and the psychological effects of which were difficult, if not impossible, to measure. With the

program, the U.S. Army in Vietnam (USARV) achieved its “10% goal” in September 1968, proudly reporting that it had saved 7.9 million dollars in August and 8 million dollars in September, respectively.²⁴ In the process, Abrams’ “Five-by-Five Plan” reduced overall artillery ammunition expenditures and H&I, now named simply “interdiction” by the Army after a semantic name change by Westmoreland in February 1968, from 21 percent of ammunition fired in August to eleven percent by November 1968, when the formal “Five-by-Five Plan” ended, but USARV continued to employ similar ammunition allocation controls. This level of H&I, near 10 percent of ammunition expended, apparently satisfied Abrams since he maintained it for most of 1969.²⁵

By early March 1969, President Richard Nixon’s new Secretary of Defense, Melvin Laird, warned Abrams that budget-driven reductions in B-52 availability were becoming more and more likely. The recent election had provided some time in which “people aren’t raising a lot of hell right now as far as Vietnam is concerned,” Laird observed, but the pressure would resume, so “We’ve got to make the best *possible* use of the time that we *do* have.” Laird presented a rough outline of what the Nixon administration would later term the “Vietnamization” of the war and insisted that it should be “a program to reduce the United States contribution, not only in the form of men, but in casualties and materiel and in dollars, that will be available to move forward with at the time this time period of ours runs out.” Laird continued that “I don’t know what that time period is, whether it’s six months, seven months, nine months, but that program has to be laid out by our president probably within the next three or four months.” Upon his return to

Washington, Laird would speak about the plan during Congressional budget hearings, when, he said, “I’m going to be asked, I’m sure, a lot about the use of the B-52.” To prepare himself, he wanted to know not only about “its effect in terms of destruction,” but also about “its effect as a psychological warfare viewpoint.” He needed to know, he emphasized, because ““This is an expensive thing. It has a very important part in the budget. In the budget that’s currently presented, B-52, or the use of it, is scaled down in the months of April, May, and June. It’s cut back further in the 1970 budget that’s been presented to Congress.”²⁶

When the new budget was finally approved, the B-52 and tactical air support reductions proved to be much deeper than MACV had anticipated. Those who had, like Warnke, “trash[ed] around” in Washington about airpower expenses in South Vietnam apparently achieved their ends, as the new budget reduced available B-52 strikes from 1,800 to 1,400 per month effective 1 September 1969. On 8 September, when reviewing with Abrams how the new budget would impact MACV’s Vietnamization plan, Colonel Donn Starry, Commander of the 11th Armored Cavalry, observed that MACV had also “lost 104 of [daily tactical air support] sorties by fiscal ’70 budget reductions, without ever Vietnamizing the war.” Significantly, “This budget reduction took out more sorties from our current capacity than we were planning to lose in the first *five* phases of Vietnamization,” the first phase of which had already started on 1 September 1969 with the redeployment of the Army’s 9th Infantry Division and one regimental landing team (RLT) of the 3rd Marine Division.²⁷ Several weeks later, MACV recognized that, as of 15 December 1969, “allied combat capability will have been reduced by about 18

percent in maneuver battalions as a result of the redeployment of U.S. combat elements in [Vietnamization] Phases I and II.” Furthermore, “budget reductions – imposed quite aside from any redeployment considerations, will have reduced our B-52 sortie rates by over 22 percent and our tac air sortie availability by about 25 percent.” Thus, “the total combat power reductions, on the order of 20-25 percent, will have been made in the very forces which have in the past produced more than two-thirds of our operational results.”²⁸

MACV strongly disagreed with the new budget’s very rough attempt to achieve airpower cost savings by sortie reductions. In February 1969, Abrams had visited U-Tapao airbase in Thailand, where nearly 3,300 Strategic Air Command (SAC) personnel supported nearly half all B-52 strikes then occurring during the Vietnam War “to let them know over there how much their work was appreciated, and also the skill with which we think it’s being executed.”²⁹ Remembering this, Brown complained during a 27 September 1969 MACV update that simple sortie reductions represented a “gross” and “screwy way to do business,” because “dollars aren’t directly associated” with the calculations. In fact, he continued, each B-52 sortie from Guam cost nearly twice as much as those from U-Tapao in Thailand and that “Fighter sortie costs are a function of duration, ordnance load, and other variables.” Abrams responded that “this was done in the Pentagon” where one could expect “quality control” to be “rather loose.” Clearly frustrated, Abrams added that “they [in the Pentagon] move down the year, watching expenditures, and it turns out that this ... method is not producing the expenditure reductions ---o-o-o-h-h, let’s not think of that!”³⁰

It is important to emphasize that the Department of Defense sortie reduction method resembled the budget-oriented “Five-by-Five Plan” that Abrams had implemented to reduce and control H&I expenses – it controlled costs by reducing inputs, or sortie availability, just as Abrams’ method controlled costs by establishing artillery ammunition allocation restrictions. Furthermore, the Department of Defense did not deem B-52 strikes to be either ineffective or counterproductive, just as Abrams did not disparage H&I for these reasons. In fact, if Abrams disagreed with H&I, he rarely mentioned it from 1968-1970, other than in the context of efficiency and cost, and he never issued an outright prohibition against it during this period.

Moreover, the Marines and the Australians, who were also part of MACV, continued to fire historically high rates of H&I late into 1970 with little, if any, criticism from Abrams. While Marine H&I rates dropped below twenty percent of missions for the first time in October 1970, rates of Australian “Harassing Fire” remained well above twenty percent of ammunition expended from June to December 1970. The Australians consumed an average of nearly 10,000 rounds each month, yet the amount of ammunition that Australian ground forces devoted to harassing fire increased to nearly 60 percent of ammunition expended from September to December 1970.³¹ Thus, with their employment of H&I fire protected from the budget-driven pressure that impacted the Army, the Marines and Australians continued to give their troops this visible, or at least audible, “full” measure of support.

When Wheeler again visited South Vietnam in October 1969, he brought a sympathetic, if unresponsive ear for MACV’s airpower complaints, as well as a fuller

explanation of why the Department of Defense had decided to reduce B-52 and tactical air support availability. When Abrams stated on 4 October that “I think that we have to say that the reduction in B-52s and tactical air support has been *entirely* a budgetary motivated thing and has not considered the tactical situation in South Vietnam,” Wheeler agreed, pointing out that “The \$3 billion reduction which was imposed in FY ’70 is unrelated to the Vietnamization program in a very real sense. What it stems from is an effort by the Congress, or some portions of the Congress, to do two things” – the first was “to impose an expenditure limitation on the government, which they have already done by legislation -- \$198 billion.” Next, Wheeler explained, “within this limitation, disregarding the president’s budget, they have voted add-on programs. For example, they added \$1.2 billion to the president’s program in the health, education, and welfare area, and there’re going to be other add-ons by the Congress in different areas.” In order “To get the *money* to finance the programs, these social programs..., many of the younger elements on the Senate and House Armed Services Committees voted for this measure.”³²

To Wheeler, the Department of Defense faced “*one hell of a problem,*” as “the services had been forced to accommodate to a reduction of over \$14.5 billion in obligational authority in less than one year, which is one *hell* of a cut. And the effect of it is going to be felt worldwide, politically as well as militarily. It will be felt in Europe, in NATO.” Indeed, “Plans that were being considered by the United States Army would inactivate the 1st and 2nd Armored Divisions and drastically reduce the 5th Mech, even though they are earmarked for NATO in 30 days” and, Wheeler emphasized, “you can’t

conceal something like this. This was politically unacceptable, so the army had to go into *other* things. The navy had to go into reductions in operations, the air force O&M reductions, which led to your reduction in B-52 sorties.” As for Brown’s complaint about not shifting to cheaper B-52 sorties from U Tapao in place of sortie reductions, Wheeler offered that the Department of Defense sortie reduction measure was “Damn crude. We all recognize it, George,” and stressed that “As I say, this is not the best way of doing it. But, as you say, Abe, we’re just not that expert. We can’t calculate that closely.”³³

By early 1970, the prospect of even more funding cuts prompted Abrams to demand even greater efficiency from various MACV programs. Consistent with the new budget cap, actual sorties had declined from 1,750 B-52 and 28,569 tactical air sorties during the 4th quarter of 1968 to 1,388 B-52 and 19,281 tactical air sorties during the 4th quarter of 1969.³⁴ Abrams was gratified that more sensors and better targeting made it “true that we’re now getting more out of 1,400 [B-52 sorties] a month than we were getting out of 1,800 a month,” but he warned that the scope and effort of enemy logistics had also increased. Nevertheless, he stressed that “It’s very clear to me that we are not going to be able to have everything that we want. Every part of the program has got to be justified not only in terms that it’s useful, but it’s *more* useful than other parts of the program.” Abrams underscored that “I don’t want anything going on here just because we’ve always had it and gotten used to it. And every one of these projects has its own parochial protagonist who rates it above everything else.” He wanted his staff officers to know that “We’ve got to be cold-blooded about it, and we’ve got to put our money

where we're going to get the most good out of it." This was particularly true since "There's not going to be a supplemental. The secretary of defense seemed to be quite firm on that. So it has to come out of the service budgets elsewhere." Abrams considered cancelling a \$24 million herbicide request (Agent Orange), in particular, because "I'm trying to push in the direction of taking a hard stand on those things that are most critical" and "I doubt, quite frankly, I doubt that *this* is in that category." He wanted to make it clear that "I'm not trying to *help out* with the budget. I'm not trying to accept the problems with DOD's budget *here*. What I'm trying to do is be *realistic* in the environment that they're trying to resolve our problems in, and just hang on like a *bulldog* to those things which are the *most* critical to us." Hearing Abrams' comments, Lieutenant General Julian J. Ewell, Commander of MACV's Second Field Force, observed that "There's no doubt in my mind herbicides are going out of style."³⁵ Army H&I began its final decline during this time period (see Appendix C).

By early March 1970, Abrams had a clear idea about what to expect during the next round of budget cuts. He informed his staff on 14 March that "I'm almost hesitant to raise the matter of budget in this group, but at some risk I'm going to do it. It's gradually beginning to unfold, but it's pretty clear now that the Defense budget for '71 is going to be quite restricted, and South Vietnam has not been excluded from the effects of this." He told his staff to expect that "if you're going to make savings in FY '71, then you've got to take some actions in FY '70 in terms of production and contracts, cancellations and slowdowns, that sort of thing." To Abrams, "that's the *climate* that we're clearly going into. I'm a little hesitant to raise it here, as I said, because any good

field commander with that prospect in view is going to prepare himself for the days of austerity by – well, getting the things that would tide him over the lean times.” He feared “a few, just a few, handful of stories like that about burying ammunition when we’re *fighting* for ammunition and so on. Here some *bastard* goes out there and buries a truckload of ammunition in order to get rid of it. It works against you. They want to know how this goes on when you say you need so much.” Washington was “seldom very practical,” Abrams observed, but in this case, “you have to admit they have a *point*.”³⁶

When Secretary of the Army Stanley Resor visited Vietnam in June 1970, he bluntly informed MACV that army-wide budget reductions would have significant consequences for both U.S. withdrawal and MACV’s prosecution of the war during Fiscal Year 1971. “As far as the army is concerned,” Resor explained, “there isn’t any money in non-Southeast Asia accounts that can be reprogrammed. There will have to be trade-offs, paid for within the army by, say, reduced ground ammunition consumption ...” He continued that “you’ve got a limited amount of dollars to spend on the war here, and if you need them in one area – say to slip your redeployment schedule, you’ll have to watch immediately the dollar cost of that and be ready to fund it yourself out of a saving of some other program.” He even suggested that MACV might further “reduce sortie levels.”³⁷

Resor emphasized that the Secretary of Defense also had another principal concern: “There’s the money problem, and then there’s the problem of how you calculate domestic support.” To Resor, Laird would be “the best judge of ... whether from a

point of view of domestic support for the war it isn't almost essential to keep a sort of steady withdrawal [of troops from South Vietnam.]" Resor observed that "the effect of the Cambodian operation has sort of catalyzed bringing together all the opposition, resulting in the Cooper-Church amendment and the McGovern-Goodell amendment." Resor considered that, with steady troop withdrawals, anti-war energy was now "on the back burner," but that "we've got to avoid any *other* event that catalyzes" the opposition. If U.S. troop withdrawals slowed or stopped, he thought, "there would be a very *serious* problem." When Rosson pointed out that MACV had no redeployment directive beyond 15 October, Resor's response was "*Other* than to stay within the budget."³⁸ Thus, MACV could send troops home sooner if it wanted to avoid budgetary pressure in other areas.

The budget problem had become bigger than ever before, a fact that would naturally decrease the amount of firepower available to prosecute the war. "Mr. Laird has a very real world problem," Resor explained, because "he can't *get* any more money. In fact, he's going to get a billion dollars less than he asked for." Resor pointed out that "Up to now it's been, whatever was needed out here we somehow got the money from Congress and you got it. But the climate in Congress is *so* different now that it's just – it would be putting our heads in the sand, really, to make that assumption anymore." Budgets had already dropped substantially, so bombing would probably need to be reduced, Resor suggested, because "We've been spending – in '69 it was \$22 billion, in '70 it's \$17 billion, and we've got in '71 about \$11 billion budgeted now. I'm sure we can't do all the bombing that everybody asks for, but one would hope that with that ratio of overall

contribution of resources, we would have enough to do an adequate job.” Before Resor departed, he reminded the MACV staff that “How long we can continue here, how many man-years we can put in from here on out, is a function, in a large measure, of two things. One, our casualty rates. And secondly, our costs.”³⁹ By the end of June 1970, the Army virtually ceased to fire H&I missions, even if semi-autonomous Marine and Australian military budgets allowed those forces to continue the practice.

Thus, while they were often used for similar purposes, B-52s, tactical air support, and traditional artillery also suffered similar fiscal pressure from 1968-1970. Springing from social, political, and economic limitations that America collectively imposed on its own military during this admittedly limited war, budgetary constraints eventually flowed from Congress to the battlefield. Consistent with Abrams’ philosophy, these constraints were transparent to the soldier at first, as they decreased unobserved artillery fire and led, in the Army at least, to the virtual elimination of this dubious practice, the physical and psychological effects of which were debatable, difficult to quantify and largely counterproductive in a counterinsurgency environment. The same budgetary constraints claimed a visible measure of the combat soldier’s full support from 1969-1970, however, when they deprived MACV of 22 percent of B-52 sorties and 25 percent of tactical air support sorties, before MACV really began to Vietnamize the war. President Nixon eventually relied on B-52 strikes to save South Vietnam from conventional invasion in December 1972 and to negotiate America’s final withdrawal from the war, but declining airpower availability and unchecked communist logistics ultimately contributed to South

Vietnam's collapse in April 1975. Finances, rather than military strategy, determined the final limits of fire support during the Vietnam War.

Notes

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2. Abrams, Maj. Gen. Phillip Davidson and Gen. Earle Wheeler to Secretary of Defense Melvin Laird, Transcript of Secretary of Defense Briefing, 6-10 March 1969, in Sorley, ed., *Vietnam Chronicles*, 140-142 (italics added for emphasis).
3. Robert H. Scales, *Firepower in Limited War*, Revised Edition (Novato, CA: Presidio, 1995 [1990]), 125.
4. Robert M. Kipp, "Counterinsurgency from 30,000 Feet: The B-52 in Vietnam," *Air University Review* 19 (January-February 1968), 11-16.
5. Lt. Gen. Harold G. Moore and Joseph L. Galloway, *We Were Soldiers Once ... and Young, Ia Drang: The Battle that Changed the War in Vietnam* (New York: Random House, 1992), 203.
6. Kipp, "Counterinsurgency from 30,000 Feet," 13-16.
7. Abrams, Transcript of Weekly Intelligence Estimate Update, 14 September 1968, in Sorley, ed., *Vietnam Chronicles*, 47.
8. Truong Nhu Tang, David Chanoff, and Doan Van Toai, *A Vietcong Memoir* (New York: Harcourt Brace Jovanovich, 1985), 167-168.
9. Abrams, Gen. Frederick Weyand, Lt. Gen. William Peers, Gen. William Rosson, and Maj. Gen. George Eckhardt, Transcript of Special Briefing to COMUS (Commander of U.S. Forces), 4 July 1968, in Sorley, ed., *Vietnam Chronicles*, 11-13. Emphasis in the original.
10. Abrams to Davidson, Lt. Gen. Charles Corcoran, and Lt. Gen. Walter Kerwin, Transcript of Weekly Intelligence Estimate Update, 29 June 1968, in Sorley, ed., *Vietnam Chronicles*, 9-10. Emphasis in the original.
11. Abrams, Transcript of Informal Briefing for General Abrams, 23 September 1968, in Sorley, ed., *Vietnam Chronicles*, 53-54. Emphasis in the original.
12. Abrams, Transcript of Laos Update, 18 March 1970, in Sorley, ed., *Vietnam Chronicles*, 393.

13. Abrams and Lt. Gen. Ferdinand Chesarek, Transcript of J-2/J-3 Briefing for Lieutenant General Chesarek, 22 January 1969, in Sorley, ed., *Vietnam Chronicles*, 110-112. Emphasis in the original.

14. Mark Clodfelter, *The Limits of Airpower: The American Bombing of North Vietnam* (New York: The Free Press, 1989), 147.

15. Brig. Gen. George J. Keegan to Abrams, Transcript of Weekly Intelligence Estimate Update (WIEU), in Sorley, ed., *Vietnam Chronicles*, 72-73.

16. Seventh Air Force briefing officer [unnamed] to Abrams, Transcript of WIEU, 9 November 1968, in Sorley, ed., *Vietnam Chronicles*, 76.

17. MACV briefing officer [unnamed] to Abrams, Transcript of WIEU, 30 November 1968, in Sorley, ed., *Vietnam Chronicles*, 85.

18. Abrams and Air Force briefing officer [unnamed], Transcript of WIEU, 29 March 1969, in Sorley, ed., *Vietnam Chronicles*, 175. Emphasis in the original.

19. Gen. George S. Brown to Abrams, Ambassador U. Alexis Johnson, and Vice Admiral Elmo Zumwalt, Transcript of Briefing for Ambassador Johnson, 16 January 1969, in Sorley, ed., *Vietnam Chronicles*, 104. Emphasis in the original.

20. Abrams to Brown and Ambassador William Colby, Transcript of WIEU, 10 May 1969, in Sorley, ed., *Vietnam Chronicles*, 189. Emphasis in the original.

21. Gen. Ralph E. Haines, Jr., to Abrams, Transcript of WIEU, 24 August 1968, in Sorley, ed., *Vietnam Chronicles*, 34-36. Emphasis in the original.

22. Gen. Harold K. Johnson, Cable to Westmoreland, 2 October 1967, Cite: WDG 13029, Westmoreland Message File COMUSMACV, Box: "1 Oct – 31 Oct 1967, 1 Nov – 30 Nov 1967," Folder: "1 Oct – 31 Oct 1967," U.S. Army Center of Military History, Washington, D.C. See also Lewis Sorley, *Westmoreland: The General Who Lost Vietnam* (Boston: Houghton Mifflin Harcourt, 2011), 101-102.

23. Gen. Ralph E. Haines, Jr., to Abrams, Transcript of Weekly Intelligence Estimate Update, 24 August 1968, in Sorley, ed., *Vietnam Chronicles*, 34-36. Emphasis in the original.

24. Hq., United States Army, Vietnam (USARV), "Operational Report of Headquarters, United States Army Vietnam for Period Ending 31 October 1968," 15 November 1968, p. 14, accessed 22 January 2012, available at <http://www.dtic.mil/dtic/>, document ad500291.

25. Hq., United States Army, Vietnam (USARV), "Operational Report of Headquarters, United States Army Vietnam for Period Ending 31 January 1969," p. 19, accessed 22 January 2012, available at <http://www.dtic.mil/dtic/>, document ad501095; For USARV expenditure rates, see Appendix C.

26. Abrams, Maj. Gen. Phillip Davidson and Gen. Earle Wheeler to Secretary of Defense Melvin Laird, Transcript of Secretary of Defense Briefing, 6-10 March 1969, in Sorley, ed., *Vietnam Chronicles*, 140-142. Emphasis in the original.

27. Col. Donn Starry to Abrams and Gen. William Rosson, Transcript of COMUS Update, 8 September 1969, in Sorley, ed., *Vietnam Chronicles*, 256. Emphasis in the original.

28. MACV briefing officer [unnamed] to Abrams, Transcript of WIEU, 18 October 1969, in Sorley, ed., *Vietnam Chronicles*, 282.

29. Abrams, Transcript of WIEU, 1 February 1969, in Sorley, ed., *Vietnam Chronicles*, 120.

30. Abrams to Brown, Transcript of Commanders WIEU, 27 September 1969, in Sorley, ed., *Vietnam Chronicles*, 266-267. Emphasis in the original.

31. Hq. Australian Force, Vietnam (AFV), "Ammunition and Explosives Statistic – Artillery," pp. 4, 12, 26, 28, 40, 47, 54, series number: AWM 98, control symbol: R1300-1-10, Australian War Memorial, Canberra; See Appendix D for Marine expenditures.

32. Wheeler to Abrams, Transcript of Briefing for General Wheeler, 4 October 1969, in Sorley, ed., *Vietnam Chronicles*, 268-270. Emphasis in the original.

33. Wheeler to Abrams and Brown, Transcript of Briefing for General Wheeler, 4 October 1969, in Sorley, ed., *Vietnam Chronicles*, 270-272. Emphasis in the original.

34. MACV briefing officer [unnamed] to Abrams, Transcript of COMUS Brief: Commando Hunt, 28 January 1970, in Sorley, ed., *Vietnam Chronicles*, 356.

35. Abrams, Transcript of Commanders WIEU, 21 February 1970, in Sorley, ed., *Vietnam Chronicles*, 379-380. Emphasis in the original.

36. Abrams, Transcript of WIEU, 14 March 1970, in Sorley, ed., *Vietnam Chronicles*, 390-391. Emphasis in the original.

37. Sec. of the Army Stanley Resor to MACV Staff, Transcript of Comments during Secretary Resor's Visit to MACV (hereafter Secretary Resor Visit), 29 June 1970 in Sorley, ed., *Vietnam Chronicles*, 444.

38. Resor to MACV Staff, Secretary Resor Visit, 29 June 1970, in Sorley, ed., *Vietnam Chronicles*, 445-446. Emphasis in the original. In an atmosphere of public and congressional anger over a perceived expansion of the Vietnam War, Senators John Sherman Cooper (R, KY) and Frank Church (D, ID) introduced an amendment, debated and approved by the Senate between 13 May and 30 June and later revised as Public Law 91-652 approved by Congress on 22 December 1970 and enacted on 5 January 1971, that sought to prohibit funding and support of U.S. and allied land operations inside Cambodia after 30 June 1970. Likewise, Senators George McGovern (D, SD) and Charles Goodell (R, NY) had both sponsored an amendment on 30 April 1970 that sought to prohibit ground and air activity inside Cambodia.

39. Resor to MACV Staff, Secretary Resor Visit, 29 June 1970, in Sorley, ed., *Vietnam Chronicles*, 446-447. Emphasis in the original.

CHAPTER X

CONCLUSION: THE AVAILABILITY AND LIMITATIONS OF FIREPOWER IN SOUTH VIETNAM*

In August 1972, nearly three years before conventional communist forces overran South Vietnam in April 1975, the civilian who led U.S. pacification efforts in South Vietnam from 1966 to 1968, Robert W. Komer, pointed to “interrelated” reasons why U.S. forces and South Vietnam performed “so poorly for so long” during the Vietnam War. Highlighting the “sharp contrast” between the “highly motivated and ideologically disciplined regime in Hanoi and revolutionary Viet Cong apparatus versus a weak, half formed, traditionalist regime in Saigon” and impeaching the “incremental” nature of the U.S. response, Komer asserted that American planners underestimated communist determination and ability to “counterescalate at every stage.” He argued that bureaucratic constraints, such as “institutional inertia,” a reluctance “to indulge in self-examination,” a “shocking lack of institutional memory,” and the lack of a “single-manager” for “interagency” counterinsurgency programs, “helped render the U.S./GVN [Government of South Vietnam] response to an atypical insurgency conflict unduly conventional, expensive and slow to adapt.” To Komer, there was “an immense gap” between the magnitude of U.S. counterinsurgency-oriented initiatives and of

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conventional military operations that made “extensive use” of artillery at levels inappropriate for counterinsurgency because of firepower’s widespread “availability” and doctrine “to use it lavishly,” despite the fact that “observable targets in Vietnam were far sparser than they would presumably have been in a European conflict.” Making an important observation, Komer suggested that “our immense air ordnance expenditure was at least as much a function of its availability as of need.” Asking why the U.S. response to Vietnam had “changed so little over years of bitter experience,” he found that, because of “institutional constraints,” the U.S. “grossly misjudged what it could actually accomplish with the huge effort it eventually made, and thus became more and more wound up in a war it couldn’t ‘win’ the way it fought it.”¹

Historians have since refined Komer’s assertion that firepower “availability” led U.S. forces to employ too much artillery and air-delivered firepower in a predominantly counterinsurgent environment. Komer expected as much, observing that his study relied on his “own experience” and contained “only limited coverage of the period of U.S. disengagement.”² Guenter Lewy investigated Komer’s assertions in 1978, finding that “some of the tremendous firepower,” particularly harassment and interdiction (H&I) fire, “had questionable consequences for both pacification and allied casualty rates,” but that “There was evidence to show that B-52 strikes had a substantial psychological effect” on enemy forces.³ Andrew Krepinevich likewise used Komer’s argument in 1986, contending that “massive firepower was the primary means utilized by the Army to achieve the desired end of the attrition strategy – a body count,” contrary to “traditional counterinsurgency doctrine, which dictates that protection of the people must come

before destruction of the enemy.” Focusing almost exclusively on General William C. Westmoreland’s tenure as Commander, U.S. Military Assistance Command, Vietnam (MACV), Krepinevich partly relied on Komer to extend his thesis: “I was there when General [Creighton] Abrams took over [MACV in June 1968],” Krepinevich quoted Komer, “and remained as his deputy. *There was no change in strategy whatsoever*” until the United States began withdrawing.⁴ Yet, when focusing on Abrams’ command of MACV, Lewis Sorley later disagreed with Komer, Lewy, and Krepinevich, arguing that Abrams had inaugurated a radical shift in both strategy and tactics and “From his first days as commander, Abrams had clamped down on excessive use of force ... Likewise he cutback sharply on unobserved artillery fire.”⁵

Both Westmoreland and Abrams substantially reduced unobserved artillery fire by the U.S. Army, but *budgetary constraints*, rather than operational needs or strategic concerns, drove their efforts to cut back on the practice. Detailed study of available records reveals that, before 1968, the U.S. Army fired up to 91 percent of artillery missions and 85 percent of artillery ammunition against *unobserved targets* and expended nearly 40 percent of artillery ammunition as H&I – a form of unobserved fire that sought merely to hinder enemy movement and to lower enemy morale, rather than to inflict any appreciable enemy casualties on specific targets. Under budgetary pressure and unable to measure H&I’s effects on the enemy, Westmoreland progressively reduced H&I, or “interdiction” after a semantic name change in February 1968, to just over 29 percent of Army ammunition expended in July 1968, the first full month of Abrams’ command. Abrams likewise pursued dollar savings with his “Five-by-Five

Plan” of August 1968 that reduced the Army’s artillery interdiction expenditures to nearly ten percent of ammunition by January 1969. Yet Abrams allowed Army interdiction to stabilize near this level until after June 1969, when it dropped to approximately seven percent, but it persisted near that level until June 1970, when recurring financial pressure prompted Abrams to virtually eliminate artillery interdiction throughout USARV. Meanwhile, the Marines continued to fire H&I at historically high rates into the final months of 1970, while Australian “Harassing Fire” surpassed Army and Marine Corps totals during the same period. ARVN (Army of South Vietnam) artillery continued to fire H&I as well, albeit with lower overall ammunition consumption, but at comparable rates. Filipinos and Thais largely eschewed artillery in their quiet area of operations and Republic of Korea (ROK) forces abandoned H&I as did the U.S. Army, but several months into Abrams’ command and only under pressure to join MACV’s expenditure reduction program. Thus, budgetary pressure, and not strategic change, drove MACV’s three major efforts to reduce unobserved firepower during the Vietnam War.

To recognize that budgetary pressure, rather than strategic change, drove MACV reductions in unobserved firepower from late 1967 to mid-1970 supports assertions that Abrams desired to focus more on pacification, but that he had trouble changing the Army’s conduct of the war. Guenther Lewy, for example, concedes that Abrams desired firepower reform, but argues that Abrams could not overturn the Army’s firmly entrenched doctrine and organization during his command.⁶ John Nagl concurs, observing that when Abrams took command in June 1968, he “confronted a culture that

by then was so entrenched in its [conventional, firepower-intensive] attitude that even the MACV commander could not change it.”⁷ Both Krepinevich and Nagl cite Speedy Express, a particularly bloody and body-count-oriented 9th Infantry Division operation during 1969, and the famous “Hamburger Hill” assault by the 4th Infantry Division in the same year as examples of the Army’s continued employment of inappropriate levels of conventional firepower.⁸

Yet Komer and Krepinevich suggest that Abrams eventually implemented a modest shift toward pacification and counterinsurgency principles, at least by the U.S. Army. Krepinevich, who focuses almost exclusively on Westmoreland’s command, argues that “it took Abrams nearly a year to fabricate [his] new approach” and that firepower-intensive conventional operations remained “as much in vogue as ever” during that time.⁹ More participant than historian, Komer himself asserts that “Even after 1967, pacification remained a small tail to the very large conventional military dog” that continued to operate in an entrenched and unduly conventional manner, yet he emphasizes that pacification’s role in “the Vietnam turnaround of 1969-1971” at least demonstrated its feasibility as part of a more balanced military strategy, along with its probable lower cost and less tragic side effects.¹⁰

Richard Hunt, a Vietnam veteran who subsequently served as chief of the U.S. Army Center of Military History’s Oral History Program, agrees that “Abrams viewed the war differently,” but argues that Abrams “was responding to changes in the nature of the war itself,” since the enemy had reverted to protracted war after absorbing peak losses throughout 1968, and that the costly U.S. assault of “Hamburger Hill” in May 1969 and

continued search-and-destroy operations such as Russell Beach in the Batangan Peninsula of Quang Ngai Province made it “difficult to discern a new or a unifying strategy at work.”¹¹ Thus, Komer and Krepinevich credit Abrams with a delayed move toward counterinsurgency principles such as firepower restraint, while Hunt, Lewy and Nagl argue that the Army’s culture and conduct differed little from Westmoreland’s to Abrams’ command, despite Abrams’ vocal advocacy of pacification, or a “one war” approach. While this work supports Komer, Krepinevich, Hunt, Lewy and Nagl in their assessments of the amount of firepower that various commanders employed, and while it supports many of their appraisals concerning why the amount and type of firepower changed over time, it challenges these and other previous explanations by attributing primary causation to fiscal pressure, rather than to strategic or operational considerations. More than other factors, budgetary constraints drove reductions in U.S. ammunition consumption from 1968-1970.

The fact that Westmoreland and Abrams both reduced unobserved artillery fire primarily for budgetary reasons lends greater support to historian Andrew J. Birtle’s argument that the two commanders shared significant continuity of strategic, and even tactical, thought. On the strategic level, Birtle asserts that senior generals such as Phillip B. Davidson and historians such as Lewy, Krepinevich, Sorley, and Nagl have wrongly used the Army’s Program for the Pacification and Long-Term Development of South Vietnam (PROVN) report of 1966, “either to cast aspersions” on Westmoreland for over-emphasizing the firepower-intensive “big-unit” war, “or to praise his successor” for heeding strategic advice supposedly ignored by Westmoreland. PROVN “indicted the

U.S. government for failing to create a unified and well-coordinated program for eliminating the insurgency in South Vietnam,” Birtle explains, and it argued that pacification, the establishment of “control over and winning the support of the population” was the essence of the strategic problem, “to which all actions had to be subordinated.” Yet PROVN was “never implemented,” Birtle continues, and its conclusions “were less radical and its remedies less novel than observers have tended to admit” and often shared by both Westmoreland and Abrams.¹²

It is in the tactical and operational levels of war that a detailed study of U.S. and Allied unobserved firepower underscores Birtle’s assertion of continuity between Westmoreland and Abrams. Birtle observes that “Perhaps the most notable example of an operational change implemented by Abrams was his reduction of unobserved harassment and interdiction fire,” explaining that Abrams reduced unobserved fire to nearly ten percent of U.S. artillery ammunition expenditures in 1969 and nearly eliminating it in 1970. He cautions that this achievement “should not be exaggerated,” however, since the South Vietnamese fired approximately one-third of their missions as H&I in 1969 and that “Abrams dropped more tons of bombs on South Vietnam than Westmoreland and flew more than twice as many B-52 sorties over that country as his predecessor.” Furthermore, “civilian casualties, as measured by hospital admissions, were nearly three times greater during Abrams’s tenure,” the “average number of small-unit operations that generated contact with the enemy per month” during Abrams’ command never exceeded those in Westmoreland’s last year and a half, “U.S. large-unit operations focused squarely on combat regardless of who was the MACV commander,”

and “while the Allies made undeniable progress in rooting out the Viet Cong infrastructure, Viet Cong agents remained, abducting and assassinating twice as many civilians during Abrams’s tenure as they had during Westmoreland’s.” Birtle’s measurements of tactical and operational continuity inform the question of whether Abrams realized a radical change in military strategy and Birtle’s conclusion remains valid that both Westmoreland and Abrams “endeavored to prevent misconduct and to achieve a balance between political goals and military means, but that neither had been more successful than the other in achieving those ends.”¹³

Birtle’s measurements of continuity between Westmoreland and Abrams align with the work of Gregory A. Daddis in *No Sure Victory*. Daddis argues that during the commands of both Westmoreland and Abrams, MACV perpetually struggled, and failed, to adopt appropriate metrics to measure *progress and effectiveness*. To Daddis, neither MACV nor the U.S. Army ever established “useful indicators revealing the war’s true trends.” Despite, or because of, the massive U.S. capacity to quantify data, “MACV had attempted measuring everything and ended up measuring nothing.” Thus, the U.S. Army “failed in Vietnam” partly because the metrics that it used, such as body counts and kill ratios, “masked important operational and organizational deficiencies. Flawed measurements validated imperfect counterinsurgency methods and provided MACV with a false sense of progress and effectiveness.” Daddis finds that “While MACV’s officers claimed that they were making consistent progress in Vietnam, in truth they never reached a consensus over how they were doing in an extremely complex war.”¹⁴ It is important to note that MACV did not employ Birtle’s measurements to indicate a lack

of progress, nor did it track reductions in H&I to measure firepower restraint – a principle of traditional counterinsurgency – among Army, Marine or other Allied forces, but it tracked H&I to measure *dollar savings*, particularly when MACV sought to balance troop strength and funding during America's withdrawal.

In terms of firepower restraint, American military strategy, operations, and tactics changed little from 1968-1970, notwithstanding communist shifts between protracted and conventional warfare, a prospect that Secretary of Defense Clark Clifford considered almost immediately upon joining President Lyndon Johnson's cabinet. On 28 February 1968, following the Tet Offensive, Westmoreland and the Chairman of the Joint Chiefs of Staff, General Earle Wheeler precipitated significant changes when, to take advantage of the weakened Communist position and to reconstitute a depleted U.S. strategic reserve of forces, Wheeler consolidated his discussions with Westmoreland and asked that Johnson bring 206,000 more troops onto active duty. The *New York Times* wrongly reported on 10 March that all 206,000 troops were needed *in Vietnam* – Westmoreland had envisioned that some 108,000 of them deploy, but either number substantially increased the nearly 500,000 already in South Vietnam on 1 January 1968.¹⁵

Determined to avoid calling up the reserves, yet equally determined to avoid losing South Vietnam to communism, Johnson sought the advice of his new Defense Secretary. Clifford, a long-time supporter of the war, had replaced a disillusioned Robert McNamara and soon formed a task force to answer Johnson's request.

Clifford fulfilled first a self-imposed obligation to question the basic assumptions of U.S. military strategy, as well as reviewing the military prospects and considering the

war's social, political, and economic costs to the United States. Clifford later explained, he "turned against the war" and began to encourage a group of presidential advisors "organized and dedicated to changing Lyndon Johnson's mind" about staying the course.¹⁶ Clifford succeeded when most of the "Wise Men," an informal group of elder statesmen and advisors, most of whom had supported the war in the past, advised Johnson on 26 March 1968 that America must, in the words of former Secretary of State Dean Acheson, "take steps to disengage" from Vietnam. Acheson foresaw no solution in Vietnam, he emphasized, "at least not in any time the American people will permit."¹⁷ Ultimately, Johnson authorized only 24,500 more U.S. troops in South Vietnam, announced that in June he would replace Westmoreland with General Creighton Abrams, herald of a supposedly "new" military strategy, and revealed on 31 March that he would not seek reelection. Yet the nine subsequent months included much of the "fiercest" and "bloodiest" fighting of the entire war.¹⁸ Meanwhile, Vietnam continued to wrench America apart at home as the Wise Men and the Clifford Task Force had appreciated.

Offering the perspectives of a Vietnam veteran and historian, General Phillip Davidson, who served as MACV J-2, or Assistant Chief of Staff for Intelligence, for both Westmoreland and Abrams, wrote a detailed, but critical, account of the Clifford Task Force and its deliberations in *Vietnam at War* (1988). Davidson explains that Clifford had taken upon himself the question, in Clifford's words, not "how could we send troops to Westmoreland, but what is the most important thing for the country."¹⁹ Clifford asked his Task Force participants to assess "1. What military and other

objectives are additional forces designed to advance? 2. What specific dangers are their dispatch to SVN designed to avoid, and what specific goals would the increment of the force ... aim to achieve in the next six months? over the next year?"²⁰ Both the Department of Defense Systems Analysis (SA) and Central Intelligence Agency (CIA) groups presented "bleak" prophecies that, to Davidson, "did a major disservice to Clark Clifford, and more importantly, to their country."²¹

Other members of the Task Force offered their views. Paul Nitze, the Deputy Secretary of Defense, likewise reached the conclusion that the Vietnam War as not worth the cost, but advocated a defensive strategy that would focus on improving the RVNAF (Republic of Vietnam Armed Forces) and protecting populated areas, mostly along the coastal plain. Paul Warnke, the Assistant Secretary of Defense for International Affairs, concluded that the war was essentially a political one and that any projections of military progress were therefore irrelevant. When the Joint Chiefs of Staff (JCS) subsequently explained to Clifford that only an undetermined length of firepower-based attrition could bring victory unless the United States expanded the war by mining North Vietnam's Hai Phong harbor or by denying enemy base areas in Laos and Cambodia – measures that Johnson had consistently rejected to avoid provoking World War III – Clifford assessed that U.S. military strategy in Vietnam was hopeless and proceeded to convince Johnson to start America's disengagement from the war.²²

Davidson's views aligned with those of military analyst and Vietnam veteran Harry G. Summers, and even with the spirit of the JCS position, when he argued that the war was unwinnable because of U.S. political constraints. To Davidson, "If blame had to be

assessed, it lay with the president and his civilian advisers in the State Department and in OSD [Office of the Secretary of Defense]” because “It was the civilians who had convinced the president of the feasibility of carrying out a limited war; it was the civilians who had sold him on ‘gradualism’; and it was the civilians who had, through the president, placed the United States forces on the strategic defensive – a ‘no win’ concept.” Moreover, Davidson continued, “Somewhere in 1967 or early 1968, one or more of the Chiefs should have stood up and told the president publicly that what he was doing in Vietnam would not work, and then resigned. It might not have changed American strategy, but the integrity of the Joint Chiefs of Staff ... would have been preserved.”²³

In his provocative work *On Strategy: A Critical Analysis of the Vietnam War* (1982), Summers viewed the war in similar, conventional terms, describing the Army as an axe best used to cleave symmetrical formations of opposing enemy forces while striking at the source of communist strength and infiltration, North Vietnam, as well as sanctuaries in Cambodia and Laos. To Summers, policy makers precluded military victory by failing to officially declare war, failing to mobilize the nation, and most importantly, by too long limiting ground engagements to the confines of South Vietnam.²⁴

Both Summers and Davidson correctly identified the need for sound strategy and national unity during prolonged or demanding conflicts, but their rejections of limited war and over-emphasis on conventional operations wrongly dismiss both the necessity and the prospects of counterinsurgency operations. It was the scale, the complexity, and

especially the hybrid nature of the Vietnam War that made it so difficult and ultimately unwinnable.

As Komer, Krepinevich and Nagl assert, political constraints were not alone sufficient to preclude American victory during the Vietnam War. Other significant factors complicated the struggle, including the organizational inertia that led Westmoreland to approach the war in an overly conventional manner for too long. Indeed, as Krepinevich asserts, the Army remained wedded to firepower and “big unit” operations beyond the fateful months of early 1968, while Westmoreland himself chose to relegate population security and pacification mostly to the South Vietnamese.²⁵ Although Abrams subsequently advocated a more balanced “one war” approach as the hybrid communist threat persisted, Abrams did so during a period of inexorable American disengagement, as the Communists reverted to protracted war in the South while building conventional forces in the North and significantly expanding the Ho Chi Minh trail. Whatever its prospects if implemented sooner, Abrams’ “one war” approach did not arrive in time to save South Vietnam.

Although the Abrams “one war” approach, with its more balanced emphasis on traditional counterinsurgency principles, had the potential to make Allied military operations more effective in this hybrid war, Abrams’ command, like that of Westmoreland before him, was persistently dogged by a lack of firepower restraint – a counterinsurgency principle so fundamental that the Army and Marine Corps later strongly emphasized it in Field Manual 31-24, *Counterinsurgency Operations* (2006).²⁶ Indeed, insufficient firepower restraint influenced every domain of America’s

counterinsurgent effort, not only the military, but also the social, the political, and the economic domains, for the United States as well as for the South Vietnamese. As Major General Arthur S. Collins, Jr., commander of the Army's 4th Infantry Division in 1966, explained to his men after hearing hundreds of rounds of H&I during his first night in the field, the troops, trucks, fuel, ships and infrastructure, dollars and effort devoted to H&I made it a tremendous "waste ... of our national resources," since "none of it is observed and you have no indication of any effect at all on the enemy." Moreover, he later pointed out, it risked "loss of life [to civilians or even friendly soldiers] or damage to [Vietnamese civilian] property" and "it doesn't help our image."²⁷ Such holistic disdain of unobserved firepower's supposed military necessity remained unfortunately rare, even during Abrams' command, and most Allied ground forces continued to focus on firepower employment, more than restraint, in an effort to save soldiers' lives, not ammunition.

Yet the financial costs of excessive unobserved firepower expenditures during the Vietnam War were alone staggering and sufficient enough to threaten both the military's budget and public support because of related social, political, and economic concerns. U.S. Army Chief of Staff General Harold Johnson indicated this in a cable to Westmoreland. Explaining that "Today we are writing checks for a quarter of a billion dollars every month to pay for ammunition," General Johnson emphasized that "When one relates this enormous cost to the unobserved artillery fires it is obvious that a significant question is raised, especially in view of the domestic furor over the cost of the war, poverty programs, and tax increases. This is a problem that both of us share,"

he added, “because of the essentiality of maintaining U.S. domestic support for the war effort in Vietnam.”²⁸ Appalled that “Munitions expenditures are amounting to ... *three billion dollars* a year,” and that artillery rounds comprised “a substantial portion of this cost,” Westmoreland subsequently reduced H&I.²⁹ Abrams continued these budget-driven reductions, but as Birtle notes, “Abrams relied on artillery just as heavily as Westmoreland, with [overall] ammunition consumption rates remaining virtually unchanged from 1968 through 1970” and, as Allied artillery fired at least twice what it had during 1966, even “PROVN's authors would probably not have been impressed by Abrams's accomplishment” in reducing Army H&I expenditures, whether budget-driven or not.³⁰

Indeed, increasing budgetary constraints deprived Abrams of considerable air and artillery ammunition faster than he wanted during both 1969 and 1970. Data in the command chronologies of Marine artillery battalions and the nearly 218,000 Army artillery records compiled by the U.S. Army Combat Developments Command (CDC) as “Combat Loss and Expenditure Data – Vietnam” (COLED-V), recorded the downward trend in U.S. ammunition consumption that followed the first year of Abrams' command, a period that included not only the “bloodiest” part of the Vietnam War, but also the time when U.S. forces consumed the greatest amount of ammunition. In the COLED-V data, Army artillery expenditures peaked at over one million rounds per month during November 1968 and March 1969, but subsequently declined and dropped below 700,000 rounds per month in early 1970. Available records of Marine artillery battalions likewise recorded more than 340,000 rounds expended per month during both

August 1968 and March 1969, but less than 200,000 rounds per month after September 1969.³¹ Consistent with the Department of Defense budget cap that took effect on 1 September 1969, Air Force sorties declined from 1,750 B-52 and 28,569 tactical air sorties during the 4th quarter of 1968 to 1,388 B-52 and 19,281 tactical air sorties during the 4th quarter of 1969.³² Abrams and his staff disagreed with air and artillery ammunition reductions, finding sortie cutbacks to be a “gross” and “screwy way to do business” in September 1969 and, in March 1970, reminding MACV to guard against anything that might be perceived as wasting artillery ammunition “when we’re *fighting* for ammunition.”³³

As budgetary pressure to reduce ammunition expenses increased from 1968 to 1970, Abrams remained committed to searching for practical economy measures that soldiers would not perceive as a loss of full support. Abrams advocated this philosophy almost from the outset of his command – when General Ralph E. Haines, Commander in Chief, U.S. Army Pacific, predicted firepower reductions to Abrams in August 1968, Abrams responded that “Of course, we must take every economy measure that’s practical. But one thing we’re going to have to be very careful about is that, through inadvertence or misunderstanding, we don’t carve into something that the *soldier* sees.” Abrams insisted that “We’ve got to be careful what we put out here on saving money and saving expenditures.” He estimated that there were many soldiers in South Vietnam to whom “that doesn’t *sound* very good.” To Abrams, “Guys at a fire support base, you know, they don’t think very much about this saving of money. They want to feel they’ve got *full* support.” Abrams “hope[d]” that it wouldn’t “get to the point where there’s a clear

competition between the priority to economize and the priority to support the forces in Vietnam,” he said, because “I can’t see how the army, or the country, can afford to get into that kind of an argument.”³⁴

Likewise, when the prospect of even steeper budget-driven firepower reductions pressed MACV in February 1970, Abrams made it clear that “I’m trying to push in the direction of taking a hard stand on those things that are most critical” and that “I’m not trying to *help out* with the budget. I’m not trying to accept the problems with DOD’s budget *here*. What I’m trying to do is be *realistic* in the environment that they’re trying to resolve our problems in, and just hang on like a *bulldog* to those things which are the *most* critical to us.”³⁵ Preserving firepower consumption at 1968-1969 levels might have shown “full support” to American soldiers in Vietnam, but increasing budgetary pressure precluded this. Thus, the prospect of budget-driven firepower reductions, which Abrams first recognized in mid-1968, had prompted Abrams to first economize, and then to nearly eliminate, Army harassment and interdiction fire by June 1970.

Despite the hybrid, simultaneously conventional and counterinsurgent, nature of the Vietnam War, the Army’s reduction of harassment and interdiction fire from 1968-1970 resembled its reduction of harassment and interdiction fire during the Korean War. Following MacArthur’s Inchon landing, the drive to the Yalu River and subsequent Chinese intervention, artillery firepower saved the lives of many U.S. soldiers who would have otherwise been overwhelmed by sheer numbers of Chinese and North Korean infantry. During a communist offensive in May 1951, Lieutenant General James Van Fleet, commander of the American Eighth Army, admonished his subordinates that

“We must expend steel and not men. . . . I want so many artillery holes that a man can step from one to another.”³⁶ His artillery used ammunition in “Van Fleet loads,” rates of consumption five times greater than previously allowed, and at least one battalion, the 38th Field Artillery, fired more than 12,000 rounds during a single, 24-hour period.³⁷ Yet Allied inventories of some artillery calibers dropped nearly to zero during this fortunately brief communist offensive, prompting ammunition rationing, reductions in unobserved artillery fire, and a related Congressional investigation in 1953, trials during which Van Fleet’s management of unobserved artillery fire resembled Abrams’ philosophy and methods from 1968-1970.

Van Fleet best outlined America’s long-standing approach to unobserved artillery fire during his testimony before the U.S. Senate Armed Services Committee on 1 April 1953. Explaining that American rates of ammunition resupply were based on averages consumed in France during 1944, Van Fleet emphasized that ammunition received in Korea “was always below those tables.” This was backward, he emphasized, because there were fewer American guns in Korea “per division or per yard” than in France and the enemy artillery capability had rapidly increased, particularly during 1952. Moreover, the communist enemies did not “value life.” They used, in Van Fleet’s words, “mass attacks, taking their losses in great numbers in order to place some people on the objective and succeed.” When Senator John Sherman Cooper of Kentucky cited Van Fleet’s similar testimony of 4 March 1953 and asked whether more artillery ammunition could have prevented any Chinese waves from reaching their objective(s), Van Fleet replied “Yes.” To do this, Van Fleet explained, “A great deal of that firing

must be ahead of time, must be preventing trouble, so as to destroy the enemy's attack before it is launched, to counterbattery artillery so that it cannot shoot, to harass and interdict many days ahead of time when you sense that he is building up in an area to launch an attack. If we shoot at that time, the attack will never come off. If we wait until the attack is launched, it is generally too late." To Van Fleet, "If you have more ammunition, you seize the initiative from the enemy and put pressure on him that keeps him down and prevents him from staging raids against us – preventive work – if you can shoot sufficient amounts." In Korea, Van Fleet's artillery had not cut back on unobserved fire willingly – it had merely observed temporary supply restrictions caused, in part, by steel industry strikes that impacted the production of artillery ammunition during 1952.³⁸ Van Fleet, like Abrams nearly two decades later, had been forced to economize ammunition and both chose firepower reductions that would prove least harmful to U.S. soldiers.

By late 1970, with Vietnamization forging ahead in earnest, the Marines nearly withdrawn, and overall U.S. troop levels at nearly two-thirds of their 1969 peak, Abrams apparently entertained a more holistic disdain for firepower in counterinsurgency. Lewis Sorley's *Vietnam Chronicles* contain an account of how Abrams prompted a study titled "Where Do We Let Peace Come to Vietnam?" In his weekly intelligence estimate update (WIEU) of 22 August 1970, Abrams declared "I think there's areas around here in Vietnam right now where the question should be asked whether artillery, gunships, tac air, and all that kind of stuff, whether it ought to be used *at all*. Out here to try to get four guerrillas – three air strikes, and 155s and 105s, and two helicopter gunship

runs....” To Abrams, ARVN artillery employment near Saigon was a case in point. “I sometimes wonder, sitting over there at the quarters, I hear these explosions out there,” he continued, “Then I look at the book and see nothing happened in Saigon. What the hell are they doing, exercising their recoil systems? Well, goddamn it, you can’t use it against *terrorism*.” Someone in the audience replied to Abrams that “I’ve talked to General Truong about this [Truong had commanded the 1st ARVN Division and was now the Commander of the ARVN IV Corps]. He is not a keen supporter of the ammo conservation program.”³⁹

Abrams emphasized that “I didn’t bring this up on the basis of saving ammunition,” explaining that “I’m thinking about the Vietnamese people, the whole atmosphere of political and economic and a healthy attitude toward the government and all that kind of *stuff*.” Asserting that “I don’t know too much about it,” Abrams asked “What the hell do the villages think out here – this stuff just keeps going off, banging around out there, and so on. The most charitable thing, I suppose, is that they think somebody’s coming. And probably what they *do* think is ... why are they doing that? There hasn’t been a VC around here in a *month*.” Abrams tempered his comments by continuing that “men that are fighting, and fighting the enemy, they’ve got to be supported by everything that we can do.”⁴⁰

Based on the concerns that Abrams expressed on 22 August 1970, a young Air Force officer conducted a study that analyzed both artillery and tactical air support. When the study was completed “a few months later,” Sorley contends, “influenced by Abrams’ concern, field commanders had already modified their operations to cut back on the use

of air and artillery in populated areas and the analysts had seen that reflected in the data.”⁴¹ Unfortunately, this insight by Abrams came after the U.S. phase of the war had practically ended and it remained incomplete, as Marine and Australian H&I continued at historically high levels, at least through the end of 1970, and the ARVN continued to employ large amounts of unobserved fire as well.⁴²

Abrams may have changed his appreciation of fire support in a hybrid, mixed conventional and counterinsurgent, environment by embracing non-artillery areas at the beginning of 1971, but during the commands of both Abrams and Westmoreland, the Army and Marine Corps had overcome diverse challenges to dominate most conventional engagements with a firepower umbrella so expansive and thorough that it risked unnecessary loss of South Vietnamese popular support throughout much of the war. Despite harsh terrain, bad weather, and an elusive enemy, innovative artillerymen had found ways to improve this umbrella to a level consistent with previous, twentieth century conventional conflicts and the American expectation to “Save Lives, Not Ammunition.” They developed innovations of enduring value such as omni-directional traverse, Beehive ammunition, “Killer Junior,” sensor-“Acquired” missions, and helicopter-based firepower. They also created the first, but short-lived, riverine artillery force. From defending bases to piling firepower on a cornered enemy, artillery firepower delivered against confirmed enemy locations preserved the lives of countless soldiers and Marines, as did Air Force firepower delivered against massed enemy forces, headquarters areas, and logistical networks, particularly the ever-expanding capacity of the Ho Chi Minh Trail, the communist infiltration route from North through Laos into

South Vietnam. Nevertheless, if Abrams intended to finally eliminate harassment and interdiction fire in some less populated areas, then his direction had the potential to improve Allied performance, whatever the prospects of ultimate Allied victory.

Militarily dubious in a counterinsurgency environment, widespread harassment and interdiction fire also posed a persistent moral dilemma that threatened U.S. and South Vietnamese support for the war, at least in the social and political domains. Former Navy lieutenant John Kerry recognized this. After serving on river patrol boats in South Vietnam, Kerry returned to the United States and devoted himself to Vietnam Veterans Against the War (VVAW), an activist organization that, to further the prompt withdrawal of American forces from Southeast Asia, investigated numerous atrocities allegedly perpetrated by American forces during the war. To increase political pressure against the war, Kerry proposed a congressional audience for VVAW's findings and helped to organize a VVAW march on Washington, D.C.⁴³ After three days on the mall, Kerry managed to testify before the Senate Foreign Relations Committee on 23 April 1971 and entered VVAW's allegations into the *Congressional Record* as an "angry war veteran." He and VVAW condemned the military for several "war crimes," including its use of "harassment and interdiction (H&I) fire." Kerry charged that H&I fire not only violated the Geneva Conventions, but also stood as an "accepted policy by many units in South Vietnam."⁴⁴ Given the views that Collins' had expressed about H&I during 1966 and what Abrams had expressed about firepower in general by late 1970, it is hard to dispute that the virtual absence of military necessity rendered much H&I not only counterproductive, but also morally bankrupt in a counterinsurgency

environment, even if American doctrine prohibited H&I near friendly populated areas. Many soldiers and civilians could share this view, whatever their political perspectives.

Thus, if Abrams genuinely desired to focus more U.S. effort on pacification than Westmoreland, insufficient firepower restraint continued to thread together the military, social, political, and economic domains as a barometer of a war in which America “couldn’t ‘win’ the way it fought it.” This accorded with the work of Carl von Clausewitz, whose nineteenth-century treatise *On War* considered these factors and their interdependence and stood widely revered by American military officers and institutions throughout much of the twentieth and into the twenty-first century. Clausewitz described war as a “paradoxical trinity” where the popular passions of “primordial violence, hatred and enmity” interact in a “variable” balance with the “chance and probability” of military operations and the primacy of political aims and concerns. Within this balance, military operations represented “an instrument of policy” that should be “subject to reason alone.” In other words, strategy, operations, or tactics that do not serve policy, that wrongly discounted popular passion, or that otherwise seek “to fix an arbitrary relationship” between the three factors court failure.⁴⁵

Yet if insufficient American firepower restraint influenced multiple wartime domains, then flawed American policy mattered most. The United States intervened in South Vietnam because of the logical, predictable, but flawed “Domino Theory” espoused by President Dwight Eisenhower and averred to by Presidents John F. Kennedy and Lyndon Johnson. Insufficient South Vietnamese nationalism afterward plagued America’s war effort, as did comparatively strong North Vietnamese nationalism, an increasingly

divided American public, and fickle congressional support. The military suffered from its own failures to question deceitful policy and to fully embrace the implications of Abrams's "one war" approach sooner. Most importantly, however, America bled its national power on behalf of less than vital national interests. This policy, formulated in ignorance, fear, arrogance, and deceit, eventually proved less than compelling given the costs required to attain its ends. Given the totality of its complications, the demands of the war exceeded American support naturally, if not quickly. As inflation mounted, as the dollar weakened, and as public funds continued to pursue diverse programs, including new social spending, decreasing Department of Defense budgets balanced vital NATO commitments, modernization, and personnel strength and began to reject the American military's own demands for fire support.

Like most wars, but particularly those waged for less than vital national interests, the Vietnam War was never immune from such non-military influence – America courted failure in multiple domains and insufficient restraint of expensive unobserved harassment and interdiction fire (H&I) negatively influenced many of them. Soldiers and Marines sought to "Save Lives, Not Ammunition," but their H&I rarely killed the enemy. Results were difficult to quantify, but H&I instead sometimes killed civilians, livestock, and even friendly troops, not only when "friendly fire" accidents claimed lives, but also when Viet Cong insurgents ambushed any one of the many extra truck convoys required to supply the voracious American and Allied appetite for unobserved firepower, or when the Viet Cong used the explosive filler of unexploded munitions to create booby-traps and landmines that inflicted more American and Allied casualties

than any other weapon. Psychologically, the daily thunder of unobserved artillery allowed civilians to consider American and Allied forces as uncaring, even indiscriminate, while it armed both the communist enemy and domestic anti-war protesters with useful propaganda. Perhaps most significantly, this firepower wastage incurred tremendous fiscal costs that not only stoked domestic inflation, but ultimately contributed to America's military and financial disengagement from South Vietnam.

During much of the Vietnam War, America and its Allies failed to appreciate that the effects of unobserved firepower were weak in conventional war and unreasonable, even counterproductive, in counterinsurgency. That both Westmoreland and Abrams failed to explicitly link unobserved firepower's counter-productivity to the H&I cutbacks that each implemented while under budgetary pressure from 1965 to 1970, and that Marine and Australian forces meanwhile continued to lavishly employ unobserved firepower during the same period without significant MACV admonishment, not only highlighted a persistent, MACV-wide failure to embrace the counterinsurgency principle of firepower restraint, but also augured failure in that difficult and hybrid struggle.

Notes

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APPENDIX A
NOMENCLATURE

ACQ	Fire at Target(s) Acquired by Sensors
AREA	Fire at Area Target(s)
AWM	Australian War Memorial
CNF	Fire at Confirmed Target(s)
COLED-V	Combat Loss and Expenditure Data – Vietnam
CTB	Counter-Battery Fire
DEF	Defensive Fire
DES	Fire to Destroy Target(s)
FFE	Fire for Effect
FOS	Fire to Support the Forward Observer School
H&I	Harassment and Interdiction Fire
INT	Interdiction Fire, or H&I after February 1968
MN, MSN(S)	Fire Mission(s)
MSTL	Morris Swett Technical Library, Fort Sill, OK
N/A	Ammunition Lost or Target Category Not Available
OBS	Observed Fire
OPP	Opportunity Fire
OTH	Other Fire
PRE	Preemptive Fire

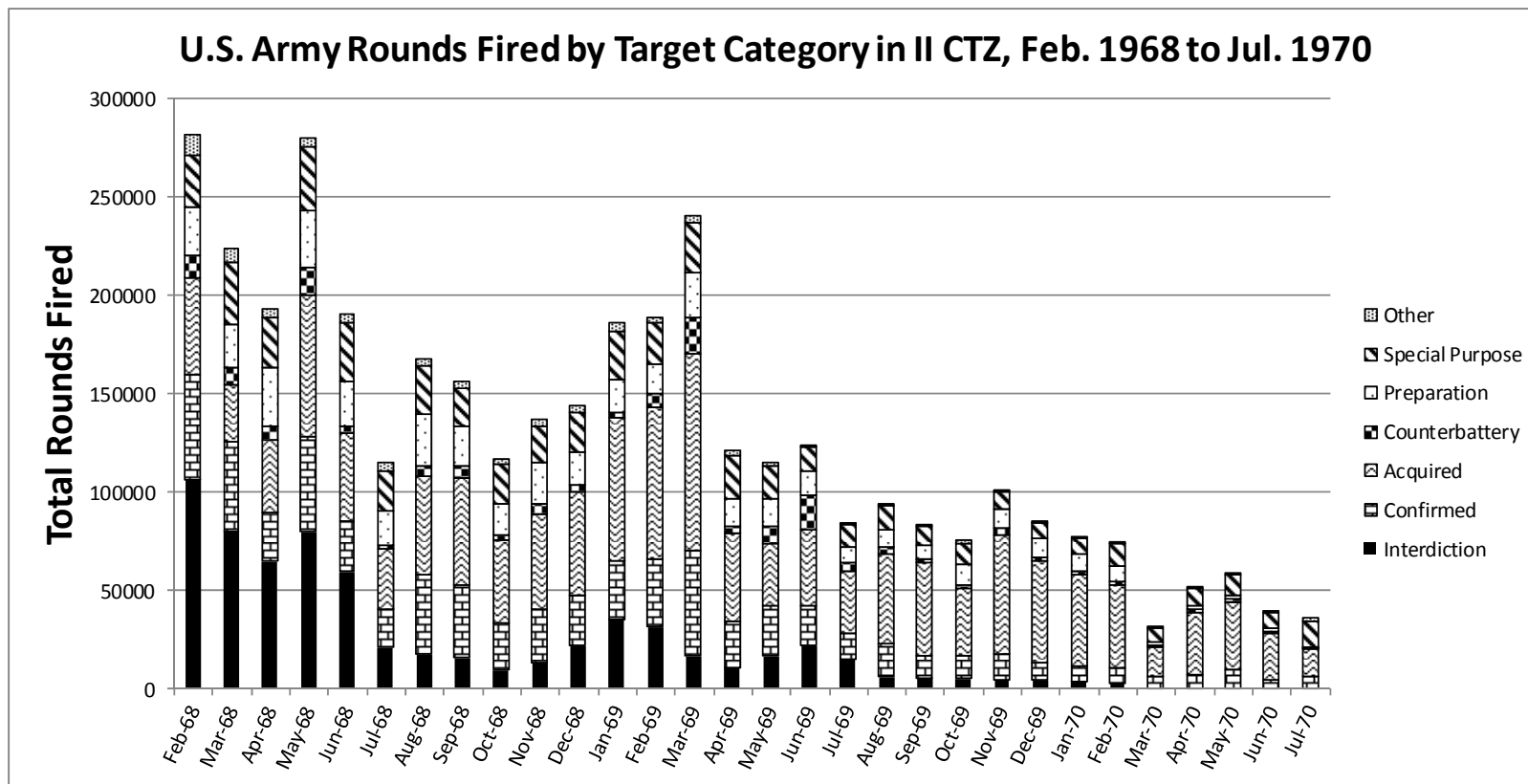
PRP	Preparatory Fire
REG	Fire to Register Artillery Piece(s) to Improve Accuracy
RDS	Rounds of Artillery Ammunition Expended
S2	Fire at Targets Recommended by Intelligence Officer(s)
SP	Special Purpose Fire
UN	Unobserved Fire
VCA-TTU	The Vietnam Center and Archive, Texas Tech University
VNS	Fire Support to the South Vietnamese Army

APPENDIX B

U.S. ARMY, FIRST FIELD FORCE, VIETNAM, ARTILLERY AMMUNITION

EXPENDED IN II CTZ, FEBRUARY 1968 TO JULY 1970

Figure B-1. U.S. Army, First Field Force, Vietnam, Rounds Fired by Target Category in II CTZ, February 1968 to July 1970. Source: Hq., First Field Force Artillery, "US Expenditures by Target Category," Enclosure 2 in "Artillery Seminar, An Khe, 21 June 1968," Tab D in First Field Force Artillery Information Packet, June-July 1968, Microfiche File 1, DS557 A6U103 JE-JUL 68, Morris Swett Technical Library, Fort Sill, OK (MSTL, Fort Sill); Hq., First Field Force Artillery, Quarterly Operational Reports from 31 July 1968 to 31 July 1970, Microfiche File 2, DS 557.A631 F1, MSTL, Fort Sill.



APPENDIX C

U.S. ARMY ARTILLERY AMMUNITION EXPENDED DURING THE VIETNAM WAR, JULY 1968 TO JUNE 1970

The author compiled this data from records that the U.S. Army Combat Developments Command (CDC) collected in South Vietnam from July 1968 to June 1970 and which the National Archives and Records Administration (NARA) preserved and later made publicly accessible on the internet in 2005. Originally on magnetic reel tapes, the database recorded relatively comprehensive ammunition and equipment lost and expended by the U.S. Army in many categories, but its more than 218,000 artillery-related records proved exceptionally interesting to this study.

To access the data, the author transferred his query results into spreadsheets and subsequently into a database of his own, where he linked each record to one battery or battalion and also to one separate brigade or major command (division), according to CDC records and the unit list presented by Shelby Stanton in *Vietnam Order of Battle* (1981). During this procedure, the author discovered and resolved several attribution errors, such as misspelled unit names, that may have impacted the COLED-V reports that CDC itself published. Like the results of any human collection effort, CDC data are not perfect – readers may even find that a given battalion's expenditures during a particular month vary from that battalion's own operational reports and lessons learned, but the scope and consistency of CDC methodology offer a clear view of artillery expenditure trends from July 1968 to June 1970.

Figure C-1. U.S. Army, Vietnam (USARV), Artillery Rounds Fired by Target Category, July 1968 to June 1970. Source: U.S. Army, Combat Developments Command, "Records About Combat Operations by Army Units and Their Use and Loss of Military Supplies During the Vietnam War, created 7/1/1967 - 6/30/1970, documenting the period 7/1/1967 - 6/30/1970 [Combat Operations Loss and Expenditure Data – Vietnam (COLED-V)]," RG 338: Records of the U.S. Army Commands, 1942-, Electronic and Special Media Records Services Division, National Archives and Records Administration (NARA), College Park, MD, accessed 3 December 2012, available at <http://aad.archives.gov/aad/>.

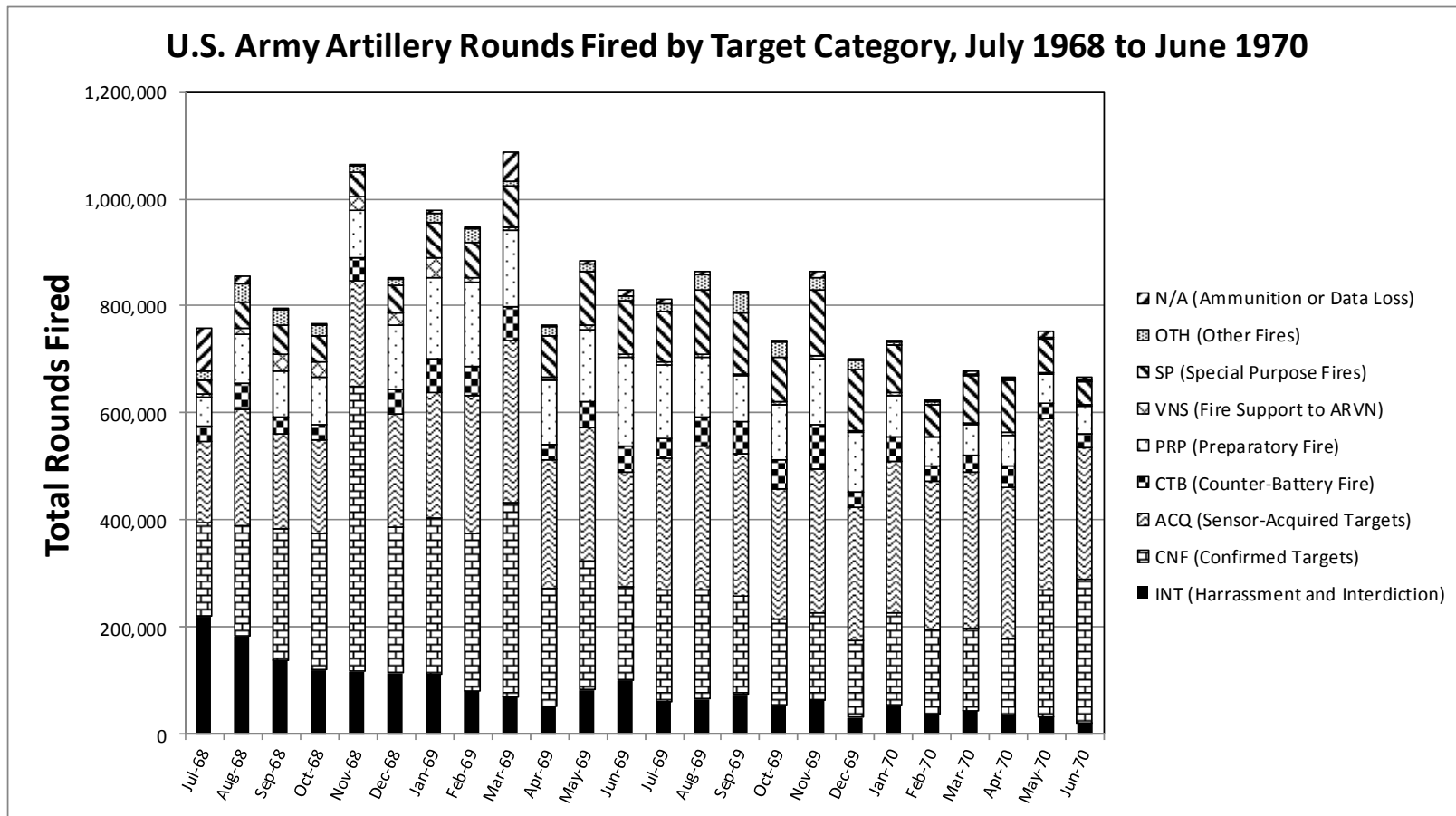


Table C-1. U.S. Army, Vietnam (USARV)

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	757,951	176,145	151,413	26,599	55,549	4,868	219,825	25,994	17,998	79,560	46.7%	29.0%
Aug-68	854,273	208,141	217,316	48,739	90,720	12,179	182,369	48,037	32,451	14,321	55.5%	21.3%
Sep-68	794,020	244,483	177,992	32,059	84,205	32,948	138,741	52,127	29,164	2,301	57.2%	17.5%
Oct-68	765,047	255,352	175,924	27,618	90,036	26,939	119,120	47,971	20,522	1,565	60.0%	15.6%
Nov-68	1,061,327	531,414	199,011	41,451	89,251	25,010	116,957	46,979	10,873	381	72.7%	11.0%
Dec-68	850,199	272,073	210,345	47,622	119,095	24,020	114,682	49,614	11,965	783	62.3%	13.5%
Jan-69	977,590	289,232	236,451	62,643	149,966	38,448	112,971	66,787	15,736	5,356	60.2%	11.6%
Feb-69	946,377	292,191	257,683	56,153	157,479	8,855	81,453	65,923	25,257	1,383	64.0%	8.6%
Mar-69	1,086,004	362,720	302,572	63,555	143,653	5,821	69,191	75,451	11,038	52,003	67.1%	6.4%
Apr-69	762,254	219,494	238,309	30,757	119,304	5,139	53,056	79,152	15,469	1,574	64.1%	7.0%
May-69	882,744	241,804	248,470	49,386	131,990	10,926	82,470	98,814	13,476	5,408	61.1%	9.3%
Jun-69	829,796	175,826	212,177	48,919	166,871	4,731	100,476	102,050	8,522	10,224	52.7%	12.1%
Jul-69	812,616	208,417	245,648	37,436	136,273	5,496	61,827	93,880	14,690	8,949	60.5%	7.6%
Aug-69	862,772	204,759	266,587	56,425	109,616	5,944	65,755	119,701	28,153	5,832	61.2%	7.6%
Sep-69	824,476	184,904	265,930	58,490	86,744	3,930	73,815	112,993	36,570	1,100	61.8%	9.0%
Oct-69	735,877	160,915	243,979	53,004	104,442	3,993	54,255	82,013	31,050	2,226	62.2%	7.4%
Nov-69	863,567	164,310	268,621	83,029	124,010	5,774	61,980	123,291	21,368	11,184	59.7%	7.2%
Dec-69	700,599	143,234	248,361	29,521	109,570	4,363	31,777	113,027	19,551	1,195	60.1%	4.5%
Jan-70	733,675	172,906	282,203	45,461	79,133	4,355	53,369	88,183	7,487	578	68.2%	7.3%
Feb-70	622,916	157,699	276,570	29,447	53,470	1,439	37,325	59,140	4,759	3,067	74.4%	6.0%
Mar-70	677,005	155,248	289,573	33,471	56,016	4,244	43,522	87,864	3,253	3,814	70.6%	6.4%
Apr-70	664,953	142,983	280,825	40,199	57,127	5,584	36,125	97,107	4,900	103	69.8%	5.4%
May-70	752,945	236,193	320,582	27,793	56,016	2,531	32,160	62,344	3,187	12,139	77.6%	4.3%
Jun-70	665,660	269,294	244,157	26,391	50,300	3,352	21,236	43,065	2,371	5,494	81.1%	3.2%

Table C-2. 1st Cavalry Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	53,014	18,454	17,682	290	2,735	157	3,705	1,201	331	8,459	68.7%	7.0%
Aug-68	58,018	19,264	10,989	2,312	11,720	80	12	10,839	2,332	470	56.1%	0.0%
Sep-68	62,827	19,554	7,605	1,438	18,656	436		9,762	5,352	24	45.5%	0.0%
Oct-68	62,337	26,424	10,156	200	12,853	346	597	7,220	4,541		59.0%	1.0%
Nov-68	59,579	27,265	9,001	2,996	10,177	1,253	2,533	5,406	948		65.9%	4.3%
Dec-68	73,990	42,900	8,140	4,174	7,523	655	1,068	7,222	2,151	157	74.6%	1.4%
Jan-69	95,730	58,957	9,209	2,658	15,019	2,258		6,094	1,255	280	74.0%	0.0%
Feb-69	87,371	51,063	6,504	3,826	14,472	537	14	8,458	2,430	67	70.3%	0.0%
Mar-69	103,125	64,124	5,465	4,146	14,695	131	636	12,056	1,702	170	71.5%	0.6%
Apr-69	84,050	48,605	5,291	1,441	15,150		942	11,266	1,023	332	65.8%	1.1%
May-69	74,624	28,736	4,734	4,911	15,363	258	7,339	12,254	888	141	51.4%	9.8%
Jun-69	60,993	26,036	5,197	3,493	13,089	108	4,241	7,998	653	178	56.9%	7.0%
Jul-69	62,725	30,402	4,899	2,631	12,999	28	1,712	7,967	1,876	211	60.5%	2.7%
Aug-69	82,593	46,730	3,881	3,615	15,028	98	861	9,549	761	2,070	65.7%	1.0%
Sep-69	81,003	48,785	4,274	3,909	10,831		694	11,791	450	269	70.3%	0.9%
Oct-69	65,499	34,122	5,503	1,046	13,243		2,649	8,186	150	600	62.1%	4.0%
Nov-69	146,352	69,950	9,193	5,016	20,731	31	7,158	33,332	941		57.5%	4.9%
Dec-69	98,201	56,091	5,684	4,984	15,430	106	3,179	12,185	542		68.0%	3.2%
Jan-70	108,388	71,279	5,003	7,328	10,319	16	1,626	12,145	672		77.1%	1.5%
Feb-70	58,631	37,119	6,149	911	3,704	37	3,057	7,211	423	20	75.4%	5.2%
Mar-70	105,285	67,448	7,837	2,128	10,574	1,753	5,562	8,586	1,389	8	73.5%	5.3%
Apr-70	115,225	70,374	8,164	4,468	10,923	1,523	10,257	9,075	441		72.0%	8.9%
May-70	147,946	115,094	7,205	3,215	9,521	795	2,438	9,293	214	171	84.8%	1.6%
Jun-70	156,076	126,343	9,514	2,554	10,129			7,364	172		88.7%	0.0%

Table C-3. 1st Infantry Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	88,751	12,642	9,809		1,740	43	57,915		6,602		25.3%	65.3%
Aug-68	91,549	11,660	14,157	355	2,380	201	51,566	663	10,567		28.6%	56.3%
Sep-68	87,599	11,469	27,003	360	6,678	977	37,662	2,482	968		44.3%	43.0%
Oct-68	95,203	17,865	25,463	1,230	8,352	473	37,129	2,991	1,700		46.8%	39.0%
Nov-68	88,761	16,765	27,324	1,888	11,742	1,590	22,617	6,553	282		51.8%	25.5%
Dec-68	85,391	16,540	26,981	1,429	16,169	404	9,536	13,792	540		52.6%	11.2%
Jan-69	79,379	16,503	23,640	3,318	12,118	284	8,065	15,156	295		54.8%	10.2%
Feb-69	81,590	13,389	28,106	5,180	16,223	725	4,686	10,430	2,851		57.2%	5.7%
Mar-69	73,070	12,355	29,570	8,205	7,982	512	2,657	10,694	1,055	40	68.6%	3.6%
Apr-69	68,040	12,817	36,013	1,444	6,651	1,191	265	9,200	407	52	73.9%	0.4%
May-69	88,606	16,532	44,490	6,959	8,330	1,738	1,269	9,087	201		76.7%	1.4%
Jun-69	57,104	10,849	23,446	3,396	5,150	156	955	6,836	204	6,112	66.0%	1.7%
Jul-69	69,167	11,758	34,896	1,720	5,134	1,948	526	12,525	660		69.9%	0.8%
Aug-69	85,881	14,343	42,776	4,884	5,807	2,604	615	14,236	280	336	72.2%	0.7%
Sep-69	86,931	9,728	41,780	3,222	9,141	1,503	27	20,641	889		63.0%	0.0%
Oct-69	93,966	14,133	43,933	2,366	15,973	1,787	87	12,727	2,960		64.3%	0.1%
Nov-69	66,512	11,468	27,014	915	9,351	1,996		15,426	330	12	59.2%	0.0%
Dec-69	74,576	12,354	35,776	1,286	7,845	1,326	14	15,528	412	35	66.3%	0.0%
Jan-70	67,497	7,385	42,034	584	8,002	927	685	7,156	724		74.1%	1.0%
Feb-70	68,978	7,084	48,704	1,146	3,888	292	418	7,080	220	146	82.5%	0.6%
Mar-70	13,752	1,166	10,474	167	719	18		1,133	75		85.9%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-4. 4th Infantry Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	10,241	1,189	933		973	60	1,169	2,477	214	3,226	20.7%	11.4%
Aug-68	29,384	3,525	4,433	156	1,013		5,327	2,469	12,461		27.6%	18.1%
Sep-68	38,070	4,641	6,235	394	1,768		13,745	2,012	9,275		29.6%	36.1%
Oct-68	24,234	3,247	6,554	366	534	88	5,506	2,013	5,926		42.0%	22.7%
Nov-68	23,060	2,458	9,444	1,270	734		2,020	2,288	4,763	83	57.1%	8.8%
Dec-68	25,559	6,658	8,004	1,250	1,030		3,454	1,024	3,914	225	62.3%	13.5%
Jan-69	38,533	10,260	10,416	377	764		8,437	2,844	5,435		54.6%	21.9%
Feb-69	50,784	11,816	15,118	1,337	1,826	48	8,601	2,533	9,505		55.7%	16.9%
Mar-69	97,498	52,389	29,790	3,001	4,927		3,548	2,427	696	720	87.4%	3.6%
Apr-69	27,148	9,769	8,466	480	2,339	20	1,056	4,477	41	500	68.9%	3.9%
May-69	31,562	8,827	9,298	1,161	2,746	2,628	826	4,699	89	1,288	61.1%	2.6%
Jun-69	20,309	485	15,935	1,003	1,093			1,140	65	588	85.8%	0.0%
Jul-69	37,693	2,799	22,177	114	3,057	21	1,051	886	61	7,527	66.6%	2.8%
Aug-69	52,751	3,031	33,574	725	1,067		7,989	5,265	776	324	70.8%	15.1%
Sep-69	35,242	2,649	21,788	215	503	635	46	2,883	6,465	58	70.0%	0.1%
Oct-69	15,781	1,016	13,949		258			449	109		94.8%	0.0%
Nov-69	34,352	1,302	31,386	141	360		328	835			95.6%	1.0%
Dec-69	23,100	817	21,355		6		451	232	239		96.0%	2.0%
Jan-70	17,989	35	17,743				43	168			98.8%	0.2%
Feb-70	151		16					135			10.6%	0.0%
Mar-70	12,864	209	8,533	810				1,373		1,939	74.3%	0.0%
Apr-70	15,531	498	10,172					4,861			68.7%	0.0%
May-70	16,771	137	14,628					2,006			88.0%	0.0%
Jun-70	3,839		3,839								100.0%	0.0%

Table C-5. 1st Brigade, 5th Infantry Division as a Separate Brigade

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68	9,461	1,442	8,019								100.0%	0.0%
Nov-68	6,984		6,984								100.0%	0.0%
Dec-68	9,552	8,533	1,019								100.0%	0.0%
Jan-69	18,894	14,897	2,810				1,187				93.7%	6.3%
Feb-69	13,228	12,280	948								100.0%	0.0%
Mar-69	21,280	14,018	7,262								100.0%	0.0%
Apr-69	14,019	1,998	11,056	514			451				96.8%	3.2%
May-69	19,612	15,799	2,933							880	95.5%	0.0%
Jun-69	15,478	9,235	6,243								100.0%	0.0%
Jul-69	17,830	11,474	6,356								100.0%	0.0%
Aug-69	16,481	11,310	5,171								100.0%	0.0%
Sep-69	19,440	11,438	8,002								100.0%	0.0%
Oct-69	18,926	17,924	1,002								100.0%	0.0%
Nov-69	26,694	7,078	19,616								100.0%	0.0%
Dec-69	22,616	11,718	10,898								100.0%	0.0%
Jan-70	18,017	1,792	16,225								100.0%	0.0%
Feb-70	22,215	12,094	9,048	1,073							100.0%	0.0%
Mar-70	27,977	16,431	9,322						573	1,651	92.1%	0.0%
Apr-70	34,211	13,902	20,309								100.0%	0.0%
May-70	32,863	17,189	14,571							1,103	96.6%	0.0%
Jun-70	37,451	37,451									100.0%	0.0%

Table C-6. 9th Infantry Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	74,810	16,322	5,551	6,408	4,893	814	34,840	4,849	808	325	37.8%	46.6%
Aug-68	96,572	21,156	27,458	9,743	2,687	4,698	24,462	5,980	16	372	60.4%	25.3%
Sep-68	74,194	18,070	18,599	8,828	1,877	1,933	19,436	5,367	6	78	61.3%	26.2%
Oct-68	86,520	23,900	20,719	14,051	4,808	4,541	13,279	5,129	41	52	67.8%	15.3%
Nov-68	79,241	15,581	16,361	10,450	8,434	1,124	24,929	2,329	33		53.5%	31.5%
Dec-68	90,898	20,914	14,282	14,525	21,282	797	16,490	2,542	66		54.7%	18.1%
Jan-69	93,912	17,827	13,773	23,231	11,269	1,098	21,917	4,560	237		58.4%	23.3%
Feb-69	78,574	13,830	21,624	16,770	11,487	1,488	4,599	8,282	343	151	66.5%	5.9%
Mar-69	49,478	13,997	10,658	5,281	8,088	1,046	2,764	7,214	397	33	60.5%	5.6%
Apr-69	68,212	22,054	16,202	4,665	12,514	2,752	2,415	7,578	32		62.9%	3.5%
May-69	70,528	20,912	15,486	7,567	14,320	772	1,852	9,414	171	34	62.3%	2.6%
Jun-69	76,306	13,676	19,633	6,863	16,553	1,860	3,351	13,602	161	607	52.6%	4.4%
Jul-69	58,460	16,022	14,551	6,175	8,939	550	2,193	9,791	239		62.9%	3.8%
Aug-69	28,109	7,535	4,681	2,825	7,674	18	492	4,884			53.5%	1.8%
Sep-69	27,198	10,456	6,612	1,353	4,118		593	4,066			67.7%	2.2%
Oct-69	25,085	6,001	6,643	200	5,881		471	5,627	262		51.2%	1.9%
Nov-69	30,580	9,025	12,844	74	5,282		1,481	1,839		35	71.8%	4.8%
Dec-69	27,983	9,560	8,959	123	5,609	92	1,397	2,243			66.6%	5.0%
Jan-70	31,980	16,830	9,140	12	4,870			1,128			81.2%	0.0%
Feb-70	26,951	12,264	8,945	747	4,003		96	896			81.5%	0.4%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-7. 3rd Brigade, 9th Infantry Division as a Separate Brigade

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68												
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69												
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70	34,372	13,434	14,793		4,923			1,222			82.1%	0.0%
Apr-70	19,536	6,989	8,519		3,340			688			79.4%	0.0%
May-70	14,671	6,664	6,309		1,043			486		169	88.4%	0.0%
Jun-70	17,710	6,306	2,749		4,769			3,718	84	84	51.1%	0.0%

Table C-8. 11th Armored Cavalry as a Separate Brigade Equivalent

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	13,815	1,878	6,260				5,647	30			58.9%	40.9%
Aug-68	6,684	420	4,769				1,495				77.6%	22.4%
Sep-68	6,456	272	3,312	32	61	470	1,722		51	536	56.0%	26.7%
Oct-68	8,947	3,010	2,043	23	1,091		2,037	278	465		56.7%	22.8%
Nov-68	9,900	5,455	731	240	132	551	2,321	6	464		64.9%	23.4%
Dec-68	9,719	4,093	1,948	65	333		2,737	79	464		62.8%	28.2%
Jan-69	9,732	4,720	1,698		81		2,869	206	158		65.9%	29.5%
Feb-69	10,689	4,488	5,110		119		848	121	3		89.8%	7.9%
Mar-69	3,449	545	2,338	75	30		285	28	148		85.8%	8.3%
Apr-69	7,439	975	3,425		2,583	56	142	148	110		59.1%	1.9%
May-69	5,515	691	4,283	78	119		141	147	56		91.6%	2.6%
Jun-69	2,789	313	1,910	30	99		20	417			80.8%	0.7%
Jul-69	2,358	255	1,099	64	409			499	32		60.1%	0.0%
Aug-69	8,799	3,596	2,646	667	173		914	803			78.5%	10.4%
Sep-69	9,250	2,625	2,457	214	241		2,347	932	434		57.3%	25.4%
Oct-69	6,488	371	2,430	164	252		1,690	1,297	284		45.7%	26.0%
Nov-69	3,648		1,708		197		1,244	439	60		46.8%	34.1%
Dec-69	2,179	255	1,459				292	173			78.7%	13.4%
Jan-70	8,468	912	1,599	14	126		5,433	384			29.8%	64.2%
Feb-70	11,102	1,315	3,079	70	176		4,470	1,832		160	40.2%	40.3%
Mar-70	13,204	2,168	1,825	143	748		4,800	3,520			31.3%	36.4%
Apr-70	9,423	1,091	965	148	91		2,723	4,405			23.4%	28.9%
May-70	8,118	445	1,077		270		2,796	3,530			18.7%	34.4%
Jun-70	10,990	2,415	633		1,006		110	2,036		4,790	27.7%	1.0%

Table C-9. 23rd Infantry Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	102,656	31,165	14,753	7,262	2,051	6	36,207	1,173	428	9,611	51.8%	35.3%
Aug-68	119,805	30,518	17,861	12,296	7,316	1,142	47,205	3,109	177	181	50.6%	39.4%
Sep-68	89,021	39,069	6,097	5,792	5,148	105	26,670	5,208	692	240	57.2%	30.0%
Oct-68	95,437	42,885	13,193	6,732	8,785		16,348	5,915	427	1,152	65.8%	17.1%
Nov-68	85,911	36,124	10,303	10,502	3,469		19,693	5,010	742	68	66.3%	22.9%
Dec-68	94,035	39,421	10,992	6,088	1,946	26	29,690	5,298	557	17	60.1%	31.6%
Jan-69	110,822	50,543	9,652	8,138	2,470	570	31,666	5,578	1,985	220	61.7%	28.6%
Feb-69	68,983	22,796	14,885	5,145	2,575	564	14,782	7,295	858	83	62.1%	21.4%
Mar-69	98,312	36,289	19,744	7,382	7,687	13	17,084	8,895	1,116	102	64.5%	17.4%
Apr-69	79,319	24,355	16,108	6,327	3,916	55	18,550	6,850	3,095	63	59.0%	23.4%
May-69	101,157	35,411	18,844	10,702	6,187	879	19,010	7,120	2,905	99	64.2%	18.8%
Jun-69	93,517	20,861	16,988	14,369	6,675	87	26,797	5,723	1,758	259	55.8%	28.7%
Jul-69	82,688	27,504	19,320	11,362	7,177	7	9,514	6,417	1,368	19	70.4%	11.5%
Aug-69	115,042	33,918	20,506	31,992	7,748		14,218	5,802	714	144	75.1%	12.4%
Sep-69	122,991	31,040	21,196	32,284	4,781		26,248	6,879	460	103	68.7%	21.3%
Oct-69	110,355	23,289	29,061	24,071	6,547	810	20,738	5,676	163		69.3%	18.8%
Nov-69	136,077	15,496	19,253	57,243	4,038	1,988	32,857	4,324	878		67.6%	24.1%
Dec-69	77,649	17,170	23,183	10,404	4,566	1,832	13,808	5,059	754	873	65.4%	17.8%
Jan-70	94,107	19,145	16,943	22,934	6,827	655	20,655	5,764	780	404	62.7%	21.9%
Feb-70	81,496	20,864	22,943	16,743	4,297	471	6,047	7,114	904	2,113	74.3%	7.4%
Mar-70	76,324	14,174	23,161	17,542	3,490	1,150	8,201	8,329	277		71.9%	10.7%
Apr-70	76,210	13,869	28,611	11,508	3,806	873	8,299	8,795	449		70.8%	10.9%
May-70	108,225	16,994	58,271	6,350	4,781	488	4,623	6,900	67	9,751	75.4%	4.3%
Jun-70	77,183	8,753	41,550	15,221	6,137	1,417	1,252	2,710	13	130	84.9%	1.6%

Table C-10. 25th Infantry Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	59,518	9,654	6,803	3,940	2,663	382	15,589	3,757	1,457	15,273	34.3%	26.2%
Aug-68	93,625	33,823	17,762	8,037	16,304	802	14,289	2,241		367	63.7%	15.3%
Sep-68	114,759	50,953	17,602	6,104	15,018	4,374	6,909	4,794	8,308	697	65.1%	6.0%
Oct-68	89,397	40,306	12,431	2,017	16,713	4,530	4,852	4,228	4,320		61.2%	5.4%
Nov-68	72,852	40,081	7,414	3,083	11,236	979	2,579	7,085	237	158	69.4%	3.5%
Dec-68	111,829	43,963	25,058	11,898	18,302	1,790	4,399	5,581	838		72.4%	3.9%
Jan-69	127,509	43,329	29,728	17,860	20,451	766	6,677	7,545	1,143	10	71.3%	5.2%
Feb-69	139,048	48,492	24,998	16,549	24,631	2,714	14,078	6,236	943	407	64.8%	10.1%
Mar-69	113,327	42,689	19,993	9,598	19,437	3,584	10,265	5,222	1,659	880	63.8%	9.1%
Apr-69	55,383	18,866	11,819	4,119	8,185	800	5,692	5,078	518	306	62.8%	10.3%
May-69	78,983	27,867	17,687	3,217	10,792	1,144	11,154	6,194	896	32	61.7%	14.1%
Jun-69	67,215	21,341	15,176	4,278	11,179	969	9,976	3,973	319	4	60.7%	14.8%
Jul-69	92,561	25,346	25,250	5,263	18,998	844	10,149	5,984	721	6	60.3%	11.0%
Aug-69	46,945	18,376	10,502	1,255	9,230	257		5,562	1,763		64.2%	0.0%
Sep-69	68,909	26,625	14,911	1,310	6,397	286		8,723	10,657		62.2%	0.0%
Oct-69	73,531	28,456	16,475	3,273	5,823	53		3,039	16,412		65.6%	0.0%
Nov-69	56,732	15,281	16,536	2,274	5,667	312		5,018	8,644	3,000	60.1%	0.0%
Dec-69	57,788	11,070	16,462	549	2,638	521		11,409	15,139		48.6%	0.0%
Jan-70	68,799	15,318	21,272	671	3,099		20	24,984	3,435		54.2%	0.0%
Feb-70	67,673	29,416	24,513	742	5,120	6	63	7,813			80.8%	0.1%
Mar-70	81,888	17,831	34,828	1,121	3,269	508		24,273	58		65.7%	0.0%
Apr-70	90,707	14,399	33,826	3,949	9,871	12	74	26,410	2,166		57.5%	0.1%
May-70	64,929	30,107	20,705	1,299	5,154	139		4,916	2,609		80.3%	0.0%
Jun-70	38,652	17,731	7,056	2,133	3,924	33	841	5,590	1,344		69.6%	2.2%

Table C-11. 3rd Brigade, 82nd Airborne Division as a Separate Brigade

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	24,442	6,179	2,044	434	779	205	6,172	463	1,192	6,974	35.4%	25.3%
Aug-68	22,839	4,524	5,665		3,016		8,034	1,593	7		44.6%	35.2%
Sep-68												
Oct-68	9,027	907	2,594	197	1,616		2,823	371	418	101	41.0%	31.3%
Nov-68	317,003	301,422	7,197		1,113		6,187		1,084		97.4%	2.0%
Dec-68	13,105	814	3,779				6,809	13	1,690		35.0%	52.0%
Jan-69	10,538	944	2,243		524		4,691	1,366	770		30.2%	44.5%
Feb-69	12,897	4,104	3,673		837		2,993	110	1,180		60.3%	23.2%
Mar-69	10,382	2,588	3,536		697		3,037		524		59.0%	29.3%
Apr-69	9,975	859	3,175		820		3,996	918	207		40.4%	40.1%
May-69	18,934	307	8,478	822	852		3,807	4,668			50.7%	20.1%
Jun-69	17,494		5,948	833	1,915		5,788	3,010			38.8%	33.1%
Jul-69	19,400		4,719	582	784		8,255	5,060			27.3%	42.6%
Aug-69	26,453		8,724	136	2,037		9,152	6,404			33.5%	34.6%
Sep-69	29,760		14,487		1,326		9,235	4,712			48.7%	31.0%
Oct-69	23,483	1,088	6,745	363	4,664	614	6,116	3,606	287		34.9%	26.0%
Nov-69	5,165		1,716		1,708		1,331	410			33.2%	25.8%
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-12. 101st Airborne Division as a Major Command

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	54,854	17,642	23,424	566	6,795	88	2,498	2,662	1,129	50	75.9%	4.6%
Aug-68	62,326	16,434	29,264	1,082	5,205	79		8,772	1,450	40	75.1%	0.0%
Sep-68	42,460	12,096	13,039	1,925	4,018		1,232	9,901	249		63.7%	2.9%
Oct-68	34,696	3,849	18,275	461	4,598		43	6,592	878		65.1%	0.1%
Nov-68	60,188	11,713	28,754	1,690	11,736	252	416	5,520	107		70.0%	0.7%
Dec-68	36,758	3,885	21,007	1,010	5,294	19	336	4,966	49	192	70.5%	0.9%
Jan-69	48,275	4,958	29,611	878	3,224	54	54	9,116	380		73.4%	0.1%
Feb-69	33,028	4,035	18,541	1,192	1,394		1,426	5,677	763		72.0%	4.3%
Mar-69	77,520	14,006	45,201	1,087	5,321	19	3,483	7,000	1,403		77.8%	4.5%
Apr-69	61,086	10,052	30,619	180	9,378		1,180	8,547	1,130		66.9%	1.9%
May-69	22,038	3,932	9,051	500	3,277		1,529	2,474	1,240	35	61.2%	6.9%
Jun-69	25,642	6,619	8,720	165	4,816	29	5	4,043	1,245		60.5%	0.0%
Jul-69	25,420	6,700	6,843	530	5,622		75	4,916	718	16	55.4%	0.3%
Aug-69	35,151	8,233	6,026	760	6,515		5,434	7,600	583		42.7%	15.5%
Sep-69	46,836	3,158	25,014	3,520	3,057	77	6,639	4,738	584	49	67.7%	14.2%
Oct-69	32,855	1,025	14,341	5,088	1,953	12	6,606	2,529	555	746	62.3%	20.1%
Nov-69	58,972	1,254	35,271	11,857	2,033	78	3,019	5,060	400		82.0%	5.1%
Dec-69	75,286	147	44,869	10,997	4,505	30	1,741	12,347	650		74.4%	2.3%
Jan-70	94,596	2,006	61,184	9,080	3,080	1,366	1,871	15,966	43		76.4%	2.0%
Feb-70	86,223	3,238	52,413	5,075	7,385		5,767	11,737	38	570	70.4%	6.7%
Mar-70	139,998	3,085	89,187	7,666	7,945		9,416	22,601	98		71.4%	6.7%
Apr-70	147,181	1,141	93,390	13,201	6,028	85	9,323	24,000	13		73.2%	6.3%
May-70	187,231	803	122,119	11,440	8,938		17,064	26,641	226		71.8%	9.1%
Jun-70	165,326	17,836	119,275			1,038	15,799	10,852	526		82.9%	9.6%

Table C-13. 173rd Airborne Brigade as a Separate Brigade

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	11,050	1,629	9,407							14	99.9%	0.0%
Aug-68	14,278	2,250	11,473							555	96.1%	0.0%
Sep-68	13,938	5,479	8,032	427							100.0%	0.0%
Oct-68	10,268	9,623	645								100.0%	0.0%
Nov-68	13,101	354	12,286		461						96.5%	0.0%
Dec-68	18,471		18,471								100.0%	0.0%
Jan-69	16,687	1,324	15,363								100.0%	0.0%
Feb-69	17,330		17,330								100.0%	0.0%
Mar-69	16,131		16,131								100.0%	0.0%
Apr-69	15,944		15,944								100.0%	0.0%
May-69	22,568	1,009	19,963		404					1,192	92.9%	0.0%
Jun-69	16,642		14,928							1,714	89.7%	0.0%
Jul-69	21,019		21,003							16	99.9%	0.0%
Aug-69	17,336		14,333		2,235					768	82.7%	0.0%
Sep-69	15,015	706	12,343		1,779					187	86.9%	0.0%
Oct-69	17,561	1,454	12,794		3,313						81.1%	0.0%
Nov-69	18,870	3,559	15,311								100.0%	0.0%
Dec-69	14,912	1,221	6,331		6,037		1,323				50.6%	8.9%
Jan-70	17,930	1,455	14,621		1,854						89.7%	0.0%
Feb-70	28,939	1,769	27,170								100.0%	0.0%
Mar-70	21,045	2,420	17,560		1,065						94.9%	0.0%
Apr-70	25,387	5,604	19,059						724		97.1%	0.0%
May-70	10,752		10,125							627	94.2%	0.0%
Jun-70												

Table C-14. 199th Infantry Brigade as a Separate Brigade

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	14,068		11	260	6,618		5,507		1,672		1.9%	39.1%
Aug-68	12,607		6		6,727		5,034		840		0.0%	39.9%
Sep-68												
Oct-68												
Nov-68												
Dec-68	928		584		128		98	116	2		62.9%	10.6%
Jan-69	16,915	2,219	6,886	134	3,642		1,820	2,156	58		54.6%	10.8%
Feb-69	21,561	3,490	9,042	356	4,623		1,495	2,477	78		59.8%	6.9%
Mar-69	22,472	3,393	9,099	234	4,328		2,224	2,463	731		56.6%	9.9%
Apr-69	22,522	384	12,707		3,368		1,966	3,877	220		58.1%	8.7%
May-69	28,174	2,776	13,044	472	4,287	164	2,282	4,773	376		57.8%	8.1%
Jun-69	18,311	1,345	7,201	323	2,578	304	2,602	3,845	68	45	48.4%	14.2%
Jul-69	14,165	1,099	3,747	111	1,884	129	3,359	3,704	132		35.0%	23.7%
Aug-69	21,995	2,942	9,801	90	1,670		2,234	4,868	390		58.3%	10.2%
Sep-69	30,817	1,976	18,245	277	1,972	18	1,690	6,321	318		66.5%	5.5%
Oct-69	35,804	2,450	20,906		4,785	100	2,187	5,346	19	11	65.2%	6.1%
Nov-69	51,515	10,429	23,570	86	6,122	456	2,885	7,501	466		66.2%	5.6%
Dec-69	25,953	6,743	7,113	64	4,915	132	1,435	5,139	412		53.6%	5.5%
Jan-70	26,098	3,176	12,499	290	2,190	208	2,984	4,500	251		61.2%	11.4%
Feb-70	27,224	3,719	12,359	120	2,738	48	3,593	3,779	868		59.5%	13.2%
Mar-70	40,975	3,123	19,052		2,726	99	11,065	4,866	44		54.1%	27.0%
Apr-70	40,896	6,648	27,161	11	2,744	144		3,141	1,047		82.7%	0.0%
May-70	33,153	5,976	21,966	127	1,404	111		3,498	71		84.7%	0.0%
Jun-70	43,630	14,015	20,436	159	3,331	105	41	5,484	59		79.3%	0.1%

Table C-15. USARV Artillery Units Not in Divisions or Separate Brigades

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	250,732	59,391	54,736	7,439	26,302	3,113	50,576	9,382	4,165	35,628	48.5%	20.2%
Aug-68	246,586	64,567	73,479	14,758	34,352	5,177	24,945	12,371	4,601	12,336	62.0%	10.1%
Sep-68	264,696	82,880	70,468	6,759	30,981	24,653	31,365	12,601	4,263	726	60.5%	11.8%
Oct-68	239,520	81,894	55,832	2,341	30,686	16,961	36,506	13,234	1,806	260	58.5%	15.2%
Nov-68	244,690	74,196	63,212	9,332	30,017	19,261	33,662	12,782	2,213	15	60.0%	13.8%
Dec-68	279,964	84,352	70,080	7,183	47,088	20,329	40,065	8,981	1,694	192	57.7%	14.3%
Jan-69	305,887	62,751	81,422	6,049	80,404	33,418	25,588	12,166	4,020	69	49.1%	8.4%
Feb-69	331,294	102,408	91,804	5,798	79,292	2,779	27,931	14,304	6,303	675	60.4%	8.4%
Mar-69	350,478	106,327	103,785	24,546	70,461	516	23,208	19,452	1,607	576	67.0%	6.6%
Apr-69	249,117	68,760	67,484	11,587	54,400	265	16,401	21,213	8,686	321	59.3%	6.6%
May-69	320,443	79,005	80,179	12,997	65,313	3,343	33,261	37,984	6,654	1,707	53.7%	10.4%
Jun-69	357,996	65,066	70,852	14,166	103,724	1,218	46,741	51,463	4,049	717	41.9%	13.1%
Jul-69	309,130	75,058	80,788	8,884	71,270	1,969	24,993	36,131	8,883	1,154	53.3%	8.1%
Aug-69	323,169	54,745	103,966	9,476	50,432	2,967	23,846	54,728	22,886	123	52.0%	7.4%
Sep-69	251,084	35,718	74,821	12,186	42,598	1,411	26,296	41,307	16,313	434	48.9%	10.5%
Oct-69	215,951	29,586	70,197	16,433	41,750	617	13,711	33,531	9,849	277	53.8%	6.3%
Nov-69	226,618	19,468	55,203	5,423	68,521	913	11,677	49,107	9,649	6,657	35.3%	5.2%
Dec-69	200,356	16,088	66,272	1,114	58,019	324	8,137	48,712	1,403	287	41.7%	4.1%
Jan-70	179,806	33,573	63,940	4,548	38,766	1,183	20,052	15,988	1,582	174	56.8%	11.2%
Feb-70	143,333	28,817	61,231	2,820	22,159	585	13,814	11,543	2,306	58	64.8%	9.6%
Mar-70	109,321	13,759	53,001	3,894	20,557	716	4,478	11,961	739	216	64.6%	4.1%
Apr-70	90,646	8,468	30,649	6,914	20,324	2,947	5,449	15,732	60	103	50.8%	6.0%
May-70	128,286	42,784	43,606	5,362	24,905	998	5,239	5,074		318	71.5%	4.1%
Jun-70	114,803	38,444	39,105	6,324	21,004	759	3,193	5,311	173	490	73.1%	2.8%

Table C-16. USARV Ammunition Losses

Month	N/A
Jul-68	
Aug-68	
Sep-68	
Oct-68	
Nov-68	57
Dec-68	
Jan-69	4,777
Feb-69	
Mar-69	49,482
Apr-69	
May-69	
Jun-69	
Jul-69	
Aug-69	2,067
Sep-69	
Oct-69	592
Nov-69	1,480
Dec-69	
Jan-70	
Feb-70	
Mar-70	
Apr-70	
May-70	
Jun-70	

Table C-17. 2nd Battalion, 4th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	23,100	343	824				18,323	2,802	808		5.1%	79.3%
Aug-68	28,761	4,838	5,594	4,192		379	10,708	3,050			50.8%	37.2%
Sep-68	17,557	6,668		6,486		173	4,230				74.9%	24.1%
Oct-68	20,978	8,223		11,171			1,584			0	92.4%	7.6%
Nov-68	14,848	6,382	343	6,763	1,360						90.8%	0.0%
Dec-68	19,647	2,953		11,315	5,379						72.6%	0.0%
Jan-69	21,371	642		20,078	651						97.0%	0.0%
Feb-69	18,711	1,909	3,926	10,323	214		423	1,916			86.4%	2.3%
Mar-69	7,986	2,777	2,226	1,526	880			577			81.8%	0.0%
Apr-69	14,365	6,290	2,600	540	3,074			1,861			65.6%	0.0%
May-69	11,436	4,643	1,829	2,027	2,492			445			74.3%	0.0%
Jun-69	12,969	2,939	3,200	1,514	3,393			1,899		24	59.0%	0.0%
Jul-69	19,489	7,071	4,132	803	4,585		64	2,834			61.6%	0.3%
Aug-69	23,929	7,179	3,439	1,267	7,674		176	4,194			49.7%	0.7%
Sep-69	27,198	10,456	6,612	1,353	4,118		593	4,066			67.7%	2.2%
Oct-69	25,085	6,001	6,643	200	5,881		471	5,627	262		51.2%	1.9%
Nov-69	30,580	9,025	12,844	74	5,282		1,481	1,839		35	71.8%	4.8%
Dec-69	27,983	9,560	8,959	123	5,609	92	1,397	2,243			66.6%	5.0%
Jan-70	31,980	16,830	9,140	12	4,870			1,128			81.2%	0.0%
Feb-70	26,951	12,264	8,945	747	4,003		96	896			81.5%	0.4%
Mar-70	34,372	13,434	14,793		4,923			1,222			82.1%	0.0%
Apr-70	19,536	6,989	8,519		3,340			688			79.4%	0.0%
May-70	14,671	6,664	6,309		1,043			486		169	88.4%	0.0%
Jun-70	17,710	6,306	2,749		4,769			3,718	84	84	51.1%	0.0%

Table C-18. 5th Battalion, 4th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68	9,461	1,442	8,019								100.0%	0.0%
Nov-68	6,984		6,984								100.0%	0.0%
Dec-68	9,552	8,533	1,019								100.0%	0.0%
Jan-69	18,894	14,897	2,810				1,187				93.7%	6.3%
Feb-69	13,228	12,280	948								100.0%	0.0%
Mar-69	21,280	14,018	7,262								100.0%	0.0%
Apr-69	14,019	1,998	11,056	514			451				96.8%	3.2%
May-69	19,612	15,799	2,933							880	95.5%	0.0%
Jun-69	15,478	9,235	6,243								100.0%	0.0%
Jul-69	17,830	11,474	6,356								100.0%	0.0%
Aug-69	16,481	11,310	5,171								100.0%	0.0%
Sep-69	19,440	11,438	8,002								100.0%	0.0%
Oct-69	18,926	17,924	1,002								100.0%	0.0%
Nov-69	26,694	7,078	19,616								100.0%	0.0%
Dec-69	22,616	11,718	10,898								100.0%	0.0%
Jan-70	18,017	1,792	16,225								100.0%	0.0%
Feb-70	22,215	12,094	9,048	1,073							100.0%	0.0%
Mar-70	27,977	16,431	9,322						573	1,651	92.1%	0.0%
Apr-70	34,211	13,902	20,309								100.0%	0.0%
May-70	32,863	17,189	14,571							1,103	96.6%	0.0%
Jun-70	37,451	37,451									100.0%	0.0%

Table C-19. 8th Battalion, 4th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	7,221	1,596	3,787	1,681				157			97.8%	0.0%
Aug-68	5,160	2,967	2,193								100.0%	0.0%
Sep-68	4,443	3,589	854								100.0%	0.0%
Oct-68	5,115	3,867	1,248								100.0%	0.0%
Nov-68	2,305	1,272	1,033								100.0%	0.0%
Dec-68	4,022	4,022									100.0%	0.0%
Jan-69	4,300	4,022	278								100.0%	0.0%
Feb-69	5,238	4,582	656								100.0%	0.0%
Mar-69	8,741	2,080	6,661								100.0%	0.0%
Apr-69	5,661	4,445	1,216								100.0%	0.0%
May-69	5,610	4,110	139				1,074	287			75.7%	19.1%
Jun-69	8,227	8,052	175								100.0%	0.0%
Jul-69	8,783	8,484	299								100.0%	0.0%
Aug-69	11,891		11,114					777			93.5%	0.0%
Sep-69	7,491	1,774				892	453	4,372			23.7%	6.0%
Oct-69	5,819	1,667	1,316					2,836			51.3%	0.0%
Nov-69	11,949	1,193						10,756			10.0%	0.0%
Dec-69	10,497	953	1,376		325	227		7,616			22.2%	0.0%
Jan-70	10,597	6,950	442		826			2,026	353		69.8%	0.0%
Feb-70	12,675	6,160	607		1,481			2,525	1,902		53.4%	0.0%
Mar-70	10,326	3,608	2,390		956			3,372			58.1%	0.0%
Apr-70	12,255	2,036	2,333	1,027	1,159			5,700			44.0%	0.0%
May-70	20,923	17,326	2,536					1,061			94.9%	0.0%
Jun-70	16,998	15,691	1,307								100.0%	0.0%

Table C-20. 1st Battalion, 5th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	20,263		1,146				19,117				5.7%	94.3%
Aug-68	26,221						26,221				0.0%	100.0%
Sep-68	29,851						29,851				0.0%	100.0%
Oct-68	29,712						29,117		595		0.0%	98.0%
Nov-68	30,868	3,963	5,197	611	3,193	842	14,209	2,810	43		31.7%	46.0%
Dec-68	18,335	3,880	5,508	36	2,434		2,464	3,815	198		51.4%	13.4%
Jan-69	17,721	3,879	4,220	41	1,803		2,486	5,213	79		45.9%	14.0%
Feb-69	12,856	1,032	5,364	474	2,168	124	815	2,736	143		53.4%	6.3%
Mar-69	14,366	2,126	6,225	881	1,074	323	343	3,245	125	24	64.3%	2.4%
Apr-69	9,900	2,113	3,590	191	1,097	582	36	2,255	36		59.5%	0.4%
May-69	15,564	2,902	7,962	1,007	1,099	1,155	14	1,364	61		76.3%	0.1%
Jun-69	9,759	1,359	5,613	410	370	138	343	1,468	58		75.6%	3.5%
Jul-69	17,466	2,809	9,065	792	1,279		2	3,203	316		72.5%	0.0%
Aug-69	22,808	2,260	15,203	937	410	35		3,866	97		80.7%	0.0%
Sep-69	26,874	654	17,062	1,477	2,456			4,965	260		71.4%	0.0%
Oct-69	28,279	2,247	16,428	790	5,455	39	87	3,030	203		68.8%	0.3%
Nov-69	21,657	3,678	8,518	497	6,406	137		2,356	65		58.6%	0.0%
Dec-69	15,055	1,782	5,826	433	2,369			4,398	212	35	53.4%	0.0%
Jan-70	15,113	1,092	7,812	130	3,389	364		1,989	337		59.8%	0.0%
Feb-70	7,076	412	2,598	624	2,069	45	90	1,173	65		51.4%	1.3%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-21. 3rd Battalion, 6th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	4,251		1,084	72	413		526	1,030	1,126		27.2%	12.4%
Aug-68	4,760	1,023	691	435	504		1,264	627	181	35	45.1%	26.6%
Sep-68	6,978	1,957	1,707	69	158		1,371	1,377	301	38	53.5%	19.6%
Oct-68	4,076		1,736	20	136		426	1,346	412		43.1%	10.5%
Nov-68	2,930		823	81			248	1,560	218		30.9%	8.5%
Dec-68	5,174	93	2,266	501	109		94	1,895	177	39	55.3%	1.8%
Jan-69	7,829	375	946	108			1,576	4,632	192		18.3%	20.1%
Feb-69	9,099	1,566	2,499	155	84		690	4,034	71		46.4%	7.6%
Mar-69	13,078	1,372	1,913	1,125	363		2,031	5,835	439		33.7%	15.5%
Apr-69	6,966	987	1,513	195	178		1,192	2,806	90	5	38.7%	17.1%
May-69	19,390	47	641	179	30		2,304	16,071	118		4.5%	11.9%
Jun-69	15,382	1,439	1,136	920	183		2,096	9,424	169	15	22.7%	13.6%
Jul-69	1,875	128	58		24		140	1,525			9.9%	7.5%
Aug-69	10,252	667	632	305	131		386	7,976	155		15.6%	3.8%
Sep-69	6,447	18	436	203	98		238	5,378	76		10.2%	3.7%
Oct-69	8,024	340	2,075		335			5,257	17		30.1%	0.0%
Nov-69	10,147	298	2,214	10	173			7,366	86		24.9%	0.0%
Dec-69	6,150	43	1,626					4,367	114		27.1%	0.0%
Jan-70	1,231		339					879	13		27.5%	0.0%
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-22. 8th Battalion, 6th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	30,831	4,874	4,234		440		21,283				29.5%	69.0%
Aug-68	21,228	7,460	5,919	355	1,575		5,919				64.7%	27.9%
Sep-68	18,899	6,932	5,560	38	1,396	4	4,969				66.3%	26.3%
Oct-68	20,339	7,167	5,280	761	1,874		5,257				64.9%	25.8%
Nov-68	19,173	6,679	4,719	116	2,098		5,561				60.1%	29.0%
Dec-68	18,955	3,281	6,170		2,269	332	4,993	1,910			49.9%	26.3%
Jan-69	15,871	2,585	6,095	727	1,157	129	3,435	1,730	13		59.3%	21.6%
Feb-69	15,545	2,995	6,363	879	1,457	570	1,772	1,509			65.9%	11.4%
Mar-69	14,150	2,139	8,464	609	696	55	588	1,583		16	79.2%	4.2%
Apr-69	16,886	1,616	12,108	77	496		101	2,436		52	81.7%	0.6%
May-69	20,978	4,357	12,517	755	779	42	374	2,154			84.0%	1.8%
Jun-69	12,323	1,864	6,286	481	1,204		340	2,148			70.0%	2.8%
Jul-69	14,379	2,966	6,716	237	1,047	338	43	3,032			69.0%	0.3%
Aug-69	15,088	2,189	8,167	462	1,475	519	135	1,926		215	71.7%	0.9%
Sep-69	15,687	2,322	9,509	456	1,626	194	27	1,553			78.3%	0.2%
Oct-69	19,995	3,032	13,406	452	1,701	26		1,336	42		84.5%	0.0%
Nov-69	14,711	4,079	7,942	75	845	201		1,493	64	12	82.2%	0.0%
Dec-69	26,061	4,679	16,361	382	1,781	174	14	2,505	165		82.2%	0.1%
Jan-70	15,062	3,635	7,830	167	991	89	145	1,930	275		77.2%	1.0%
Feb-70	14,422	3,005	8,478	250	330	119	64	1,930	100	146	81.4%	0.4%
Mar-70	2,238	304	1,378	118	260	17		161			80.4%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-23. 1st Battalion, 7th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	17,686	5,454				43	11,406		783		30.8%	64.5%
Aug-68	15,130	2,848	2,247		21	201	8,445	658	710		33.7%	55.8%
Sep-68	18,434	2,193	8,605	274	3,095	153	1,186	2,482	446		60.1%	6.4%
Oct-68	26,004	8,065	8,596	469	3,877	317	1,689	2,991			65.9%	6.5%
Nov-68	15,493	1,662	6,825	902	2,394	358	558	2,792	2		60.6%	3.6%
Dec-68	17,423	1,250	8,038	277	2,486	39	1,010	4,323			54.9%	5.8%
Jan-69	18,470	1,617	6,897	1,065	2,780	155	741	5,211	4		51.9%	4.0%
Feb-69	20,289	3,517	7,547	1,379	3,435		649	3,762			61.3%	3.2%
Mar-69	18,960	3,198	8,332	3,377	1,357		95	2,601			78.6%	0.5%
Apr-69	14,650	2,080	9,651	495	569			1,853	2		83.5%	0.0%
May-69	15,100	1,037	9,043	1,516	582	36	719	2,165	2		76.8%	4.8%
Jun-69	10,825	2,343	5,748	1,081	614		64	975			84.7%	0.6%
Jul-69	10,128	468	5,926				358	3,376			63.1%	3.5%
Aug-69	13,078	1,839	4,885	1,609				4,745			63.7%	0.0%
Sep-69	15,687	2,144	1,684		692			10,552	615		24.4%	0.0%
Oct-69	12,400	1,786	2,030					5,991	2,593		30.8%	0.0%
Nov-69	14,725	1,699	3,061					9,965			32.3%	0.0%
Dec-69	15,707	2,551	5,516		637			7,003			51.4%	0.0%
Jan-70	15,652	655	11,979	162	809		540	1,507			81.8%	3.5%
Feb-70	22,734	1,047	18,896	112	661	128	264	1,626			88.2%	1.2%
Mar-70	1,138		1,138								100.0%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-24. 1st Battalion, 8th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	12,389	3,964					4,066	212		4,147	32.0%	32.8%
Aug-68	25,889	12,694	1,745	50	5,904	11	5,255	133		97	56.0%	20.3%
Sep-68	24,028	6,780	2,075	1,215	5,053	70	2,895	688	5,252		41.9%	12.0%
Oct-68	21,261	5,897	1,489	637	5,894	150	1,851	1,863	3,480		37.7%	8.7%
Nov-68	16,963	6,476	900	1,345	4,270	40	173	3,452	149	158	51.4%	1.0%
Dec-68	27,647	12,962	5,732	2,610	2,862	199	1,143	1,825	314		77.1%	4.1%
Jan-69	35,460	13,015	3,545	5,290	5,843	137	3,885	3,260	485		61.6%	11.0%
Feb-69	37,532	12,862	4,824	3,076	7,317	212	7,755	1,413	73		55.3%	20.7%
Mar-69	27,227	10,756	4,143	2,128	3,789	12	4,221	1,600	9	569	62.5%	15.5%
Apr-69	15,024	5,609	2,187	1,728	2,220		2,069	1,141		70	63.4%	13.8%
May-69	18,338	7,785	2,787	250	2,593	94	2,784	2,045			59.0%	15.2%
Jun-69	18,499	5,757	6,024	666	3,048		2,328	676			67.3%	12.6%
Jul-69	27,162	6,779	8,730	2,298	5,170	226	2,345	1,614			65.6%	8.6%
Aug-69	9,280	2,291	2,814	452	2,141			1,582			59.9%	0.0%
Sep-69	38,393	15,327	13,702	369	4,689	20		4,286			76.6%	0.0%
Oct-69	29,792	8,847	13,353	1,914	3,371			2,174	133		80.9%	0.0%
Nov-69	24,036	4,113	13,111	1,551	2,609	192		2,314	146		78.1%	0.0%
Dec-69	17,985	2,669	11,600		474	494		2,748			79.3%	0.0%
Jan-70	23,008	4,307	15,266		72			3,363			85.1%	0.0%
Feb-70	18,781	5,867	9,446	427	64	6	48	2,923			83.8%	0.3%
Mar-70	16,822	3,186	8,922					4,714			72.0%	0.0%
Apr-70	22,008	2,918	8,383	168	6,074			4,465			52.1%	0.0%
May-70												
Jun-70												

Table C-25. 2nd Battalion, 9th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	2,807	317	441		628	60	242	983	136		27.0%	8.6%
Aug-68	6,863	2,627	2,133	146	822		72	965	98		71.5%	1.0%
Sep-68	11,266	4,084	3,859	301	1,579		478	906	59		73.2%	4.2%
Oct-68	7,688	2,163	3,118	366	416		155	1,424	46		73.5%	2.0%
Nov-68	10,738	939	6,762	944	282			1,664	64	83	80.5%	0.0%
Dec-68	6,688	1,823	3,265	593	578		342	72	4	11	84.9%	5.1%
Jan-69	8,942	742	2,360	175	669		3,392	1,396	208		36.6%	37.9%
Feb-69	15,696	3,012	6,883	1,013	1,209		2,568	1,007	4		69.5%	16.4%
Mar-69	23,461	9,260	7,866	979	4,122		156	1,051	27		77.2%	0.7%
Apr-69	4,637	1,889	1,907		436	16	12	370	7		81.9%	0.3%
May-69	6,197	683	3,314	1,159	215		50	725	51		83.2%	0.8%
Jun-69	6,203	485	3,915	528	70			1,140	65		79.4%	0.0%
Jul-69	8,530	1,413	5,515	114	285	21	9	886	61	226	82.6%	0.1%
Aug-69	13,634	1,470	9,255	725	1,067			906	211		84.0%	0.0%
Sep-69	10,114	862	7,390	181	503		6	978	194		83.4%	0.1%
Oct-69	6,210	1,016	4,378		258			449	109		86.9%	0.0%
Nov-69	10,949	1,302	7,983	141	360		328	835			86.1%	3.0%
Dec-69	6,724	817	4,979		6		451	232	239		86.2%	6.7%
Jan-70	1,277	35	1,031				43	168			83.5%	3.4%
Feb-70	151		16					135			10.6%	0.0%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-26. 7th Battalion, 8th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	7,868	1,468	334			274	5,792				22.9%	73.6%
Aug-68	5,013	1,881	2,011				662			459	77.6%	13.2%
Sep-68	6,200	1,009	4,912				279				95.5%	4.5%
Oct-68	5,585	1,413	4,172								100.0%	0.0%
Nov-68	6,625	2,655	3,970								100.0%	0.0%
Dec-68	6,948	1,131	5,575		242						96.5%	0.0%
Jan-69	6,843	591	6,070				182				97.3%	2.7%
Feb-69	6,624	4,940	1,684								100.0%	0.0%
Mar-69	8,121	6,614	979	200			328				96.0%	4.0%
Apr-69	7,343	6,982	361								100.0%	0.0%
May-69	10,850	10,112	738								100.0%	0.0%
Jun-69	9,404	1,264	1,361	364			5,962	453			31.8%	63.4%
Jul-69	7,561						6,896			665	0.0%	91.2%
Aug-69	10,639					1,634	9,005				0.0%	84.6%
Sep-69	6,218				220	475	5,523				0.0%	88.8%
Oct-69	5,059				394	405	4,257			3	0.0%	84.1%
Nov-69	4,757				164	69	4,524				0.0%	95.1%
Dec-69	3,794						3,794				0.0%	100.0%
Jan-70	2,492						2,492				0.0%	100.0%
Feb-70	3,450						3,450				0.0%	100.0%
Mar-70	3,933						3,933				0.0%	100.0%
Apr-70	4,862						4,759			103	0.0%	97.9%
May-70	5,182						5,126			56	0.0%	98.9%
Jun-70	3,173						3,173				0.0%	100.0%

Table C-27. 2nd Battalion, 9th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	2,807	317	441		628	60	242	983	136		27.0%	8.6%
Aug-68	6,863	2,627	2,133	146	822		72	965	98		71.5%	1.0%
Sep-68	11,266	4,084	3,859	301	1,579		478	906	59		73.2%	4.2%
Oct-68	7,688	2,163	3,118	366	416		155	1,424	46		73.5%	2.0%
Nov-68	10,738	939	6,762	944	282			1,664	64	83	80.5%	0.0%
Dec-68	6,688	1,823	3,265	593	578		342	72	4	11	84.9%	5.1%
Jan-69	8,942	742	2,360	175	669		3,392	1,396	208		36.6%	37.9%
Feb-69	15,696	3,012	6,883	1,013	1,209		2,568	1,007	4		69.5%	16.4%
Mar-69	23,461	9,260	7,866	979	4,122		156	1,051	27		77.2%	0.7%
Apr-69	4,637	1,889	1,907		436	16	12	370	7		81.9%	0.3%
May-69	6,197	683	3,314	1,159	215		50	725	51		83.2%	0.8%
Jun-69	6,203	485	3,915	528	70			1,140	65		79.4%	0.0%
Jul-69	8,530	1,413	5,515	114	285	21	9	886	61	226	82.6%	0.1%
Aug-69	13,634	1,470	9,255	725	1,067			906	211		84.0%	0.0%
Sep-69	10,114	862	7,390	181	503		6	978	194		83.4%	0.1%
Oct-69	6,210	1,016	4,378		258			449	109		86.9%	0.0%
Nov-69	10,949	1,302	7,983	141	360		328	835			86.1%	3.0%
Dec-69	6,724	817	4,979		6		451	232	239		86.2%	6.7%
Jan-70	1,277	35	1,031				43	168			83.5%	3.4%
Feb-70	151		16					135			10.6%	0.0%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-28. 7th Battalion, 9th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	12,261	635	2,409	192	453	312	6,687	1,197		376	26.4%	54.5%
Aug-68	13,103	1,039	7,295	687	287	1,617	540	1,616		22	68.8%	4.1%
Sep-68	12,942	712	4,150	284	78	6,652	280	778		8	39.8%	2.2%
Oct-68	12,217	1,246	7,055	376	54	1,941	464	1,045	36		71.0%	3.8%
Nov-68	14,620	866	8,989	202	628	2,866	162	813	79	15	68.8%	1.1%
Dec-68	15,226	576	11,038	457		2,056	158	851	10	80	79.3%	1.0%
Jan-69	16,013	923	12,816	52	347	1,215	67	593			86.1%	0.4%
Feb-69	15,705	912	13,962	320	12		54	440	5		96.7%	0.3%
Mar-69	19,476	2,662	12,112	408	202		3,264	828			78.0%	16.8%
Apr-69	16,429	1,023	7,872	236	286		6,030	982			55.6%	36.7%
May-69	22,307	1,947	11,083	576	863		6,877	961			61.0%	30.8%
Jun-69	19,259	891	15,424	408	303			1,295	913	25	86.8%	0.0%
Jul-69	19,654	545	15,477	203	236			2,080	1,103	10	82.6%	0.0%
Aug-69	30,350	7,025	13,441	318	3,405		2,060	2,937	1,095	69	68.5%	6.8%
Sep-69	33,220	8,453	17,876	1,443	1,872		84	2,288	1,204		83.6%	0.3%
Oct-69	30,228	4,217	18,269	447	4,531		74	1,981	498	211	75.9%	0.2%
Nov-69	18,982	2,430	7,189	1,053	4,023			1,893	2,394		56.2%	0.0%
Dec-69	18,991	1,746	9,800	226	3,342		33	3,138	706		62.0%	0.2%
Jan-70	18,077	453	3,739	928	4,017		5,941	1,796	1,203		28.3%	32.9%
Feb-70	11,780	474	5,962	163	2,009		10	3,080	82		56.0%	0.1%
Mar-70	1,207	63	792					352			70.8%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-29. 1st Battalion, 11th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	19,449	10,746		4,753	2,007		1,943				79.7%	10.0%
Aug-68	29,177	7,847	13,068	3,850	979	451	1,366	1,228	16	372	84.9%	4.7%
Sep-68	22,810	5,708	12,304	652	989	154	625	2,294	6	78	81.8%	2.7%
Oct-68	22,784	5,541	11,483	1,435	2,283	107	667	1,181	35	52	81.0%	2.9%
Nov-68	19,060	4,258	10,235	2,040	743	8	725	1,018	33		86.7%	3.8%
Dec-68	12,355	4,888	4,197	1,710	559	70	134	797			87.4%	1.1%
Jan-69	24,281	8,229	8,160	1,809	2,165	207	1,010	2,686	15		74.9%	4.2%
Feb-69	16,387	3,097	7,469	1,837	1,029	458	292	2,205			75.7%	1.8%
Mar-69	12,671	4,522	2,738	984	745	438	632	2,599	13		65.1%	5.0%
Apr-69	20,158	7,278	4,754	2,087	703	446	1,262	3,599	29		70.0%	6.3%
May-69	19,971	6,921	3,507	1,151	1,906	451	1,049	4,833	119	34	58.0%	5.3%
Jun-69	25,348	5,563	6,261	917	3,431	1,040	2,033	5,925	160	18	50.3%	8.0%
Jul-69	20,890	4,577	6,348	1,773	1,334	550	665	5,479	164		60.8%	3.2%
Aug-69	2,031	135	540	640		18	58	640			64.7%	2.9%
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-30. 2nd Battalion, 11th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	12,590	2,847	2,370	148	1,672	6	4,836	478	136	97	42.6%	38.4%
Aug-68	12,397	3,844	1,518	1,007	2,753	180	2,538	557			51.4%	20.5%
Sep-68	7,354	1,826	1,864	260	1,652		923	829			53.7%	12.6%
Oct-68	14,777	5,568	4,170	80	4,959						66.4%	0.0%
Nov-68	14,648	4,301	7,191		2,937			219			78.5%	0.0%
Dec-68												
Jan-69	9,777	663	8,006		416			684	8		88.7%	0.0%
Feb-69	7,967	1,034	2,935	884	503		1,044	1,406	161		60.9%	13.1%
Mar-69	11,840	1,520	5,795	542	748		513	2,538	184		66.4%	4.3%
Apr-69	4,877	1,427	1,708	180	606		16	940			68.0%	0.3%
May-69	3,359	505	1,032		819		85	617	301		45.8%	2.5%
Jun-69	7,874	1,334	2,996		2,015			1,460	69		55.0%	0.0%
Jul-69	14,833	3,929	3,467	88	3,761			3,429	159		50.5%	0.0%
Aug-69	15,691	3,039	2,342	719	3,489		1,000	4,976	126		38.9%	6.4%
Sep-69	10,019	1,022	1,343	1,187	1,269		2,912	1,721	565		35.5%	29.1%
Oct-69	8,493	245	1,755	160	170		5,729	142	292		25.4%	67.5%
Nov-69	9,270	476	1,893	522	519		2,714	2,819	327		31.2%	29.3%
Dec-69	13,346		548	673	1,538		393	9,647	547		9.1%	2.9%
Jan-70	15,090					1,360	1,003	12,727			0.0%	6.6%
Feb-70	13,305						5,723	7,582			0.0%	43.0%
Mar-70	20,857						9,160	11,697			0.0%	43.9%
Apr-70	22,829						9,243	13,586			0.0%	40.5%
May-70	31,735						17,064	14,671			0.0%	53.8%
Jun-70	27,689					1,038	15,799	10,852			0.0%	57.1%

Table C-31. 6th Battalion, 11th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	13,887	4,377	2,377	2,572	342		4,075	144			67.2%	29.3%
Aug-68	19,198	1,699	2,240	7,130	1,734	128	5,565	702			57.7%	29.0%
Sep-68	6,802	143		4,142	276		2,241				63.0%	32.9%
Oct-68	8,682			4,913			3,769				56.6%	43.4%
Nov-68	16,546			8,151			8,265	125	5		49.3%	50.0%
Dec-68	20,602			3,721			16,881				18.1%	81.9%
Jan-69	24,940			6,326		232	18,382				25.4%	73.7%
Feb-69	14,930			3,515		538	10,877				23.5%	72.9%
Mar-69	17,314			4,735			12,579				27.3%	72.7%
Apr-69	21,124			5,808	326		14,990				27.5%	71.0%
May-69	24,033			7,751	713	743	14,211	615			32.3%	59.1%
Jun-69	36,694			12,663			23,837			194	34.5%	65.0%
Jul-69	14,915			10,749			4,166				72.1%	27.9%
Aug-69	39,134			29,626			9,508				75.7%	24.3%
Sep-69	54,035			31,048			22,987				57.5%	42.5%
Oct-69	41,157			22,970			18,187				55.8%	44.2%
Nov-69	85,695			56,619			29,076				66.1%	33.9%
Dec-69	18,634			10,113			7,661			860	54.3%	41.1%
Jan-70	36,903			22,123			14,645			135	59.9%	39.7%
Feb-70	17,613			15,704	271		1,638				89.2%	9.3%
Mar-70	17,703			17,324	379						97.9%	0.0%
Apr-70	10,676			10,676							100.0%	0.0%
May-70	3,995						3,995				0.0%	100.0%
Jun-70	18,382		322	14,523	1,428	857	1,252				80.8%	6.8%

Table C-32. 7th Battalion, 11th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	16,982	2,895	453			121	7,928	726	743	4,116	19.7%	46.7%
Aug-68	34,419	12,421	6,729	4,019	3,970	143	5,466	1,401		270	67.3%	15.9%
Sep-68	48,285	23,398	7,641	4,108	4,254	1,228	1,212	3,388	3,056		72.8%	2.5%
Oct-68	26,909	13,217	3,990	30	6,602	848	573	901	748		64.1%	2.1%
Nov-68	14,332	6,711	2,487	216	3,210	40	625	1,043			65.7%	4.4%
Dec-68	25,793	10,800	6,506	3,162	4,241	411	84	589			79.4%	0.3%
Jan-69	24,975	11,782	6,882	1,824	3,436	121	50	815	55	10	82.0%	0.2%
Feb-69	34,245	14,875	5,572	4,621	6,811	598	381	966	14	407	73.2%	1.1%
Mar-69	26,985	10,694	4,715	2,013	7,101	996	40	907	508	11	64.6%	0.1%
Apr-69	11,836	3,138	3,484	1,032	2,042	126	1,233	554	227		64.7%	10.4%
May-69	23,714	4,951	9,393	1,021	3,870	451	2,808	1,006	201	13	64.8%	11.8%
Jun-69	22,104	4,477	5,599	2,499	4,611	738	3,265	780	135		56.9%	14.8%
Jul-69	31,081	9,611	9,106	1,390	6,958	5	3,308	608	95		64.7%	10.6%
Aug-69	2,060	422	679		767			192			53.4%	0.0%
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70	1,386	89	901		297		20	79			71.4%	1.4%
Feb-70	16,071	6,171	5,703	271	3,105			821			75.6%	0.0%
Mar-70	26,073	4,460	16,813	395	2,339			2,008	58		83.1%	0.0%
Apr-70	31,808	3,227	19,367	2,531	3,143	12	74	2,607	847		79.0%	0.2%
May-70	24,631	6,630	7,847	758	3,783	139		2,865	2,609		61.9%	0.0%
Jun-70	16,749	3,306	3,752	1,780	3,368	33	841	2,325	1,344		52.8%	5.0%

Table C-33. 2nd Battalion, 12th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68												
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69												
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69	6,752				6,752						0.0%	0.0%
Oct-69	8,650				8,650						0.0%	0.0%
Nov-69	21,442				21,442						0.0%	0.0%
Dec-69	10,851				10,849						0.0%	0.0%
Jan-70	12,150				12,150						0.0%	0.0%
Feb-70	9,556				9,556						0.0%	0.0%
Mar-70	15,940				15,940						0.0%	0.0%
Apr-70	13,840				13,840						0.0%	0.0%
May-70	20,918				20,918						0.0%	0.0%
Jun-70	17,676				17,676						0.0%	0.0%

Table C-34. 2nd Battalion, 13th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	19,594				19,594						0.0%	0.0%
Aug-68	22,551				22,551						0.0%	0.0%
Sep-68	22,015			1,700	18,707	424	1,184				7.7%	5.4%
Oct-68	17,051				17,051						0.0%	0.0%
Nov-68	13,496				11,657		1,839				0.0%	13.6%
Dec-68	20,089				20,089						0.0%	0.0%
Jan-69	26,425				26,425						0.0%	0.0%
Feb-69	24,974		704		24,270						2.8%	0.0%
Mar-69	19,547	641	6,740		10,849		1,317				37.8%	6.7%
Apr-69	10,999				10,999						0.0%	0.0%
May-69	16,908				16,908						0.0%	0.0%
Jun-69	19,654				19,654						0.0%	0.0%
Jul-69	11,896				11,896						0.0%	0.0%
Aug-69	17,689				17,689						0.0%	0.0%
Sep-69	17,476				17,476						0.0%	0.0%
Oct-69	15,289				15,289						0.0%	0.0%
Nov-69	36,349				36,349						0.0%	0.0%
Dec-69	32,629				32,629						0.0%	0.0%
Jan-70	15,287				15,287						0.0%	0.0%
Feb-70	4,873				4,873						0.0%	0.0%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-35. 3rd Battalion, 13th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	19,674	2,415	4,037	3,940	2,663	261	3,583	2,775			52.8%	18.2%
Aug-68	19,401	2,047	4,138	3,968	4,325	648	3,568	707			52.3%	18.4%
Sep-68	21,130	5,936	3,596	461	5,232	3,076	2,111	718			47.3%	10.0%
Oct-68	19,320	6,506	2,754	668	2,872	3,307	2,066	1,146	1		51.4%	10.7%
Nov-68	16,686	5,402	2,410	875	3,504	899	1,781	1,739	76		52.1%	10.7%
Dec-68	27,409	10,748	4,973	3,044	3,378	956	2,625	1,620	65		68.5%	9.6%
Jan-69	27,556	6,649	7,461	6,188	2,594	355	2,302	1,898	109		73.7%	8.4%
Feb-69	27,786	9,950	3,872	3,229	4,356	792	3,293	2,165	129		61.4%	11.9%
Mar-69	23,240	9,838	3,017	1,804	2,631	1,255	3,062	1,559	74		63.1%	13.2%
Apr-69	11,887	4,829	1,496	538	1,517	393	1,384	1,714	16		57.7%	11.6%
May-69	11,920	4,330	1,260	380	2,333	283	1,994	1,229	92	19	50.1%	16.7%
Jun-69	11,222	3,784	1,727	434	1,956	206	1,919	1,120	72	4	53.0%	17.1%
Jul-69	19,154	5,465	3,549	1,326	3,926	279	2,376	2,169	64		54.0%	12.4%
Aug-69	11,318	6,184	856	34	2,749	239		1,248	8		62.5%	0.0%
Sep-69	14,891	10,677	1,209	147	1,708	266		879	5		80.8%	0.0%
Oct-69	16,769	10,767	1,273	1,359	2,452	53		865			79.9%	0.0%
Nov-69	15,825	8,661	1,868	723	3,058	120		1,395			71.1%	0.0%
Dec-69	16,982	8,231	3,544	549	2,164	27		2,431	36		72.6%	0.0%
Jan-70	20,444	10,922	3,819	671	2,730			2,273	29		75.4%	0.0%
Feb-70	13,541	6,764	2,922	44	1,239		15	2,557			71.9%	0.1%
Mar-70	15,400	5,908	4,605	726	930			3,231			73.0%	0.0%
Apr-70	15,596	7,460	2,567	1,250	654			3,665			72.3%	0.0%
May-70	12,585	5,683	2,995	541	1,371			1,995			73.3%	0.0%
Jun-70	11,921	6,687	1,060	353	556			3,265			67.9%	0.0%

Table C-36. 7th Battalion, 13th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	17,898	7,928	3,766	130	888	1,039	2,421	1,061	665		66.1%	13.5%
Aug-68	21,112	4,911	1,838	84	636	103	7,307	4,030	1,129	1,074	32.4%	34.6%
Sep-68	15,813	8,486	3,221		612	110	1,624		1,760		74.0%	10.3%
Oct-68	10,112	5,643	492	439	856	40	1,594	36	757	255	65.0%	15.8%
Nov-68	8,355	3,403	789	730	69	266	1,939	100	1,059		58.9%	23.2%
Dec-68	8,318	1,008	1,368	98	420	2,077	2,648		627	72	29.7%	31.8%
Jan-69	12,063	2,276	1,278			54	5,842		2,552	61	29.5%	48.4%
Feb-69	12,088	2,332	1,331		357	608	2,371	857	4,148	84	30.3%	19.6%
Mar-69	7,568	955	1,305	66	438		2,791	1,453	542	18	30.7%	36.9%
Apr-69	8,355	287	1,070	352	133	78	4,245	1,929	173	88	20.5%	50.8%
May-69	10,264	3,730	2,723	205		27	2,557	868	154		64.9%	24.9%
Jun-69	7,335	3,107	1,417		805	316	1,116	502	72		61.7%	15.2%
Jul-69	3,352	320	1,671		8		948	405			59.4%	28.3%
Aug-69	9,919	1,297	2,706	418	2,197	8	2,226	1,067			44.6%	22.4%
Sep-69	10,761	496	2,185	1,065	4,459		353	1,663	106	434	34.8%	3.3%
Oct-69	9,835	1,300	1,299		6,280	15	70	657	214		26.4%	0.7%
Nov-69	1,697	1,034	260				266	137			76.3%	15.7%
Dec-69	1,311	42	313		788			168			27.1%	0.0%
Jan-70												
Feb-70												
Mar-70	1,610	146	667		524			273			50.5%	0.0%
Apr-70	4,110	218	50		3,773			69			6.5%	0.0%
May-70	4,656	959	23		2,914	518		140		102	21.1%	0.0%
Jun-70	3,500	447	128		2,421	280		224			16.4%	0.0%

Table C-37. 1st Battalion, 14th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	16,258	2,630	2,645		4		3,740	12	276	6,951	32.4%	23.0%
Aug-68	23,131	1,492	10,610	216	412		10,296		105		53.3%	44.5%
Sep-68	19,609	14,904	521				3,571		613		78.7%	18.2%
Oct-68	21,265	17,402					2,284		427	1,152	81.8%	10.7%
Nov-68	14,803	11,561					2,852		390		78.1%	19.3%
Dec-68	17,948	15,245					2,181		505	17	84.9%	12.2%
Jan-69	29,129	25,911					2,702		516		89.0%	9.3%
Feb-69	11,732	4,962	2,894	781	787		292	2,016			73.6%	2.5%
Mar-69	25,048	9,354	9,508	1,119	1,595		828	2,644			79.8%	3.3%
Apr-69	20,635	5,974	8,985	250	1,396	30	734	3,266			73.7%	3.6%
May-69	28,773	10,971	7,952	696	4,057	105	750	3,713	430	99	68.2%	2.6%
Jun-69	22,817	4,811	9,144	573	4,621		444	3,043	181		63.7%	1.9%
Jul-69	25,141	6,252	9,944	304	4,219	7	518	3,736	161		65.6%	2.1%
Aug-69	24,182	4,857	10,542	802	3,912		860	3,209			67.0%	3.6%
Sep-69	22,298	3,518	11,106	440	2,344		911	3,940	39		67.6%	4.1%
Oct-69	29,845	4,784	16,429	108	4,069		1,613	2,842			71.4%	5.4%
Nov-69	19,785	2,704	10,675	512	2,393	72	953	2,437	39		70.2%	4.8%
Dec-69	20,963	1,999	12,165	171	2,115	219	1,446	2,776	72		68.4%	6.9%
Jan-70	20,785	3,807	9,320	265	2,757	213	1,288	2,943	192		64.4%	6.2%
Feb-70	25,257	3,799	12,040	856	1,699	278	1,867	3,923	402	393	66.1%	7.4%
Mar-70	26,935	4,255	13,444	103	1,586	869	1,883	4,747	48		66.1%	7.0%
Apr-70	26,536	2,401	16,444	628	1,030	142	1,887	3,587	417		73.4%	7.1%
May-70	40,760	1,973	33,167	1,976	1,467	81		2,096			91.1%	0.0%
Jun-70	22,524	1,426	17,954	379	1,449	175		998	13	130	87.7%	0.0%

Table C-38. 6th Battalion, 14th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	3,043	1,764	926				353				88.4%	11.6%
Aug-68	5,537	5,537									100.0%	0.0%
Sep-68	5,866	5,866									100.0%	0.0%
Oct-68	5,629	5,629									100.0%	0.0%
Nov-68	6,429	6,429									100.0%	0.0%
Dec-68	5,624	5,624									100.0%	0.0%
Jan-69	8,905	8,905									100.0%	0.0%
Feb-69	10,280	10,280									100.0%	0.0%
Mar-69	9,587	9,587									100.0%	0.0%
Apr-69	6,433	6,244	189								100.0%	0.0%
May-69	8,958	8,958									100.0%	0.0%
Jun-69	11,461	5,910	2,304	467	67		1,072	1,324		317	75.7%	9.4%
Jul-69	57	36					12	9			63.2%	21.1%
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70	127	71	38		6			12			85.8%	0.0%
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-39. 6th Battalion, 15th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	4,705	1,326					3,379				28.2%	71.8%
Aug-68	8,632						8,632				0.0%	100.0%
Sep-68	8,894	1,011					7,733			150	11.4%	86.9%
Oct-68	18,810	3,900					14,910				20.7%	79.3%
Nov-68	19,249	4,928					14,321				25.6%	74.4%
Dec-68	34,199	7,582			6,392		20,225				22.2%	59.1%
Jan-69	35,234				33,215	1,142	877				0.0%	2.5%
Feb-69	36,199				36,199						0.0%	0.0%
Mar-69	37,304				37,304						0.0%	0.0%
Apr-69	17,013				17,013						0.0%	0.0%
May-69	28,812			633	28,179						2.2%	0.0%
Jun-69	60,921				59,767	794				360	0.0%	0.0%
Jul-69	39,427				39,187					240	0.0%	0.0%
Aug-69	7,277				7,277						0.0%	0.0%
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-40. 7th Battalion, 15th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	8,018	1,162	5,827			262	767				87.2%	9.6%
Aug-68	4,358	619	3,442				222		75		93.2%	5.1%
Sep-68	4,170	1,130	2,581		122	43	69	225			89.0%	1.7%
Oct-68	2,625	283	1,920	171	137	114					90.4%	0.0%
Nov-68	2,508	87	1,820		230		312	59			76.0%	12.4%
Dec-68	2,296	480	751		468	140	185	98	174		53.6%	8.1%
Jan-69	3,014	555	753	590	372		295	449			63.0%	9.8%
Feb-69	3,424	411	1,648				634	731			60.1%	18.5%
Mar-69	3,120		1,263				1,698	159			40.5%	54.4%
Apr-69	2,364		714	137	13		1,414	86			36.0%	59.8%
May-69	3,568		2,665		128		775				74.7%	21.7%
Jun-69	3,711		1,702		290		1,297	422			45.9%	35.0%
Jul-69	7,148	396	5,642		200			910			84.5%	0.0%
Aug-69	7,998	370	6,219				115	1,294			82.4%	1.4%
Sep-69	8,870	748	4,332		3,382		42	366			57.3%	0.5%
Oct-69	5,277	867	2,864		514		134	836		62	70.7%	2.5%
Nov-69	5,862	390	4,484		554			434			83.1%	0.0%
Dec-69	5,747	315	5,300					132			97.7%	0.0%
Jan-70	4,932	105	4,414		134		22	257			91.6%	0.4%
Feb-70	6,345	426	5,721		198						96.9%	0.0%
Mar-70	3,553	1,119	2,240					194			94.5%	0.0%
Apr-70	2,286	196	1,370		102		131	487			68.5%	5.7%
May-70	3,880	176	3,494		57		27	126			94.6%	0.7%
Jun-70	2,225	149	1,308		92			676			65.5%	0.0%

Table C-41. 3rd Battalion, 16th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	23,945	7,229	514	3,326			10,792	16	16	2,052	46.2%	45.1%
Aug-68	23,151	11,306		1,187			10,477			181	54.0%	45.3%
Sep-68	15,494	12,271					3,223				79.2%	20.8%
Oct-68	12,699	10,574					2,125				83.3%	16.7%
Nov-68	13,969	11,445					2,524				81.9%	18.1%
Dec-68	15,000	12,585					2,415				83.9%	16.1%
Jan-69	13,563	11,850				88	1,625				87.4%	12.0%
Feb-69	7,273	5,777					1,496				79.4%	20.6%
Mar-69	12,485	9,488	684				2,313				81.5%	18.5%
Apr-69	9,284	7,746					1,524	14			83.4%	16.4%
May-69	16,026	14,309					1,717				89.3%	10.7%
Jun-69	6,771	6,389					382				94.4%	5.6%
Jul-69	12,276	11,782					494				96.0%	4.0%
Aug-69	12,633	12,099					534				95.8%	4.2%
Sep-69	8,928	8,928									100.0%	0.0%
Oct-69	7,717	7,651	66								100.0%	0.0%
Nov-69	6,177	6,177									100.0%	0.0%
Dec-69	7,593	7,421	172								100.0%	0.0%
Jan-70	4,139	3,870								269	93.5%	0.0%
Feb-70	6,282	5,777	505								100.0%	0.0%
Mar-70	831	618	213								100.0%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-42. 5th Battalion, 16th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	3,358	149	446		345		848	1,492	78		17.7%	25.3%
Aug-68	4,704	520	2,300	10	191		50	1,504	129		60.2%	1.1%
Sep-68	4,699	557	2,376	93	189		265	1,106	113		64.4%	5.6%
Oct-68	5,854	1,084	3,436		118	88	430	589	109		77.2%	7.3%
Nov-68	6,267	1,519	2,682	326	452		635	624	29		72.2%	10.1%
Dec-68	7,784	1,489	3,384	243	397		1,268	952	51		65.7%	16.3%
Jan-69	10,624	1,398	2,787	202	95		4,653	1,448	41		41.3%	43.8%
Feb-69	12,792	1,457	3,951	324	142	48	5,331	1,526	13		44.8%	41.7%
Mar-69	18,130	4,875	6,249	1,350	805		3,392	1,376	83		68.8%	18.7%
Apr-69	3,758	365	1,248	167	262	4	615	1,063	34		47.4%	16.4%
May-69	1,570	115	654	2	190		336	235	38		49.1%	21.4%
Jun-69												
Jul-69	939	126	403				410				56.3%	43.7%
Aug-69	4,311	1,561	1,639				764	347			74.2%	17.7%
Sep-69	1,139	595	411	34		59	40				91.3%	3.5%
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-43. C Battery, 6th Howitzer Battalion, 16th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68												
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69												
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70	1,562				1,562						0.0%	0.0%
Feb-70	2,150				2,094					56	0.0%	0.0%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-44. F Battery, 16th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68												
Dec-68												
Jan-69	1,949	3	1,916	27			3				99.8%	0.2%
Feb-69	3,255	43	2,921	267	12		12				99.3%	0.4%
Mar-69	4,576		4,576								100.0%	0.0%
Apr-69	3,654	293	3,361								100.0%	0.0%
May-69	4,416	113	4,303								100.0%	0.0%
Jun-69	4,964	981	2,769	263	205		666	80			80.8%	13.4%
Jul-69	8,796	2,264	4,136	162	1,062		650	522			74.6%	7.4%
Aug-69	6,806	5,415	1,163		119			109			96.7%	0.0%
Sep-69	5,648	1,317	532	175	418		3,136	70			35.8%	55.5%
Oct-69												
Nov-69												
Dec-69	7,028				7,028						0.0%	0.0%
Jan-70												
Feb-70												
Mar-70	1,165				1,165						0.0%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-45. 2nd Battalion, 17th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	10,748	1,166	1,035	219	503		3,386	1,571	916	1,952	22.5%	31.5%
Aug-68	13,944	1,815	2,651	1,306	1,984		2,263	2,020	1,786	119	41.4%	16.2%
Sep-68	12,248	2,017	1,356	574	1,980		2,953	2,085	1,283		32.2%	24.1%
Oct-68	11,911	1,518	1,936	956	913	107	2,108	3,893	480		37.0%	17.7%
Nov-68	15,001	3,409	2,585	463	3,311		2,480	2,059	694		43.0%	16.5%
Dec-68	11,373	1,663	2,461	537	1,386		2,452	2,359	515		41.0%	21.6%
Jan-69	17,346	3,314	4,410	358	2,022		3,838	2,360	1,044		46.6%	22.1%
Feb-69	16,031	3,441	4,495	275	2,223		2,444	2,417	736		51.2%	15.2%
Mar-69	16,258	4,879	3,266	1,827	2,693		1,162	2,016	415		61.3%	7.1%
Apr-69	7,579	1,265	936	427	1,908		855	1,935	253		34.7%	11.3%
May-69	12,511	2,603	2,352	1,640	2,616		1,085	2,046	169		52.7%	8.7%
Jun-69	16,155	3,687	4,637	898	2,393	82	1,383	2,941	134		57.1%	8.6%
Jul-69	12,305	4,059	2,179	346	1,930		1,318	1,816	418	239	53.5%	10.7%
Aug-69	25,178	5,599	13,392	841	1,501		1,595	2,114	136		78.8%	6.3%
Sep-69	12,926	1,139	10,453	217	63		409	645			91.4%	3.2%
Oct-69	815	8	770					37			95.5%	0.0%
Nov-69												
Dec-69												
Jan-70	342		342								100.0%	0.0%
Feb-70	4,266	38	3,110	1,118							100.0%	0.0%
Mar-70	954	76	357					305	216		45.4%	0.0%
Apr-70	2,329		1,571	623			52	23	60		94.2%	2.2%
May-70	4,572	481	3,843	109			18	121			97.0%	0.4%
Jun-70	5,561	446	4,484	97			20	292	136	86	90.4%	0.4%

Table C-46. 3rd Battalion, 18th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	14,415	5,748					8,156			511	39.9%	56.6%
Aug-68	10,832	3,797		224			6,811				37.1%	62.9%
Sep-68	8,311	80	1,165		11		6,962	93			15.0%	83.8%
Oct-68	4,182	252	2,403	83	80		985	379			65.5%	23.6%
Nov-68	6,190	340	4,075	30	147		1,107	491			71.8%	17.9%
Dec-68	7,538	1,202	4,673	2			1,351	310			78.0%	17.9%
Jan-69	6,523	1,028	4,068		70		1,044	267	46		78.1%	16.0%
Feb-69	11,037	1,732	7,281	44	496		574	894	16		82.1%	5.2%
Mar-69	4,869	1,184	2,671	307	51		406	246	4		85.5%	8.3%
Apr-69	6,419	1,831	3,152	76	69	25	694	506	33	33	78.8%	10.8%
May-69	7,154	1,172	4,028	907	338	31	189	438	51		85.4%	2.6%
Jun-69	6,643	1,043	4,469	268	278		53	525	7		87.0%	0.8%
Jul-69	5,686	1,686	3,110	102	324		15	449			86.1%	0.3%
Aug-69	5,858	1,757	3,053	378	198		21	451			88.6%	0.4%
Sep-69	4,536	3,428	1,108								100.0%	0.0%
Oct-69	9,055	2,793	4,148	527	1,013		134	440			82.5%	1.5%
Nov-69	1,617						1,617				0.0%	100.0%
Dec-69	3,901						3,788	113			0.0%	97.1%
Jan-70	4,138						4,138				0.0%	100.0%
Feb-70	4,492		1,170				1,602			1,720	26.0%	35.7%
Mar-70	5,263						5,263				0.0%	100.0%
Apr-70	6,731					422	5,557	752			0.0%	82.6%
May-70	10,624		332				541			9,751	3.1%	5.1%
Jun-70												

Table C-47. 2nd Battalion, 19th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	12,516	6,505								6,011	52.0%	0.0%
Aug-68	17,895	12,522	469	679	1,760			1,668	327	470	76.4%	0.0%
Sep-68	20,506	10,943	420	187	5,265	98		2,707	886		56.3%	0.0%
Oct-68	17,577	10,472	288		3,938		184	2,341	354		61.2%	1.0%
Nov-68	17,968	8,944		482	5,934			2,376	232		52.5%	0.0%
Dec-68	23,918	17,060	671	493	3,632	51		1,972	39		76.2%	0.0%
Jan-69	32,136	18,703	2,284	1,389	7,397	332		1,857	131	43	69.6%	0.0%
Feb-69	42,942	27,154	50	2,561	8,149	19		4,984	25		69.3%	0.0%
Mar-69	34,004	18,550	1,386	1,008	6,604		636	5,357	463		61.6%	1.9%
Apr-69	21,395	8,702	1,605	685	5,233		922	4,060	188		51.4%	4.3%
May-69	24,957	6,917	2,536	2,421	4,318	156	4,253	3,938	353	65	47.6%	17.0%
Jun-69	16,371	7,702	1,051	1,081	3,514		699	2,089	117	118	60.1%	4.3%
Jul-69	22,033	7,242	1,456	581	6,920		987	3,512	1,288	47	42.1%	4.5%
Aug-69	21,835	8,749		1,131	6,581			3,468		1,906	45.2%	0.0%
Sep-69	20,915	8,602	234	1,840	5,179		642	4,182	12	224	51.0%	3.1%
Oct-69	20,643	6,984	2,497	498	5,336		2,649	2,394	30	255	48.3%	12.8%
Nov-69	59,670	16,893	3,537	2,347	7,763		7,113	21,616	401		38.2%	11.9%
Dec-69	31,088	14,748	1,230	1,855	6,480		3,095	3,680			57.4%	10.0%
Jan-70	36,591	21,791	995	5,662	3,002		1,626	3,442	73		77.7%	4.4%
Feb-70	18,260	7,145	3,952	728	1,649		2,423	2,160	183	20	64.8%	13.3%
Mar-70	25,955	16,938	1,936	90	2,488		1,680	2,138	677	8	73.1%	6.5%
Apr-70	47,983	37,419	38	996	5,767	132		3,631			80.1%	0.0%
May-70	32,693	25,832	1,367	129	2,554			2,611	29	171	83.6%	0.0%
Jun-70	33,206	23,129	2,542	103	5,282			2,150			77.6%	0.0%

Table C-48. 1st Battalion, 21st Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	17,560	4,579	8,746		2,594	157		1,201	283		75.9%	0.0%
Aug-68	21,956	3,763	5,849	485	6,329	25		4,067	1,438		46.0%	0.0%
Sep-68	17,139	3,393	3,832	965	3,363			5,026	536	24	47.8%	0.0%
Oct-68	11,749	3,085	2,528	51	2,850		41	2,062	1,132		48.2%	0.3%
Nov-68	18,125	9,211	3,100	259	2,369	1,185	100	1,252	649		69.4%	0.6%
Dec-68	15,107	8,289	1,377	553	1,913	604		1,670	701		67.6%	0.0%
Jan-69	19,191	11,829	637	454	2,359	1,926		1,063	883	40	67.3%	0.0%
Feb-69	13,281	8,437	998	290	2,112	279		311	854		73.2%	0.0%
Mar-69	15,271	12,995	422	309	780	131		460	174		89.9%	0.0%
Apr-69	16,453	13,645	228	273	1,460			605	242		86.0%	0.0%
May-69	12,246	6,576	611	455	1,975	68	776	1,656	129		62.4%	6.3%
Jun-69	9,991	6,944	217	36	1,025		1,276	356	137		72.0%	12.8%
Jul-69	16,385	16,385									100.0%	0.0%
Aug-69	29,471	27,680	200	141	628		317	184	321		95.1%	1.1%
Sep-69	33,455	30,067	281	111	878			1,978	140		91.0%	0.0%
Oct-69	20,942	17,414	853	146	1,077			1,371	81		87.9%	0.0%
Nov-69	32,874	28,924	1,696	47	995	13	45	1,103	51		93.3%	0.1%
Dec-69	21,949	21,443	162		102			161	81		98.4%	0.0%
Jan-70	20,075	19,953	122								100.0%	0.0%
Feb-70	10,736	10,736									100.0%	0.0%
Mar-70	15,762	8,152	692	538	1,669	614	3,259	691	147		59.5%	20.7%
Apr-70	10,890	9,156	192		571	645		325	1		85.8%	0.0%
May-70	59,950	55,055	1,233	1,542	593			1,527			96.5%	0.0%
Jun-70	64,850	61,658	574	719	1,269			630			97.1%	0.0%

Table C-49. 5th Battalion, 22nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	3,609	230	1,873	330	258	25	374	507	12		67.4%	10.4%
Aug-68	4,510	17	475	1,015	564		1,189	1,081	169		33.4%	26.4%
Sep-68	4,597	226	3,284	63	118		238	578	90		77.7%	5.2%
Oct-68	3,063	80	2,407	8	38		71	368	91		81.5%	2.3%
Nov-68	2,551	155	1,476	272	57		298	282	11		74.6%	11.7%
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69												
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70	310	68	112	3	23			104			59.0%	0.0%
Jun-70	2,512	399	1,090	10	176	15		790	32		59.7%	0.0%

Table C-50. 1st Battalion, 27th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	13,656	3,160	182				6,351	140	320	3,503	24.5%	46.5%
Aug-68	15,294	5,001	5,398	689	1,215	1,469	730	652	140		72.5%	4.8%
Sep-68	24,754	5,582	8,994	1,023	2,284	1,111	2,996	2,764			63.0%	12.1%
Oct-68	20,656	3,749	9,037	279	2,910	156	1,403	3,122			63.3%	6.8%
Nov-68	17,463	3,947	8,944	811	939	18	700	2,104			78.5%	4.0%
Dec-68	23,723	6,554	11,651	2,236	684		581	2,017			86.2%	2.4%
Jan-69	20,076	5,037	9,722	2,051	2,208		105	953			83.7%	0.5%
Feb-69	21,522	6,384	11,506	1,027	1,794			811			87.9%	0.0%
Mar-69	28,503	7,091	13,586	4,777	1,209		315	1,041		484	89.3%	1.1%
Apr-69	17,592	4,141	9,910	1,907	1,123			475		36	90.7%	0.0%
May-69	18,995	7,506	7,347	2,219	1,866			57			89.9%	0.0%
Jun-69	16,484	7,949	6,097	1,000	1,438						91.3%	0.0%
Jul-69	28,484	9,586	15,050	1,232	876		216	1,514	10		90.8%	0.8%
Aug-69	24,811	8,760	10,850	1,709	1,938		60	1,423	71		85.9%	0.2%
Sep-69	20,187	6,382	7,549	719	5,371			166			72.6%	0.0%
Oct-69	6,052	1,779	2,041	542	1,690						72.1%	0.0%
Nov-69	17,551	5,843	6,835		4,873						72.2%	0.0%
Dec-69	15,105	4,913	6,196		1,962		1,892	142			73.5%	12.5%
Jan-70	15,183	4,312	5,394	937	2,332		1,980	228			70.1%	13.0%
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-51. 5th Battalion, 27th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	17,441	4,524	4,905	1,212	1,169		3,991	1,640			61.0%	22.9%
Aug-68	7,168	4,325	406	396	936		452	496	157		71.5%	6.3%
Sep-68	11,167	5,249	1,176	315	1,420		1,146	1,758	103		60.4%	10.3%
Oct-68	9,278	4,109	638	57	1,771		563	2,110	30		51.8%	6.1%
Nov-68	8,810	4,234	758	324	1,329		458	1,577	130		60.3%	5.2%
Dec-68	7,882	3,717	980	87	863		560	1,484	191		60.7%	7.1%
Jan-69	8,479	3,485	1,624	606	583		772	1,375	26	8	67.4%	9.1%
Feb-69	12,552	7,007	1,848	1,001	485		333	1,860	15	3	78.5%	2.7%
Mar-69	18,726	6,524	4,218	2,164	1,018		1,358	3,350	94		68.9%	7.3%
Apr-69	12,742	5,663	2,203	466	170		679	3,561			65.4%	5.3%
May-69	13,117	4,124	1,630	512	325		987	5,137	199	203	47.8%	7.5%
Jun-69	19,265	5,286	7,365	1,403	1,270		1,822	2,046	73		73.0%	9.5%
Jul-69	42,501	10,492	17,814	3,274	1,760		5,839	2,866	456		74.3%	13.7%
Aug-69	16,454	5,877	4,907	1,564	1,097		1,307	1,536	112	54	75.0%	7.9%
Sep-69	12,089	3,040	4,345	468	686	44	1,808	1,420	278		65.0%	15.0%
Oct-69	13,049	2,365	5,357	442	1,314	197	1,932	1,432	10		62.6%	14.8%
Nov-69	7,860	190	4,932	295	207	330	978	926	2		68.9%	12.4%
Dec-69	10,960	725	6,668	607	60	97	1,657	1,121	25		73.0%	15.1%
Jan-70	15,807	2,679	8,213	702	893	10	1,734	1,563	13		73.3%	11.0%
Feb-70	15,833	1,968	9,299	840	710		1,497	1,431	88		76.5%	9.5%
Mar-70	5,617	861	2,630	86	259		545	1,236			63.7%	9.7%
Apr-70	2,515	491	482	59	104			1,379			41.0%	0.0%
May-70	7,059	1,069	1,845	314	241		68	3,522			45.7%	1.0%
Jun-70	4,936	918	1,302		50			2,666			45.0%	0.0%

Table C-52. 6th Battalion, 27th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	11,577		11,398						179		98.5%	0.0%
Aug-68	9,848		9,848								100.0%	0.0%
Sep-68	10,445	684	9,761								100.0%	0.0%
Oct-68	9,125		9,125								100.0%	0.0%
Nov-68	9,816	1,874	7,942								100.0%	0.0%
Dec-68	11,123		11,123								100.0%	0.0%
Jan-69	11,347		10,942	405							100.0%	0.0%
Feb-69	7,596	344	6,618	192	230	142	70				94.2%	0.9%
Mar-69	10,181		9,995	186							100.0%	0.0%
Apr-69	7,110	941	6,169								100.0%	0.0%
May-69	6,822	218	6,604								100.0%	0.0%
Jun-69	6,401	3,053	2,968				153	227			94.1%	2.4%
Jul-69	7,320	4,345	2,634					341			95.3%	0.0%
Aug-69	9,346	8,341	847					158			98.3%	0.0%
Sep-69	6,434	5,099	564		72		308	391			88.0%	4.8%
Oct-69												
Nov-69	7,941	3,102	1,087		48		3,542	162			52.8%	44.6%
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-53. 6th Battalion, 29th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	1,635	517	46				79	2		991	34.4%	4.8%
Aug-68	12,234								12,234		0.0%	0.0%
Sep-68	9,103								9,103		0.0%	0.0%
Oct-68	5,771								5,771		0.0%	0.0%
Nov-68	4,670								4,670		0.0%	0.0%
Dec-68	4,073								3,859	214	0.0%	0.0%
Jan-69	5,645	459							5,186		8.1%	0.0%
Feb-69	9,646	3,662			475				5,509		38.0%	0.0%
Mar-69	28,681	20,347	7,028						586	720	95.4%	0.0%
Apr-69	7,509	5,564	1,223		222					500	90.4%	0.0%
May-69	6,396	4,139	1,234		1,023						84.0%	0.0%
Jun-69	13,043		12,020		1,023						92.2%	0.0%
Jul-69	15,288		15,288								100.0%	0.0%
Aug-69	21,697		21,697								100.0%	0.0%
Sep-69	15,179	1,192	13,987								100.0%	0.0%
Oct-69	9,571		9,571								100.0%	0.0%
Nov-69	23,403		23,403								100.0%	0.0%
Dec-69	16,376		16,376								100.0%	0.0%
Jan-70	16,712		16,712								100.0%	0.0%
Feb-70												
Mar-70	6,288		6,288								100.0%	0.0%
Apr-70	10,032		10,032								100.0%	0.0%
May-70	14,024		14,024								100.0%	0.0%
Jun-70	3,839		3,839								100.0%	0.0%

Table C-54. 1st Battalion, 30th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	22,149	1,811	9,979							10,359	53.2%	0.0%
Aug-68	25,418	4,728	17,311	241	1,147	22	1,247	416	306		87.7%	4.9%
Sep-68	15,188	7,022	2,947	112	3,301	293	40	1,075	398		66.4%	0.3%
Oct-68	12,217	6,543	2,199	41	1,884	49		1,240	261		71.9%	0.0%
Nov-68	9,431	2,808	2,802	362	1,217	20	1,692	479	51		63.3%	17.9%
Dec-68	15,253	6,560	4,451	452	997		1,068	1,388	180	157	75.2%	7.0%
Jan-69	21,961	9,938	6,028	628	3,087			1,850	233	197	75.6%	0.0%
Feb-69	15,517	7,422	2,729	493	1,965		14	1,412	1,415	67	68.6%	0.1%
Mar-69	20,177	11,978	2,256	1,020	2,434			2,350	139		75.6%	0.0%
Apr-69	19,225	11,197	1,336	123	3,561		20	2,735	62	191	65.8%	0.1%
May-69	12,808	4,310	777	499	2,614		1,615	2,901	62	30	43.6%	12.6%
Jun-69	12,773	4,029	919	864	3,777			2,957	167	60	45.5%	0.0%
Jul-69	7,787	1,722	1,248	458	2,341		33	1,981	4		44.0%	0.4%
Aug-69	14,414	5,435	1,761	472	3,397			3,345	4		53.2%	0.0%
Sep-69	14,409	5,874	2,090	623	2,805		38	2,979			59.6%	0.3%
Oct-69	11,103	4,753	1,756	66	2,580			1,827	31	90	59.2%	0.0%
Nov-69	25,230	10,098	3,491	1,272	4,130			5,775	464		58.9%	0.0%
Dec-69	24,390	12,180	3,300	524	4,258		84	3,820	224		65.6%	0.3%
Jan-70	23,072	10,908	2,877	1,322	4,781			3,051	133		65.5%	0.0%
Feb-70	13,735	8,408	1,843	180	1,242		634	1,304	124		75.9%	4.6%
Mar-70	29,398	17,547	4,395	637	3,662		623	2,420	114		76.8%	2.1%
Apr-70	26,832	12,978	6,188	2,272	2,926			2,207	261		79.9%	0.0%
May-70	32,254	21,577	3,386	1,214	3,204			2,856	17		81.2%	0.0%
Jun-70	33,024	24,514	2,596	926	1,735			3,081	172		84.9%	0.0%

Table C-55. 2nd Battalion, 32nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	9,905	2,366	401				7,138				27.9%	72.1%
Aug-68	9,468	2,226	3,500			733	2,947	62			60.5%	31.1%
Sep-68	9,834	3,180	3,540				3,114				68.3%	31.7%
Oct-68	8,605	1,073	435				7,097				17.5%	82.5%
Nov-68	8,476	366	553				7,557				10.8%	89.2%
Dec-68	10,158	344	214				9,600				5.5%	94.5%
Jan-69	11,128	484	977				9,667				13.1%	86.9%
Feb-69	7,324	1,783	1,145				4,396				40.0%	60.0%
Mar-69	11,658	3,575	129			125	4,403	3,426			31.8%	37.8%
Apr-69	6,963	1,124				181	280	5,378			16.1%	4.0%
May-69	8,074	1,833				36	662	5,543			22.7%	8.2%
Jun-69	2,451	742					205	1,504			30.3%	8.4%
Jul-69												
Aug-69												
Sep-69	916	56					731	129			6.1%	79.8%
Oct-69	8,779	2,822	409		745		2,968	1,834		1	36.8%	33.8%
Nov-69	3,540	515	258		351		956	1,460			21.8%	27.0%
Dec-69	697	344			147			206			49.4%	0.0%
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-56. 6th Battalion, 32nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	6,166	471	1,986			334	2,659			716	39.8%	43.1%
Aug-68	6,376	219	848		2,059		1,899	661	655	35	16.7%	29.8%
Sep-68	6,183		1,093		202		3,253	1,307	328		17.7%	52.6%
Oct-68	6,489	3,401	2,824				138	121		5	95.9%	2.1%
Nov-68	6,436	3,446	2,103		479		304	82	22		86.2%	4.7%
Dec-68	8,136	4,692	3,350				32	61		1	98.8%	0.4%
Jan-69	7,592	2,311	5,246				35				99.5%	0.5%
Feb-69	8,151	2,373	5,628				20			130	98.2%	0.2%
Mar-69	6,005	3,036	2,842					127			97.9%	0.0%
Apr-69	5,454	3,109	2,160		68			117			96.6%	0.0%
May-69	6,130	2,025	3,983					122			98.0%	0.0%
Jun-69	4,212	1,891	2,290					31			99.3%	0.0%
Jul-69	4,968	2,263	2,705								100.0%	0.0%
Aug-69	6,411	336	5,818	257							100.0%	0.0%
Sep-69	4,857	43	4,496	318							100.0%	0.0%
Oct-69	3,784		3,784								100.0%	0.0%
Nov-69	2,662	91	2,571								100.0%	0.0%
Dec-69	2,850	37	2,441	247				125			95.6%	0.0%
Jan-70	3,423		3,423								100.0%	0.0%
Feb-70	3,011		3,009							2	99.9%	0.0%
Mar-70	3,336		3,336								100.0%	0.0%
Apr-70	2,268	61	2,207								100.0%	0.0%
May-70	3,242	137	3,022	83							100.0%	0.0%
Jun-70	1,678		1,673						5		99.7%	0.0%

Table C-57. 2nd Battalion, 33rd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	15,266	988	4,429		1,300		2,730		5,819		35.5%	17.9%
Aug-68	20,338	1,352	5,991		784		2,349	5	9,857		36.1%	11.5%
Sep-68	20,415	2,344	12,838	48	2,187	820	1,656		522		74.6%	8.1%
Oct-68	19,148	2,633	11,587		2,601	156	1,066		1,105		74.3%	5.6%
Nov-68	23,227	4,461	10,583	259	4,057	390	2,289	951	237		65.9%	9.9%
Dec-68	30,678	8,129	7,265	1,116	8,980	33	1,069	3,744	342		53.8%	3.5%
Jan-69	27,317	8,422	6,428	1,485	6,378		1,403	3,002	199		59.8%	5.1%
Feb-69	32,900	5,845	8,832	2,448	9,163	31	1,450	2,423	2,708		52.1%	4.4%
Mar-69	25,594	4,892	6,549	3,338	4,855	134	1,631	3,265	930		57.7%	6.4%
Apr-69	26,604	7,008	10,664	681	4,489	609	128	2,656	369		69.0%	0.5%
May-69	36,964	8,236	14,968	3,681	5,870	505	162	3,404	138		72.7%	0.4%
Jun-69	24,197	5,283	5,799	1,424	2,962	18	208	2,245	146	6,112	51.7%	0.9%
Jul-69	27,194	5,515	13,189	691	2,808	1,610	123	2,914	344		71.3%	0.5%
Aug-69	34,907	8,055	14,521	1,876	3,922	2,050	480	3,699	183	121	70.0%	1.4%
Sep-69	28,683	4,608	13,525	1,289	4,367	1,309		3,571	14		67.7%	0.0%
Oct-69	33,292	7,068	12,069	1,124	8,817	1,722		2,370	122		60.9%	0.0%
Nov-69	15,419	2,012	7,493	343	2,100	1,658		1,612	201		63.9%	0.0%
Dec-69	17,753	3,342	8,073	471	3,058	1,152		1,622	35		67.0%	0.0%
Jan-70	21,670	2,003	14,413	125	2,813	474		1,730	112		76.3%	0.0%
Feb-70	24,746	2,620	18,732	160	828			2,351	55		86.9%	0.0%
Mar-70	10,376	862	7,958	49	459	1		972	75		85.5%	0.0%
Apr-70												
May-70												
Jun-70												

Table C-58. 6th Battalion, 33rd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	16,871	9,750								7,121	57.8%	0.0%
Aug-68	20,281	1,018	1,405	8,021						9,837	51.5%	0.0%
Sep-68	12,786	7,097	4,272	1,408						9	99.9%	0.0%
Oct-68	20,380	18,560	904				916				95.5%	4.5%
Nov-68	23,228	16,269	4,212	2,747							100.0%	0.0%
Dec-68	19,036	17,669	1,178	189							100.0%	0.0%
Jan-69	17,046	11,825	4,526				695				95.9%	4.1%
Feb-69	9,406	5,483	3,923								100.0%	0.0%
Mar-69	12,125	8,767	1,781	359			1,206			12	90.0%	9.9%
Apr-69	13,765	5,109	3,768					614	4,274		64.5%	0.0%
May-69	17,296	5,797		2,237	1,180	2,616	357	923	4,186		46.5%	2.1%
Jun-69	19,201	6,158			1,305		7,086	3,478	1,174		32.1%	36.9%
Jul-69	17,864	7,757	660				2,238	3,242	3,967		47.1%	12.5%
Aug-69	17,916						608	6,930	10,378		0.0%	3.4%
Sep-69	19,078						911	5,233	12,934		0.0%	4.8%
Oct-69	14,110	3,316	658		811			4,529	4,796		28.2%	0.0%
Nov-69	16,839		1,551				816	8,324	6,148		9.2%	4.8%
Dec-69	16,343	688	146					15,509			5.1%	0.0%
Jan-70	15,804	2,820	7,157	1,273	527			4,027			71.2%	0.0%
Feb-70	7,473	1,864	5,609								100.0%	0.0%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-59. 3rd Battalion, 34th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	18,353	5,233	4,727	1,655	2,886	814	666	2,047		325	63.3%	3.6%
Aug-68	27,127	8,471	8,796	1,701	1,708	3,868	881	1,702			69.9%	3.2%
Sep-68	16,540	5,694	4,446	549	888	1,606	765	2,592			64.6%	4.6%
Oct-68	29,599	6,635	9,236	1,445	2,525	4,434	1,370	3,948	6		58.5%	4.6%
Nov-68	23,243	4,941	5,783	1,647	6,331	1,116	2,114	1,311			53.2%	9.1%
Dec-68	39,542	13,073	3,918	1,500	15,344	727	3,169	1,745	66		46.8%	8.0%
Jan-69	27,655	7,385	2,666	1,344	8,144	821	5,601	1,576	118		41.2%	20.3%
Feb-69	24,658	6,182	1,457	2,537	9,485	957	1,313	2,463	202	62	41.3%	5.3%
Mar-69	19,388	5,619	2,352	1,198	6,001	562	829	2,512	282	33	47.3%	4.3%
Apr-69	26,925	6,393	5,871	1,199	8,553	2,306	953	1,647	3		50.0%	3.5%
May-69	24,091	5,954	6,059	767	8,520	321	30	2,437	3		53.0%	0.1%
Jun-69	24,370	2,926	5,016	2,551	8,654	820	286	3,552		565	43.1%	1.2%
Jul-69	3,569	680	164	272	2,081		237	135			31.3%	6.6%
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-60. 2nd Battalion, 35th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	9,226	4,441	728							4,057	56.0%	0.0%
Aug-68	11,124		10,037	670						417	96.3%	0.0%
Sep-68	13,476		13,476								100.0%	0.0%
Oct-68	8,054	1,793	6,261								100.0%	0.0%
Nov-68	13,724	1,784	11,497	443							100.0%	0.0%
Dec-68	13,819	342	13,477								100.0%	0.0%
Jan-69	8,415		8,415								100.0%	0.0%
Feb-69	12,482		12,172							310	97.5%	0.0%
Mar-69	15,704		15,426	278							100.0%	0.0%
Apr-69	12,540	437	12,103								100.0%	0.0%
May-69	21,664		21,664								100.0%	0.0%
Jun-69	14,123		14,123								100.0%	0.0%
Jul-69	14,466	12,670	1,796								100.0%	0.0%
Aug-69	19,167		18,686						481		97.5%	0.0%
Sep-69	15,894		15,894								100.0%	0.0%
Oct-69	12,276		12,276								100.0%	0.0%
Nov-69	9,110		9,110								100.0%	0.0%
Dec-69	12,077		12,077								100.0%	0.0%
Jan-70	8,008		8,008								100.0%	0.0%
Feb-70	7,126		7,126								100.0%	0.0%
Mar-70	13,585		13,585								100.0%	0.0%
Apr-70	9,449		9,449								100.0%	0.0%
May-70	11,058		11,058								100.0%	0.0%
Jun-70	8,527		8,527								100.0%	0.0%

Table C-61. 1st Battalion, 39th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68												
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69												
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69	4,028	947	1,918		650			513			71.1%	0.0%
Nov-69	10,410		906	292			595	8,132	485		11.5%	5.7%
Dec-69	12,377	648	1,656		480		645	8,948			18.6%	5.2%
Jan-70	16,857	4,033	6,891	350	765			4,818			66.9%	0.0%
Feb-70	18,283	7,248	6,278	699	1,046			3,012			77.8%	0.0%
Mar-70	10,629	438	4,175	2,950	830			2,020		216	71.2%	0.0%
Apr-70	6,256		1,051	5,205							100.0%	0.0%
May-70	8,563	111	3,554	4,853						45	99.5%	0.0%
Jun-70	9,508		3,309	5,795						404	95.8%	0.0%

Table C-62. 1st Battalion, 40th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	15,205	6,055	252	345	105	867	2,876	242		4,463	43.7%	18.9%
Aug-68	16,357	10,704	241		2,433	1,233	1,175	571			66.9%	7.2%
Sep-68	13,795	10,833	133	782	766	81	989	211			85.2%	7.2%
Oct-68	9,835	7,780	837		25			1,193			87.6%	0.0%
Nov-68	17,376	9,357	1,962	1,128			783	4,146			71.6%	4.5%
Dec-68	14,423	11,795	288	1,686			467	187			95.5%	3.2%
Jan-69	14,681	7,259	3,179	1,852	532		424	1,435			83.7%	2.9%
Feb-69	17,256	14,941	525	1,213	70		201	304	2		96.7%	1.2%
Mar-69	30,482	15,279		12,174	2,620			409			90.1%	0.0%
Apr-69	19,293	9,784	898	4,925	533	6	333	2,633		181	80.9%	1.7%
May-69	18,445	12,891	121	2,440	525		2,225	239		4	83.8%	12.1%
Jun-69	19,951	10,572	95	4,094	1,383		1,741	2,066			74.0%	8.7%
Jul-69	13,232	4,324	1,255	2,643	1,853			3,148	9		62.1%	0.0%
Aug-69	17,488	6,557	2,066	3,014	1,149		417	4,285			66.5%	2.4%
Sep-69	14,685	4,552	344	4,820	592		2,044	2,333			66.2%	13.9%
Oct-69	27,488	7,924	672	13,917	547		1,530	2,867	31		81.9%	5.6%
Nov-69	7,877	1,537	39	3,555	53			2,693			65.1%	0.0%
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-63. 2nd Battalion, 40th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	14,068		11	260	6,618		5,507		1,672		1.9%	39.1%
Aug-68	12,607		6		6,727		5,034		840		0.0%	39.9%
Sep-68												
Oct-68												
Nov-68												
Dec-68	928		584		128		98	116	2		62.9%	10.6%
Jan-69	16,915	2,219	6,886	134	3,642		1,820	2,156	58		54.6%	10.8%
Feb-69	21,561	3,490	9,042	356	4,623		1,495	2,477	78		59.8%	6.9%
Mar-69	22,472	3,393	9,099	234	4,328		2,224	2,463	731		56.6%	9.9%
Apr-69	22,522	384	12,707		3,368		1,966	3,877	220		58.1%	8.7%
May-69	28,174	2,776	13,044	472	4,287	164	2,282	4,773	376		57.8%	8.1%
Jun-69	18,311	1,345	7,201	323	2,578	304	2,602	3,845	68	45	48.4%	14.2%
Jul-69	14,165	1,099	3,747	111	1,884	129	3,359	3,704	132		35.0%	23.7%
Aug-69	21,995	2,942	9,801	90	1,670		2,234	4,868	390		58.3%	10.2%
Sep-69	30,817	1,976	18,245	277	1,972	18	1,690	6,321	318		66.5%	5.5%
Oct-69	35,804	2,450	20,906		4,785	100	2,187	5,346	19	11	65.2%	6.1%
Nov-69	51,515	10,429	23,570	86	6,122	456	2,885	7,501	466		66.2%	5.6%
Dec-69	25,953	6,743	7,113	64	4,915	132	1,435	5,139	412		53.6%	5.5%
Jan-70	26,098	3,176	12,499	290	2,190	208	2,984	4,500	251		61.2%	11.4%
Feb-70	27,224	3,719	12,359	120	2,738	48	3,593	3,779	868		59.5%	13.2%
Mar-70	40,975	3,123	19,052		2,726	99	11,065	4,866	44		54.1%	27.0%
Apr-70	40,896	6,648	27,161	11	2,744	144		3,141	1,047		82.7%	0.0%
May-70	33,153	5,976	21,966	127	1,404	111		3,498	71		84.7%	0.0%
Jun-70	43,630	14,015	20,436	159	3,331	105	41	5,484	59		79.3%	0.1%

Table C-64. 4th Battalion, 42nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	2,441	206								2,235	8.4%	0.0%
Aug-68	5,583	378					5,205				6.8%	93.2%
Sep-68	13,002						13,002				0.0%	100.0%
Oct-68	4,921						4,921				0.0%	100.0%
Nov-68	1,385						1,385				0.0%	100.0%
Dec-68	7,014	3,346	1,355	414	55		1,844				72.9%	26.3%
Jan-69	13,322	7,661	5,269				392				97.1%	2.9%
Feb-69	12,650	3,685	4,284				702		3,979		63.0%	5.5%
Mar-69	27,226	17,907	8,647	672							100.0%	0.0%
Apr-69	11,244	1,951	4,088	313	1,419		429	3,044			56.5%	3.8%
May-69	17,399	3,890	4,096		1,318	2,628	440	3,739		1,288	45.9%	2.5%
Jun-69	1,063			475						588	44.7%	0.0%
Jul-69	12,936	1,260	971		2,772		632			7,301	17.2%	4.9%
Aug-69	13,109		983				7,225	4,012	565	324	7.5%	55.1%
Sep-69	8,752					576		1,905	6,271		0.0%	0.0%
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70	6,576	209	2,245	810				1,373		1,939	49.6%	0.0%
Apr-70	5,499	498	140					4,861			11.6%	0.0%
May-70	2,747	137	604					2,006			27.0%	0.0%
Jun-70												

Table C-65. 5th Battalion, 42nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	8,090	4,024	1,040				3,026				62.6%	37.4%
Aug-68	15,381	12,557	1,314	452			724			334	93.1%	4.7%
Sep-68	9,585	5,496	681				3,408				64.4%	35.6%
Oct-68	12,779	7,999	568				4,212				67.0%	33.0%
Nov-68	12,136	5,549	3,756	1,758			1,073				91.2%	8.8%
Dec-68	17,051	10,520	2,431	1,130			2,970				82.6%	17.4%
Jan-69	12,878	7,216	5,662								100.0%	0.0%
Feb-69	15,784	4,717	9,756						1,311		91.7%	0.0%
Mar-69	14,231	8,798	4,292	400			741				94.8%	5.2%
Apr-69	17,106	9,383		2,646	1,529				3,548		70.3%	0.0%
May-69	16,605	2,432	1,698	494		650	8,565	968	1,798		27.8%	51.6%
Jun-69	14,009						7,126	5,398	1,485		0.0%	50.9%
Jul-69	16,393	2,986			1,112	1,509		7,867	2,919		18.2%	0.0%
Aug-69	21,241		695	858	1,451	1,325	3,616	2,980	10,316		7.3%	17.0%
Sep-69	15,288				429		5,549	7,595	1,715		0.0%	36.3%
Oct-69	12,576		3,721				971	4,050	3,834		29.6%	7.7%
Nov-69	11,628	2,344	1,570					523	534	6,657	33.7%	0.0%
Dec-69	13,802	5,031	8,463		308						97.8%	0.0%
Jan-70	10,911	8,912	1,999								100.0%	0.0%
Feb-70	8,237	5,730	1,083		192	249	141	842			82.7%	1.7%
Mar-70	12,905	4,214	7,151					1,540			88.1%	0.0%
Apr-70	10,409	3,553	4,559		445	577	507	768			77.9%	4.9%
May-70	8,771	5,161	2,747		752					111	90.2%	0.0%
Jun-70	9,124	6,231	1,418	422	589	464					88.5%	0.0%

Table C-66. 1st Battalion, 77th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	22,938	7,370	8,936	290	141		3,705		48	2,448	72.4%	16.2%
Aug-68	18,167	2,979	4,671	1,148	3,631	55	12	5,104	567		48.4%	0.1%
Sep-68	25,182	5,218	3,353	286	10,028	338		2,029	3,930		35.2%	0.0%
Oct-68	20,794	6,324	5,141	108	4,181	297	372	1,577	2,794		55.7%	1.8%
Nov-68	14,055	6,302	3,099	1,893	657	48	741	1,299	16		80.4%	5.3%
Dec-68	19,712	10,991	1,641	2,676	981			2,192	1,231		77.7%	0.0%
Jan-69	22,442	18,487	260	187	2,176			1,324	8		84.4%	0.0%
Feb-69	15,631	8,050	2,727	482	2,246	239		1,751	136		72.0%	0.0%
Mar-69	33,673	20,601	1,401	1,809	4,877			3,889	926	170	70.7%	0.0%
Apr-69	26,977	15,061	2,122	360	4,896			3,866	531	141	65.0%	0.0%
May-69	24,613	10,933	810	1,536	6,456	34	695	3,759	344	46	54.0%	2.8%
Jun-69	21,858	7,361	3,010	1,512	4,773	108	2,266	2,596	232		54.4%	10.4%
Jul-69	16,520	5,053	2,195	1,592	3,738	28	692	2,474	584	164	53.5%	4.2%
Aug-69	16,873	4,866	1,920	1,871	4,422	98	544	2,552	436	164	51.3%	3.2%
Sep-69	12,224	4,242	1,669	1,335	1,969		14	2,652	298	45	59.3%	0.1%
Oct-69	12,811	4,971	397	336	4,250			2,594	8	255	44.5%	0.0%
Nov-69	28,578	14,035	469	1,350	7,843	18		4,838	25		55.5%	0.0%
Dec-69	20,774	7,720	992	2,605	4,590	106		4,524	237		54.5%	0.0%
Jan-70	28,650	18,627	1,009	344	2,536	16		5,652	466		69.7%	0.0%
Feb-70	15,900	10,830	354	3	813	37		3,747	116		70.4%	0.0%
Mar-70	34,170	24,811	814	863	2,755	1,139		3,337	451		77.5%	0.0%
Apr-70	29,520	10,821	1,746	1,200	1,659	746	10,257	2,912	179		46.6%	34.7%
May-70	23,049	12,630	1,219	330	3,170	795	2,438	2,299	168		61.5%	10.6%
Jun-70	24,996	17,042	3,802	806	1,843			1,503			86.6%	0.0%

Table C-67. 2nd Battalion, 77th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	7,364	380	2,313				12	44	714	3,901	36.6%	0.2%
Aug-68	13,916	6,661	5,150		2,105						84.9%	0.0%
Sep-68	21,316	14,839	4,290	320	479		691			697	91.2%	3.2%
Oct-68	21,907	14,686	4,198	682	1,345	225	362	318	91		89.3%	1.7%
Nov-68	24,871	21,492	1,617	647	252			851	12		95.5%	0.0%
Dec-68	30,980	9,453	7,847	3,082	7,821	224	547	1,547	459		65.8%	1.8%
Jan-69	39,518	11,883	11,840	4,558	8,578	153	440	1,572	494		71.6%	1.1%
Feb-69	39,485	10,805	10,730	5,623	6,147	1,112	2,649	1,692	727		68.8%	6.7%
Mar-69	35,875	11,401	8,118	3,653	5,916	1,321	2,942	1,156	1,068	300	64.6%	8.2%
Apr-69	16,636	5,290	4,652	821	2,406	281	1,006	1,669	275	236	64.7%	6.0%
May-69	25,011	10,801	4,247	1,566	1,996	316	3,568	1,914	603		66.4%	14.3%
Jun-69	15,390	7,323	1,826	679	1,564	25	2,464	1,397	112		63.9%	16.0%
Jul-69	15,164	3,491	3,865	249	2,944	334	2,120	1,593	562	6	50.2%	14.0%
Aug-69	24,287	9,479	6,153	769	3,573	18		2,540	1,755		67.5%	0.0%
Sep-69	15,625	621		794				3,558	10,652		9.1%	0.0%
Oct-69	26,970	8,842	1,849						16,279		39.6%	0.0%
Nov-69	16,871	2,507	1,557					1,309	8,498	3,000	24.1%	0.0%
Dec-69	22,821	170	1,318					6,230	15,103		6.5%	0.0%
Jan-70	23,961		1,286					19,269	3,406		5.4%	0.0%
Feb-70	19,280	10,614	6,442		712			1,512			88.5%	0.0%
Mar-70	23,589	4,277	4,488			508		14,316			37.2%	0.0%
Apr-70	21,295	794	3,509					15,673	1,319		20.2%	0.0%
May-70	27,713	17,794	9,863					56			99.8%	0.0%
Jun-70	9,982	7,738	2,244								100.0%	0.0%

Table C-68. 6th Battalion, 77th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	3,109									3,109	0.0%	0.0%
Aug-68												
Sep-68	18,762				1,233	15,939	680	395		515	0.0%	3.6%
Oct-68	15,089	486				14,603					3.2%	0.0%
Nov-68	16,111					16,111					0.0%	0.0%
Dec-68	16,149					16,056	93				0.0%	0.6%
Jan-69	32,217					31,007	1,210				0.0%	3.8%
Feb-69	54,591	24,818	3,415	1,117	4,644	2,029	16,049	2,519			53.8%	29.4%
Mar-69	26,648	17,617	3,675	534	1,742	391	2,416	273			81.9%	9.1%
Apr-69	9,042	4,327	580		4,135						54.3%	0.0%
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-69. 1st Battalion, 82nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68	13,359	2,384		2,490			8,158	255	72		36.5%	61.1%
Sep-68	12,143	2,483	198	1,324			7,898			240	33.0%	65.0%
Oct-68	11,028	1,156	1,769	1,374	194		6,014	521			39.0%	54.5%
Nov-68	11,540	1,108	3,501	1,697	140		4,069	610	347	68	54.6%	35.3%
Dec-68	15,606	1,200	4,558	2,239		26	6,556	975	52		51.2%	42.0%
Jan-69	18,266	3,171	2,921	1,756	122	125	7,588	961	1,402	220	43.0%	41.5%
Feb-69	9,218	1,793	3,595	625	192	26	1,360	705	842	80	65.2%	14.8%
Mar-69	12,413	3,095	5,684	676	296	13	363	1,108	1,112	66	76.2%	2.9%
Apr-69	9,807	2,358	3,192	23	241			901	3,062	30	56.8%	0.0%
May-69	16,857	3,769	6,128	854	423		1,965	1,294	2,424		63.8%	11.7%
Jun-69	8,041	1,320	2,038	128	170	87	1,982	730	1,570	16	43.4%	24.6%
Jul-69	10,558	1,440	3,734	84	574		2,744	756	1,207	19	49.8%	26.0%
Aug-69	9,478	1,802	2,838	261	569		2,104	1,046	714	144	51.7%	22.2%
Sep-69	9,069	2,418	2,931	42	283		1,395	1,476	421	103	59.4%	15.4%
Oct-69	11,069	3,077	4,347	365	651	120	511	1,894	104		70.4%	4.6%
Nov-69	13,078	2,269	6,140	95	756	824	762	1,393	839		65.0%	5.8%
Dec-69	12,540	3,064	5,802	95	475	669	309	1,431	682	13	71.5%	2.5%
Jan-70	9,593	2,501	3,940	4	1,081	92	54	1,333	588		67.2%	0.6%
Feb-70	12,579	4,380	5,190	10	290	22	912	1,273	502		76.2%	7.3%
Mar-70	13,776	4,222	5,244	98	970	106	867	2,040	229		69.4%	6.3%
Apr-70	15,239	5,028	5,790	191	1,070	214	802	2,112	32		72.2%	5.3%
May-70	14,396	4,476	8,796	319	124		87	527	67		94.4%	0.6%
Jun-70	10,657	2,405	7,201	42	154			855			90.5%	0.0%

Table C-70. 3rd Battalion, 82nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	21,561	8,334	6,847	1,216	33		4,608	523			76.0%	21.4%
Aug-68	17,737	5,996	3,493	42	2,417	834	3,360	1,595			53.7%	18.9%
Sep-68	19,308	7,362	2,349	66	3,209	105	1,852	4,286	79		50.6%	9.6%
Oct-68	22,804	7,933	4,851	282	3,552		1,171	5,015			57.3%	5.1%
Nov-68	22,863	11,670	2,727	624	3,182		876	3,784			65.7%	3.8%
Dec-68	17,341	9,189	1,761	126	1,946		306	4,013			63.9%	1.8%
Jan-69	18,401	8,583	2,663	56	2,278	125	325	4,350	21		61.4%	1.8%
Feb-69	14,793	8,532	1,115	180	1,100		183	3,680		3	66.4%	1.2%
Mar-69	26,183	13,168	1,197	545	5,745		595	4,897		36	56.9%	2.3%
Apr-69	12,050	6,446	779	170	1,884		608	2,163			61.4%	5.0%
May-69	8,314	5,190	736	494	656		178	1,060			77.2%	2.1%
Jun-69	12,551	7,298	1,337	737	1,606		99	1,425		49	74.7%	0.8%
Jul-69	14,112	6,344	2,532	123	2,060		1,577	1,476			63.8%	11.2%
Aug-69	23,757	13,403	4,073	925	3,069		1,191	1,096			77.5%	5.0%
Sep-69	24,125	12,748	6,051	754	2,154		955	1,463			81.0%	4.0%
Oct-69	11,512	4,984	4,071	101	814	690	293	500	59		79.5%	2.5%
Nov-69	9,725	4,346	2,438	17	889	1,092	449	494			69.9%	4.6%
Dec-69	14,018	4,686	5,044	25	1,976	944	604	739			69.6%	4.3%
Jan-70	18,549	8,967	3,683	542	2,989	350	530	1,488			71.1%	2.9%
Feb-70	15,273	6,908	4,038	173	2,037	171	28	1,918			72.8%	0.2%
Mar-70	11,816	5,079	4,260	17	555	175	188	1,542			79.2%	1.6%
Apr-70	17,028	6,440	6,377	13	1,706	95	53	2,344			75.3%	0.3%
May-70	38,450	10,545	15,976	4,055	3,190	407		4,277			79.5%	0.0%
Jun-70	25,620	4,922	16,073	277	3,106	385		857			83.0%	0.0%

Table C-71. 1st Battalion, 83rd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	9,680	2,089	265		305		3,150	25	765	3,081	24.3%	32.5%
Aug-68	5,269	288	2,502	88			2,289	102			54.6%	43.4%
Sep-68	1,754	1,617	3	78			8	48			96.8%	0.5%
Oct-68	3,878	3,878									100.0%	0.0%
Nov-68	1,331	1,331									100.0%	0.0%
Dec-68	5,757	3,828	1,929								100.0%	0.0%
Jan-69	4,547	2,041	2,506								100.0%	0.0%
Feb-69	5,747	1,118	4,426	57						146	97.5%	0.0%
Mar-69	9,024	630	8,394								100.0%	0.0%
Apr-69	7,527		7,047		212		268				93.6%	3.6%
May-69	6,571	1,564	1,189		567		2,753	248		250	41.9%	41.9%
Jun-69	6,766	574	3,085	66	328		2,448	265			55.1%	36.2%
Jul-69	5,712	442	5,069		127		65	9			96.5%	1.1%
Aug-69	6,331	495	5,794	41				1			100.0%	0.0%
Sep-69	4,547	466	1,582				2,499				45.0%	55.0%
Oct-69	2,746	536	1,589				621				77.4%	22.6%
Nov-69	5,049		5,046					3			99.9%	0.0%
Dec-69	5,162		5,162								100.0%	0.0%
Jan-70	10,031		10,031								100.0%	0.0%
Feb-70	11,074		11,051					23			99.8%	0.0%
Mar-70	14,844		14,825					19			99.9%	0.0%
Apr-70	7,577		7,577								100.0%	0.0%
May-70	11,841	469	11,372								100.0%	0.0%
Jun-70	13,506		13,506								100.0%	0.0%

Table C-72. 1st Battalion, 84th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	13,908						13,908				0.0%	100.0%
Aug-68	11,507						11,507				0.0%	100.0%
Sep-68	17,287		1,849	1,141			13,816	481			17.3%	79.9%
Oct-68	13,159	3,501					9,658				26.6%	73.4%
Nov-68	22,090						22,090				0.0%	100.0%
Dec-68	19,354		6,167				13,187				31.9%	68.1%
Jan-69	20,605	1,571	2,947		309	70	15,306	298	104		21.9%	74.3%
Feb-69	18,818	2,642	8,772	2,073	759	73	2,571	1,698	141	89	71.7%	13.7%
Mar-69	9,433	1,079	3,342	1,573	462	46	1,303	1,526	102		63.5%	13.8%
Apr-69	6,764	2,093	2,977	839	184		200	471			87.4%	3.0%
May-69	15,030	3,394	4,091	3,622	1,402		773	1,699	49		73.9%	5.1%
Jun-69	13,619	2,248	5,156	1,881	1,075		1,032	2,226	1		68.2%	7.6%
Jul-69	14,512	3,694	3,907	3,327	939		1,227	1,343	75		75.3%	8.5%
Aug-69	2,149	221	702	918			258	50			85.7%	12.0%
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-73. 6th Battalion, 84th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	7,414	935	2,058	97	2,422		869	851	182		41.7%	11.7%
Aug-68	104		32		27		35	7	3		30.8%	33.7%
Sep-68												
Oct-68	2,208						2,208				0.0%	100.0%
Nov-68	1,625				521		1,104				0.0%	67.9%
Dec-68												
Jan-69	344							344			0.0%	0.0%
Feb-69	2,696	769	693	174	174		572	299	15		60.7%	21.2%
Mar-69	2,705	698	632	48	577		178	393	117	62	50.9%	6.6%
Apr-69	2,667	363	1,055	87	527		265	318	52		56.4%	9.9%
May-69	5,990	1,836	1,835	181	365	2	298	1,443	30		64.3%	5.0%
Jun-69	1,901	769	485	34	171	26	70	317	29		67.8%	3.7%
Jul-69	791	243	147	58	172		18	152	1		56.6%	2.3%
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-74. 1st Battalion, 92nd Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	1,566	137	346				210	873			30.8%	13.4%
Aug-68												
Sep-68	8,011	5,684	2,327								100.0%	0.0%
Oct-68	6,101	1,341	4,237		127		396				91.4%	6.5%
Nov-68												
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69	3,782	1,369	590	209	300		840	167	296	11	57.3%	22.2%
May-69	7,043	1,956	1,083	646	73	12	1,913	875		485	52.3%	27.2%
Jun-69	15,940	1,716	951	3,151	764		7,595	1,763			36.5%	47.6%
Jul-69	9,455	641	1,148	247	492		5,322	1,605			21.5%	56.3%
Aug-69	3,823	464	1,303		16		1,016	1,024			46.2%	26.6%
Sep-69	3,236	344	1,742		134		317	699			64.5%	9.8%
Oct-69	6,265	370	5,032				51	794	18		86.2%	0.8%
Nov-69	7,114	501	6,531	75				7			99.9%	0.0%
Dec-69	5,607	247	4,696	34	101		116	413			88.8%	2.1%
Jan-70	8,000	132	245				7,623				4.7%	95.3%
Feb-70	8,716						8,716				0.0%	100.0%
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-75. 2nd Battalion, 94th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	7,275	3,679	155	3,161	192			88			96.2%	0.0%
Aug-68	4,450	3,692	41	674	9			30		4	99.0%	0.0%
Sep-68	4,790	4,433		351						6	99.9%	0.0%
Oct-68	4,181	4,146		35							100.0%	0.0%
Nov-68	3,406	2,835		373	114		84				94.2%	2.5%
Dec-68	3,092	2,712		262	89			29			96.2%	0.0%
Jan-69	2,529	2,129	156		13			25	206		90.4%	0.0%
Feb-69	4,530	4,164	249				85	32			97.4%	1.9%
Mar-69	5,664	5,522						142			97.5%	0.0%
Apr-69	4,799	1,484	3,141					174			96.4%	0.0%
May-69	8,534	1,158	3,529	649	482		829	1,122		765	62.5%	9.7%
Jun-69	9,156	1,025	1,049	1,098	881		4,903	200			34.6%	53.5%
Jul-69	6,978	3,077	1,342	719	153		1,331	356			73.6%	19.1%
Aug-69	9,144	3,425	2,581		1,824		600	714			65.7%	6.6%
Sep-69	7,276	1,713	1,532	2,244	232		1,251	304			75.4%	17.2%
Oct-69	10,198	1,128	6,147	446				2,046	431		75.7%	0.0%
Nov-69	7,852		620	143	284	514		6,291			9.7%	0.0%
Dec-69	8,378	356	352					6,827	558	285	8.5%	0.0%
Jan-70	8,985	3,106	3,265	358	267	1,173	260	382		174	74.9%	2.9%
Feb-70	8,485	4,909	2,376			336		630	234		85.9%	0.0%
Mar-70	9,717	3,234	853	858	883	716		2,650	523		50.9%	0.0%
Apr-70	12,490	1,913			901	2,370		7,306			15.3%	0.0%
May-70	17,311	16,827				480				4	97.2%	0.0%
Jun-70	15,879	14,163	1,053					663			95.8%	0.0%

Table C-76. 2nd Battalion, 138th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68												
Dec-68												
Jan-69												
Feb-69												
Mar-69												
Apr-69	628		628								100.0%	0.0%
May-69	10,724	4,045	4,852	386	367			1,074			86.6%	0.0%
Jun-69	19,995		1,419		849			17,727			7.1%	0.0%
Jul-69	10,639		1,706		709	460		7,764			16.0%	0.0%
Aug-69	15,719		1,133				603	13,983			7.2%	3.8%
Sep-69	10,446	78	959	514			640	8,255			14.8%	6.1%
Oct-69	5,604			639			1,103	3,862			11.4%	19.7%
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-77. 3rd Battalion, 197th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68	6,668				6,668						0.0%	0.0%
Nov-68	10,683				10,683						0.0%	0.0%
Dec-68	16,346				16,346						0.0%	0.0%
Jan-69	14,687				14,687						0.0%	0.0%
Feb-69	8,740				8,738						0.0%	0.0%
Mar-69	11,446				11,446						0.0%	0.0%
Apr-69	15,311				15,273						0.0%	0.0%
May-69	10,839				10,839						0.0%	0.0%
Jun-69	11,668				11,668						0.0%	0.0%
Jul-69	9,473				9,473						0.0%	0.0%
Aug-69	10,520				10,520						0.0%	0.0%
Sep-69	342				342						0.0%	0.0%
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-78. 2nd Battalion, 319th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	29,171	13,016	3,450	566	5,762	88	2,498	2,662	1,129		58.4%	8.6%
Aug-68	23,344	9,105	1,217	1,082	3,899	79		6,472	1,450	40	48.9%	0.0%
Sep-68	21,476	10,494	1,269	1,925	2,208		25	5,306	249		63.7%	0.1%
Oct-68	9,957	1,091	2,967	461	3,790		43	1,344	261		45.4%	0.4%
Nov-68	19,199	3,201	5,956	608	5,972	8	327	3,040	87		50.9%	1.7%
Dec-68	12,213	2,062	2,784	234	3,562		230	3,341			41.6%	1.9%
Jan-69	12,032	1,697	4,794		1,118			4,051	372		53.9%	0.0%
Feb-69	6,151	552	2,768	245	177		382	1,498	529		58.0%	6.2%
Mar-69	16,990	989	7,882	209	2,450	19	2,970	1,506	965		53.4%	17.5%
Apr-69	12,021	514	3,582		4,515		1,070	1,552	788		34.1%	8.9%
May-69	4,489	406	1,093		847		1,330	630	162	21	33.4%	29.6%
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69	10,008		9,566	442							100.0%	0.0%
Dec-69	21,067		21,067								100.0%	0.0%
Jan-70	30,365		30,365								100.0%	0.0%
Feb-70	30,132		30,132								100.0%	0.0%
Mar-70	50,386		50,386								100.0%	0.0%
Apr-70	45,711		45,711								100.0%	0.0%
May-70	57,609		57,609								100.0%	0.0%
Jun-70	57,019		57,019								100.0%	0.0%

Table C-79. 3rd Battalion, 319th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	11,050	1,629	9,407							14	99.9%	0.0%
Aug-68	14,278	2,250	11,473							555	96.1%	0.0%
Sep-68	13,938	5,479	8,032	427							100.0%	0.0%
Oct-68	10,268	9,623	645								100.0%	0.0%
Nov-68	13,101	354	12,286		461						96.5%	0.0%
Dec-68	18,471		18,471								100.0%	0.0%
Jan-69	16,687	1,324	15,363								100.0%	0.0%
Feb-69	17,330		17,330								100.0%	0.0%
Mar-69	16,131		16,131								100.0%	0.0%
Apr-69	15,944		15,944								100.0%	0.0%
May-69	22,568	1,009	19,963		404					1,192	92.9%	0.0%
Jun-69	14,928		14,928								100.0%	0.0%
Jul-69	21,019		21,003							16	99.9%	0.0%
Aug-69	17,336		14,333		2,235					768	82.7%	0.0%
Sep-69	15,015	706	12,343		1,779					187	86.9%	0.0%
Oct-69	17,561	1,454	12,794		3,313						81.1%	0.0%
Nov-69	18,870	3,559	15,311								100.0%	0.0%
Dec-69	14,912	1,221	6,331		6,037		1,323				50.6%	8.9%
Jan-70	17,930	1,455	14,621		1,854						89.7%	0.0%
Feb-70	28,939	1,769	27,170								100.0%	0.0%
Mar-70	21,045	2,420	17,560		1,065						94.9%	0.0%
Apr-70	25,387	5,604	19,059						724		97.1%	0.0%
May-70	10,752		10,125							627	94.2%	0.0%
Jun-70												

Table C-80. 2nd Battalion, 320th Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	16,982		16,932							50	99.7%	0.0%
Aug-68	27,425		27,425								100.0%	0.0%
Sep-68	13,202		11,770				749	683			89.2%	5.7%
Oct-68	12,453		12,453								100.0%	0.0%
Nov-68	12,638		12,638								100.0%	0.0%
Dec-68	13,830	447	13,383								100.0%	0.0%
Jan-69	12,785		12,785								100.0%	0.0%
Feb-69	9,531		9,531								100.0%	0.0%
Mar-69	14,644		14,644								100.0%	0.0%
Apr-69	17,343		17,343								100.0%	0.0%
May-69	3,004		3,004								100.0%	0.0%
Jun-69												
Jul-69												
Aug-69												
Sep-69	21,967		21,598	369							100.0%	0.0%
Oct-69	7,113		6,396							717	89.9%	0.0%
Nov-69	21,017		21,017								100.0%	0.0%
Dec-69	19,227		19,227								100.0%	0.0%
Jan-70	20,616		20,056				560				97.3%	2.7%
Feb-70	14,676		14,106							570	96.1%	0.0%
Mar-70	24,763		24,763								100.0%	0.0%
Apr-70	36,385		36,385								100.0%	0.0%
May-70	52,330		52,330								100.0%	0.0%
Jun-70	41,643		41,643								100.0%	0.0%

Table C-81. 1st Battalion, 321st Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	8,701	4,626	3,042		1,033						88.1%	0.0%
Aug-68	11,557	7,329	622		1,306			2,300			68.8%	0.0%
Sep-68	7,782	1,602			1,810		458	3,912			20.6%	5.9%
Oct-68	12,286	2,758	2,855		808			5,248	617		45.7%	0.0%
Nov-68	13,703	4,211	2,969	1,082	2,827	244	89	2,261	20		60.3%	0.6%
Dec-68	10,715	1,376	4,840	776	1,732	19	106	1,625	49	192	65.3%	1.0%
Jan-69	13,681	2,598	4,026	878	1,690	54	54	4,381			54.8%	0.4%
Feb-69	9,379	2,449	3,307	63	714			2,773	73		62.0%	0.0%
Mar-69	34,046	11,497	16,880	336	2,123			2,956	254		84.3%	0.0%
Apr-69	26,845	8,111	7,986		4,257		94	6,055	342		60.0%	0.4%
May-69	11,186	3,021	3,922	500	1,611		114	1,227	777	14	66.5%	1.0%
Jun-69	17,768	5,285	5,724	165	2,801	29	5	2,583	1,176		62.9%	0.0%
Jul-69	10,587	2,771	3,376	442	1,861		75	1,487	559	16	62.2%	0.7%
Aug-69	19,460	5,194	3,684	41	3,026		4,434	2,624	457		45.8%	22.8%
Sep-69	14,850	2,136	2,073	1,964	1,788	77	3,727	3,017	19	49	41.6%	25.1%
Oct-69	17,249	780	6,190	4,928	1,783	12	877	2,387	263	29	69.0%	5.1%
Nov-69	18,677	778	2,795	10,893	1,514	78	305	2,241	73		77.5%	1.6%
Dec-69	21,646	147	4,027	10,324	2,967	30	1,348	2,700	103		67.0%	6.2%
Jan-70	28,525	2,006	10,763	9,080	3,080	6	308	3,239	43		76.6%	1.1%
Feb-70	28,110	3,238	8,175	5,075	7,385		44	4,155	38		58.7%	0.2%
Mar-70	43,992	3,085	14,038	7,666	7,945		256	10,904	98		56.3%	0.6%
Apr-70	42,256	1,141	11,294	13,201	6,028	85	80	10,414	13		60.7%	0.2%
May-70	45,557	803	12,180	11,440	8,938			11,970	226		53.6%	0.0%
Jun-70	38,975	17,836	20,613						526		98.7%	0.0%

Table C-82. 2nd Battalion, 321st Artillery

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	24,442	6,179	2,044	434	779	205	6,172	463	1,192	6,974	35.4%	25.3%
Aug-68	22,839	4,524	5,665		3,016		8,034	1,593	7		44.6%	35.2%
Sep-68												
Oct-68	9,027	907	2,594	197	1,616		2,823	371	418	101	41.0%	31.3%
Nov-68	317,003	301,422	7,197		1,113		6,187		1,084		97.4%	2.0%
Dec-68	13,105	814	3,779				6,809	13	1,690		35.0%	52.0%
Jan-69	10,538	944	2,243		524		4,691	1,366	770		30.2%	44.5%
Feb-69	12,897	4,104	3,673		837		2,993	110	1,180		60.3%	23.2%
Mar-69	10,382	2,588	3,536		697		3,037		524		59.0%	29.3%
Apr-69	9,975	859	3,175		820		3,996	918	207		40.4%	40.1%
May-69	18,934	307	8,478	822	852		3,807	4,668			50.7%	20.1%
Jun-69	17,494		5,948	833	1,915		5,788	3,010			38.8%	33.1%
Jul-69	19,400		4,719	582	784		8,255	5,060			27.3%	42.6%
Aug-69	26,453		8,724	136	2,037		9,152	6,404			33.5%	34.6%
Sep-69	29,760		14,487		1,326		9,235	4,712			48.7%	31.0%
Oct-69	23,483	1,088	6,745	363	4,664	614	6,116	3,606	287		34.9%	26.0%
Nov-69	5,165		1,716		1,708		1,331	410			33.2%	25.8%
Dec-69												
Jan-70												
Feb-70												
Mar-70												
Apr-70												
May-70												
Jun-70												

Table C-83. Howitzer Battery, 1st Squadron, 11th Armored Cavalry

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	4,926		1,071				3,855				21.7%	78.3%
Aug-68	1,098		69				1,029				6.3%	93.7%
Sep-68	2,762		1,682	32	61		936		51		62.1%	33.9%
Oct-68	3,874	83	1,687	23	597		836	278	370		46.3%	21.6%
Nov-68	2,812	45	731		132	22	1,412	6	464		27.6%	50.2%
Dec-68	4,916	335	1,163		282		2,737	67	332		30.5%	55.7%
Jan-69	2,846		1,422		81		1,072	113	158		50.0%	37.7%
Feb-69	2,378	521	1,010				723	121	3		64.4%	30.4%
Mar-69	1,650	109	975	75	30		285	28	148		70.2%	17.3%
Apr-69	5,928	975	1,914		2,583	56	142	148	110		48.7%	2.4%
May-69	2,993	691	1,761	78	119		141	147	56		84.5%	4.7%
Jun-69	2,720	313	1,841	30	99		20	417			80.3%	0.7%
Jul-69	2,358	255	1,099	64	409			499	32		60.1%	0.0%
Aug-69	8,799	3,596	2,646	667	173		914	803			78.5%	10.4%
Sep-69	9,250	2,625	2,457	214	241		2,347	932	434		57.3%	25.4%
Oct-69	6,488	371	2,430	164	252		1,690	1,297	284		45.7%	26.0%
Nov-69	3,648		1,708		197		1,244	439	60		46.8%	34.1%
Dec-69	2,179	255	1,459				292	173			78.7%	13.4%
Jan-70	3,989	912	1,599	14	126		954	384			63.3%	23.9%
Feb-70	4,572	822	1,152	70	176		520	1,832			44.7%	11.4%
Mar-70	7,256	1,869	976	143	748			3,520			41.2%	0.0%
Apr-70	6,791	1,091	965	148	91		91	4,405			32.5%	1.3%
May-70	5,589	445	1,077		270		267	3,530			27.2%	4.8%
Jun-70	6,090	2,415	633		1,006			2,036			50.0%	0.0%

Table C-84. Howitzer Battery, 2nd Squadron, 11th Armored Cavalry

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	4,898		4,898								100.0%	0.0%
Aug-68	5,586	420	4,700				466				91.7%	8.3%
Sep-68	2,952		1,630				786			536	55.2%	26.6%
Oct-68	1,710	108	356		212		1,034				27.1%	60.5%
Nov-68	1,446			8		529	909				0.6%	62.9%
Dec-68	3,288	3,288									100.0%	0.0%
Jan-69	4,672	4,672									100.0%	0.0%
Feb-69	4,216	3,967	249								100.0%	0.0%
Mar-69												
Apr-69												
May-69												
Jun-69												
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70												
Feb-70	2,957	493	1,927				377			160	81.8%	12.7%
Mar-70	1,148	299	849								100.0%	0.0%
Apr-70												
May-70												
Jun-70	1,648									1,648	0.0%	0.0%

Table C-85. Howitzer Battery, 3rd Squadron, 11th Armored Cavalry

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68	3,991	1,878	291				1,792	30			54.3%	44.9%
Aug-68												
Sep-68	742	272				470					36.7%	0.0%
Oct-68	3,363	2,819			282		167		95		83.8%	5.0%
Nov-68	5,642	5,410		232							100.0%	0.0%
Dec-68	1,515	470	785	65	51			12	132		87.1%	0.0%
Jan-69	2,214	48	276				1,797	93			14.6%	81.2%
Feb-69	4,095		3,851		119		125				94.0%	3.1%
Mar-69	1,799	436	1,363								100.0%	0.0%
Apr-69	1,511		1,511								100.0%	0.0%
May-69	2,522		2,522								100.0%	0.0%
Jun-69	69		69								100.0%	0.0%
Jul-69												
Aug-69												
Sep-69												
Oct-69												
Nov-69												
Dec-69												
Jan-70	4,479						4,479				0.0%	100.0%
Feb-70	3,573						3,573				0.0%	100.0%
Mar-70	4,800						4,800				0.0%	100.0%
Apr-70	2,632						2,632				0.0%	100.0%
May-70	2,529						2,529				0.0%	100.0%
Jun-70	3,252						110			3,142	0.0%	3.4%

Table C-86. USARV Ammunition Losses and Missing Data at Battalion Level

Month	RDS	CNF	ACQ	CTB	PRP	VNS	INT	SP	OTH	N/A	RDS OBS	RDS INT
Jul-68												
Aug-68												
Sep-68												
Oct-68												
Nov-68	57									57	0.0%	0.0%
Dec-68												
Jan-69	4,777									4,777	0.0%	0.0%
Feb-69												
Mar-69	49,482									49,482	0.0%	0.0%
Apr-69												
May-69												
Jun-69	1,714									1,714	0.0%	0.0%
Jul-69												
Aug-69	8,866	117	619	151	118		232	5,420	142	2,067	10.0%	2.6%
Sep-69	58									58	0.0%	0.0%
Oct-69	592									592	0.0%	0.0%
Nov-69	1,480									1,480	0.0%	0.0%
Dec-69												
Jan-70												
Feb-70												
Mar-70	4							4			0.0%	0.0%
Apr-70												
May-70												
Jun-70												

APPENDIX D

U.S. MARINE CORPS ARTILLERY AMMUNITION EXPENDED DURING THE VIETNAM WAR, MARCH 1965 TO MAY 1971

This data is compiled by the author from the monthly command chronologies of U.S. Marine Corps artillery battalions that served in South Vietnam, which are available in the Virtual Vietnam Archive of Texas Tech University's Vietnam Center and Archive (VCA-TTU) and retrievable by the archive's document number, or reference number, for each record (see <http://www.vietnam.ttu.edu/virtualarchive/>). The VCA-TTU document number of each record appears in Table C-3, and those that follow, with the page number(s) on which the document lists artillery ammunition expenditures.

To view aggregate data, the author transferred each Marine battalion's monthly expenditures into a spreadsheet and subsequently merged the spreadsheets into a database. When compiling the data, the author observed that Marine artillery battalions employed a wider range of target categories than the Army, particularly after 1968. Some battalions defined observed fire with categories not shared by the Army, or even other Marine battalions. In nearly every document, moreover, the Marines used *missions and not rounds expended* to list artillery fire by category, although they consistently recorded total rounds expended per month and sometimes detailed rounds expended by target category as well. Some Marine battalions recorded no target category data whatsoever, particularly after 1968. To capture and to highlight these variations, the author added a "remarks" column near the right margin of every battalion data table.

Figure D-1. U.S. Marine Corps, Vietnam, Artillery Missions Fired by Target Category, July 1965 to December 1967. Source: Monthly Command Chronologies of U.S. Marine Artillery Battalions in South Vietnam from July 1965 to December 1967, Vietnam Center and Archive, Texas Tech University, Lubbock. See Tables D-3 to D-21 for detailed citation information.

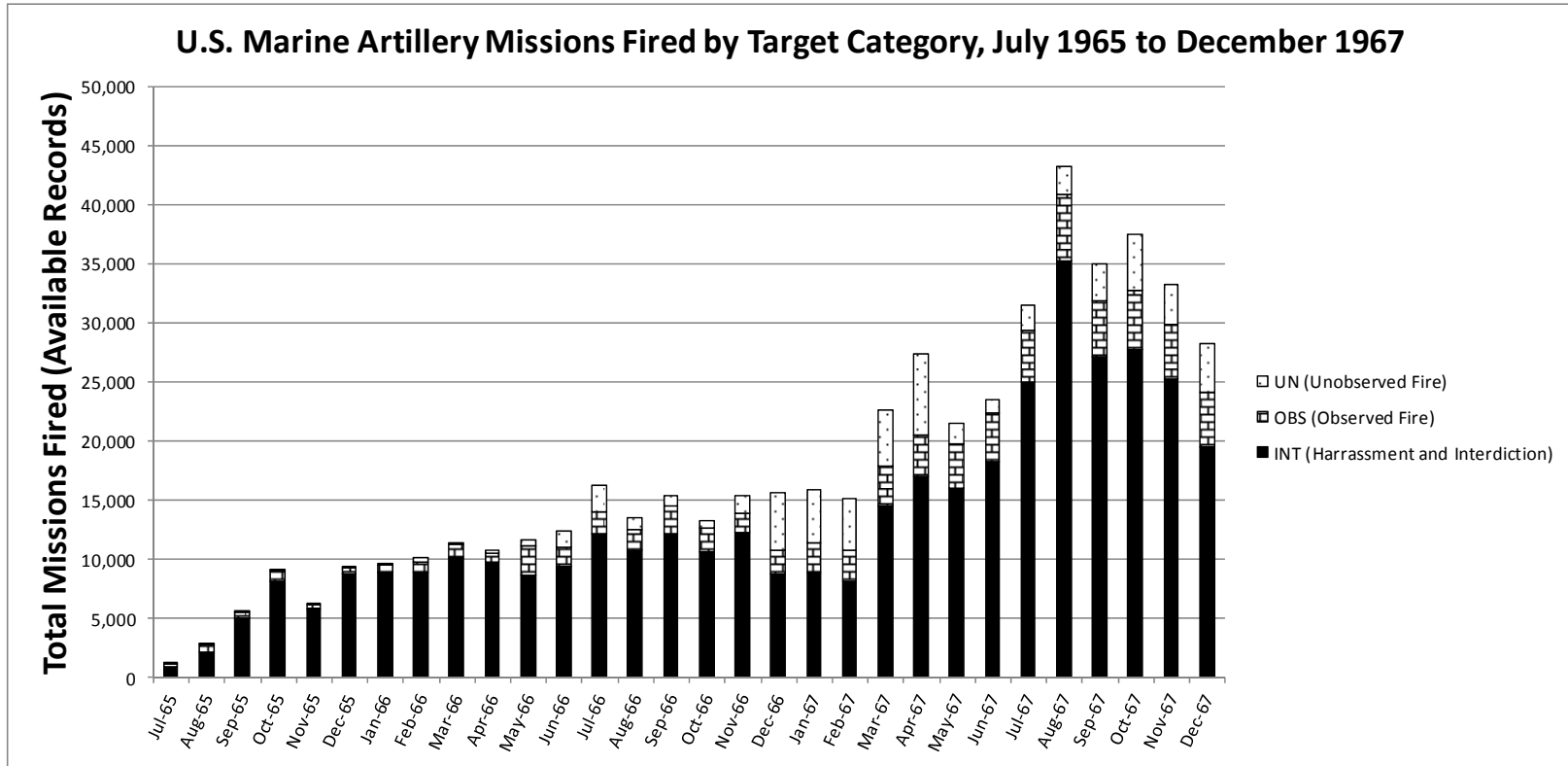


Table D-1. U.S. Marine Corps, Vietnam, March 1965 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %
Mar-65															
Apr-65															
May-65															
Jun-65	3,117	164								172			336	48.8%	51.2%
Jul-65	8,601	333				33				829			1,195	27.9%	69.4%
Aug-65	21,762	722				31				2,064			2,817	25.6%	73.3%
Sep-65	32,898	529				86				4,968			5,583	9.5%	89.0%
Oct-65	39,993	908				53				8,111			9,072	10.0%	89.4%
Nov-65	39,452	442				68				5,669			6,179	7.2%	91.7%
Dec-65	40,642	555				104				8,713			9,372	5.9%	93.0%
Jan-66	37,804	605				78				8,904			9,587	6.3%	92.9%
Feb-66	39,872	951				290				8,810			10,051	9.5%	87.7%
Mar-66	29,983	1,147				87				10,056			11,290	10.2%	89.1%
Apr-66	41,447	750				261				9,767			10,778	7.0%	90.6%
May-66	54,734	2,535				388				8,611			11,534	22.0%	74.7%
Jun-66	78,317	1,524				1,367				9,401			12,292	12.4%	76.5%
Jul-66	85,305	1,859				2,233				12,063			16,155	11.5%	74.7%
Aug-66	73,082	1,709				998				10,759			13,466	12.7%	79.9%
Sep-66	101,998	2,445				852				12,041			15,338	15.9%	78.5%
Oct-66	88,091	2,032				511				10,618			13,161	15.4%	80.7%
Nov-66	66,486	1,689				1,387				12,211			15,287	11.0%	79.9%
Dec-66	72,595	1,965				4,873				8,739			15,577	12.6%	56.1%
Jan-67	62,415	2,475				4,495				8,860			15,830	15.6%	56.0%
Feb-67	75,289	2,723				4,310				8,038			15,071	18.1%	53.3%
Mar-67	117,609	3,368				4,699				14,459			22,526	15.0%	64.2%
Apr-67	155,602	3,477				6,926				16,942			27,345	12.7%	62.0%
May-67	137,015	3,805				1,697				15,910			21,412	17.8%	74.3%
Jun-67	133,978	4,135				1,119				18,190			23,444	17.6%	77.6%
Jul-67	197,725	4,286				2,163				25,021			31,470	13.6%	79.5%
Aug-67	312,502	5,725				2,328				35,154			43,207	13.3%	81.4%
Sep-67	263,066	4,735				3,153				27,106			34,994	13.5%	77.5%
Oct-67	273,051	5,072				4,738				27,659			37,469	13.5%	73.8%
Nov-67	229,641	4,717				3,370				25,172			33,259	14.2%	75.7%
Dec-67	237,810	4,526				4,194				19,501			28,221	16.0%	69.1%

Table D-2. U.S. Marine Corps, Vietnam, January 1968 to May 1971

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %
Jan-68	280,987	7,010				5,213				18,798			31,021	22.6%	60.6%
Feb-68	292,376	7,089				5,611				16,000			28,700	24.7%	55.7%
Mar-68	278,819	6,031				6,183				18,934			31,148	19.4%	60.8%
Apr-68	330,785	4,869				9,472				22,128			36,469	13.4%	60.7%
May-68	328,566	5,321	261	227	67	9,603		379		12,576	67	3	28,504	20.6%	44.1%
Jun-68	276,752	4,717	105	328	89	16,957		46		5,221	34	10	27,507	19.0%	19.0%
Jul-68	320,652	4,530	176	1,040	12	12,446		274		11,192	70	25	29,765	19.3%	37.6%
Aug-68	340,314	4,519	269	1,507	123	11,558		271		12,421	81	56	30,805	20.8%	40.3%
Sep-68	265,081	3,914	305	618		10,116		168		8,681	136		23,938	20.2%	36.3%
Oct-68	215,272	2,889	271	260		9,302		92		7,804	182		20,800	16.4%	37.5%
Nov-68	315,889	3,517	422	490		13,414		138		8,536	262		26,779	16.5%	31.9%
Dec-68	262,744	2,966	124	789	72	11,366		100		5,084	98		20,599	19.2%	24.7%
Jan-69	269,670	3,126	108	1,214	2	6,855		54		6,792	92		18,243	24.4%	37.2%
Feb-69	315,868	3,356	133	1,428	22	7,292		33		8,453	66		20,783	23.8%	40.7%
Mar-69	352,516	4,432	262	1,601	80	7,849		73		9,731	76		24,104	26.4%	40.4%
Apr-69	272,046	3,527	244	1,666	20	10,209		70		6,322	72		22,130	24.7%	28.6%
May-69	317,025	4,133	207	814	56	6,959	2,040	63		6,884	139		21,295	24.5%	32.3%
Jun-69	316,936	3,938	155	759	85	6,721	993	26		8,439	109		21,225	23.3%	39.8%
Jul-69	308,031	4,443				8,409	1,010		1,541	5,974			21,377	20.8%	27.9%
Aug-69	339,722	4,394	186	552	88	10,804	691	81	1,662	6,491	155		25,104	20.8%	25.9%
Sep-69	204,280	3,170				7,725	325		1,173	3,093			15,486	20.5%	20.0%
Oct-69	155,103	1,879				5,800	329		344	3,256			11,608	16.2%	28.0%
Nov-69	122,983	1,309				164	107		352	2,829			4,761	27.5%	59.4%
Dec-69	159,338	1,340				6,678	176		300	3,141			11,635	11.5%	27.0%
Jan-70	172,609	1,509				7,098	305		344	3,568			12,824	11.8%	27.8%
Feb-70	157,043	777	126	29	1	6,807	214	29		3,598	10		11,591	8.0%	31.0%
Mar-70	140,259	537	113	106	1	842	211	38		4,030	7		5,885	12.9%	68.5%
Apr-70	140,457	509	68	21	73	196	296	48		3,725	16		4,952	13.6%	75.2%
May-70	138,849	525	81	127	5	392	391	62		4,364	17		5,964	12.4%	73.2%
Jun-70	127,696	374	103	253	0	336	399	37		4,923	10		6,435	11.3%	76.5%
Jul-70	114,065	461	88	71	0	114	178	18		4,399	34		5,363	11.6%	82.0%
Aug-70	71,583	383	51	61	12	139	140	28		4,910			5,724	8.9%	85.8%
Sep-70	88,686	460	67	2,756	11	92	149	64		2,248			5,847	56.3%	38.4%
Oct-70	48,097	359	164	2,048	21	72	83	1		356			3,104	83.5%	11.5%
Nov-70	20,762	257	82	1,271	0	14	204	2		149			1,979	81.4%	7.5%
Dec-70	26,049	411	149	0	1,498	60	207	2		395	17		2,739	75.1%	14.4%
Jan-71	33,715	495	138			1,510	4	176	26		580		2,929	73.2%	19.8%
Feb-71	30,389	613				1,149	9	173	1,626	293			3,863	45.6%	7.6%
Mar-71	9,410	205				2,194	0	208	36	24			2,667	90.0%	0.9%
Apr-71	8,220	135				2,585		103	14				2,837	95.9%	0.0%
May-71	225					98							98	100.0%	0.0%

Table D-3. 1st Battalion, 11th Marines, May 1966 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
May-66	14,571	191				202				581			974	19.6%	59.7%	VCA-TTU, 1201057267	2	
Jun-66	2,422	59				0				335			394	15.0%	85.0%	VCA-TTU, 1201057268	2	RDS: 1,627 H&I (67.2%)
Jul-66	13,234	174				36				1,040			1,250	13.9%	83.2%	VCA-TTU, 1201057269	2-3	RDS: 8,948 H&I (67.6%)
Aug-66	4,038	101				2				585			688	14.7%	85.0%	VCA-TTU, 1201057270	2	RDS: 2,684 H&I (66.5%)
Sep-66	17,688	306				44				761			1,111	27.5%	68.5%	VCA-TTU, 1201057271	2	RDS: 5,242 H&I (29.6%)
Oct-66	18,260	433				80				1,132			1,645	26.3%	68.8%	VCA-TTU, 1201057272	2	RDS: 7,976 H&I (43.7%)
Nov-66	7,334	374				48				715			1,137	32.9%	62.9%	VCA-TTU, 1201057273	2	RDS: 2,796 H&I (38.1%)
Dec-66	10,011	713				73				355			1,141	62.5%	31.1%	VCA-TTU, 1201057274	2	RDS: 1,492 H&I (14.9%)
Jan-67	9,228	873				110				503			1,486	58.7%	33.8%	VCA-TTU, 1201057275	4	RDS: 1,207 H&I (13.1%)
Feb-67	10,953	1,123				78				556			1,757	63.9%	31.6%	VCA-TTU, 1201057276	4	RDS: 1,982 H&I (18.1%)
Mar-67	15,424	1,047				177				586			1,810	57.8%	32.4%	VCA-TTU, 1201057277	6	RDS: 1,893 H&I (12.3%)
Apr-67	20,742	1,070				161				726			1,957	54.7%	37.1%	VCA-TTU, 1201057278	5	RDS: 3,671 H&I (17.7%)
May-67	14,554	632				209				872			1,713	36.9%	50.9%	VCA-TTU, 1201058001	5	RDS: 2,452 H&I (16.8%)
Jun-67	13,833	763				155				888			1,806	42.2%	49.2%	VCA-TTU, 1201058002	4	RDS: 4,321 H&I (31.2%)
Jul-67	12,347	624				214				962			1,800	34.7%	53.4%	VCA-TTU, 1201058003	5	RDS: 3,537 H&I (28.6%)
Aug-67	13,953	779				183				1,022			1,984	39.3%	51.5%	VCA-TTU, 1201058004	5	RDS: 3,744 H&I (26.8%)
Sep-67	13,008	659				325				665			1,649	40.0%	40.3%	VCA-TTU, 1201058005	5	RDS: 3,401 H&I (26.1%)
Oct-67	12,569	493				71				1,575			2,139	23.0%	73.6%	VCA-TTU, 1201058006	6	RDS: 6,738 H&I (53.6%)
Nov-67	15,590	260				74				1,697			2,031	12.8%	83.6%	VCA-TTU, 1201058007	7	RDS: 12,229 H&I (78.4%)
Dec-67	16,893	330				84				2,996			3,410	9.7%	87.9%	VCA-TTU, 1201058008	7	RDS: 12,458 H&I (73.7%)

Table D-4. 1st Battalion, 11th Marines, January 1968 to May 1971

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	13,568	300				174				1,915			2,389	12.6%	80.2%	VCA-TTU, 1201058009	8	RDS: 7,620 H&I (56.2%)
Feb-68	29,402	1,409				616				2,325			4,350	32.4%	53.4%	VCA-TTU, 1201058010	11	RDS: 4,775 H&I (16.2%)
Mar-68	16,204	302				249				2,520			3,071	9.8%	82.1%	VCA-TTU, 1201058011	9	RDS: 6,778 H&I (41.8%)
Apr-68	32,146	766				384				2,235			3,385	22.6%	66.0%	VCA-TTU, 1201058012	9	RDS: 7,738 H&I (24.1%)
May-68	62,503	1,724				3,319				2,782			7,825	22.0%	35.6%	VCA-TTU, 1201058013	15	RDS: 9,796 H&I (15.7%)
Jun-68	66,651	1,733				7,331							9,064	19.1%	0.0%	VCA-TTU, 1201058014	9	
Jul-68	34,331	802				1,844				2,416			5,062	15.8%	47.7%	VCA-TTU, 1201058015	10	RDS: 10,283 H&I (30.0%)
Aug-68	33,841	524				862				2,711			4,097	12.8%	66.2%	VCA-TTU, 1201058017	7	RDS: 13,956 H&I (41.2%)
Sep-68	15,851	373				113				798			1,284	29.0%	62.1%	VCA-TTU, 1201058018	5	RDS: 4,872 H&I (30.7%)
Oct-68	19,170	149				404				591			1,144	13.0%	51.7%	VCA-TTU, 1201058019	6	RDS: 5,564 H&I (29.0%)
Nov-68	25,709	436				336				676			1,448	30.1%	46.7%	VCA-TTU, 1201058020	6	RDS: 4,297 H&I (16.7%)
Dec-68	20,562	352				140				962			1,454	24.2%	66.2%	VCA-TTU, 1201058021	5	RDS: 6,495 H&I (31.6%)
Jan-69	16,191	328				121				605			1,054	31.1%	57.4%	VCA-TTU, 1201058022	4	RDS: 2,823 H&I (17.4%)
Feb-69	22,611	363				219				412			994	36.5%	41.4%	VCA-TTU, 1201058023	5	RDS: 1,596 H&I (7.1%)
Mar-69	24,621	402				246				484			1,132	35.5%	42.8%	VCA-TTU, 1201058024	5	RDS: 2,987 H&I (12.1%)
Apr-69	23,646	374				168				976			1,518	24.6%	64.3%	VCA-TTU, 1201058025	5	RDS: 7,114 H&I (30.1%)
May-69	18,742	310				119				900			1,329	23.3%	67.7%	VCA-TTU, 1201058026	5	RDS: 7,553 H&I (40.3%)
Jun-69	46,459	535				553				1,234			2,322	23.0%	53.1%	VCA-TTU, 1201058028	5	RDS: 10,649 H&I (22.9%)
Jul-69	30,679	367							1,281	273			1,921	19.1%	14.2%	VCA-TTU, 1201058029	4	RDS: 15,568 PRE (50.7%)
Aug-69	24,224	363							1,264	18			1,645	22.1%	1.1%	VCA-TTU, 1201058030	3	RDS: 13,583 PRE (56.1%)
Sep-69	25,750	390							983	131			1,504	25.9%	8.7%	VCA-TTU, 1201058031	3	RDS: 14,265 PRE (55.4%)
Oct-69	22,462	446							344	1,022			1,812	24.6%	56.4%	VCA-TTU, 1201058032	6	RDS: 17,823 S2 (79.3%)
Nov-69	29,294	479							352	1,074			1,905	25.1%	56.4%	VCA-TTU, 1201058033	5	RDS: 15,655 S2 (53.4%)
Dec-69	33,889	399							300	1,060			1,759	22.7%	60.3%	VCA-TTU, 1201058034	5	RDS: 18,698 S2 (55.2%)
Jan-70	32,360	293							344	1,052			1,689	17.3%	62.3%	VCA-TTU, 1201058035	6	RDS: 18,881 S2 (58.3%)
Feb-70	25,720		126	29	1		45	29		1,447	10		1,687	9.2%	85.8%	VCA-TTU, 1201058036	6	RDS: 19,371 INT (75.3%)
Mar-70	37,688		113	106	1		97	38		2,214	7		2,576	8.5%	85.9%	VCA-TTU, 1201058037	7	RDS: 29,179 INT (77.4%)
Apr-70	49,212		68	21	73		197	48		2,786	16		3,209	5.0%	86.8%	VCA-TTU, 1201058038	6	RDS: 38,268 INT (77.8%)
May-70	49,743		81	127	5		183	62		3,121	17		3,596	5.9%	86.8%	VCA-TTU, 1201058039	6	RDS: 38,604 INT (77.6%)
Jun-70	48,083		103	253	0		205	37		3,348	10		3,956	9.0%	84.6%	VCA-TTU, 1201058040	6	RDS: 40,619 INT (84.5%)
Jul-70	38,166		88	71	0		148	18		2,858	34		3,217	4.9%	88.8%	VCA-TTU, 1201058041	6	RDS: 31,946 INT (83.7%)
Aug-70	32,748		51	61	12		130	28		2,590			2,872	4.3%	90.2%	VCA-TTU, 1201058042	7	RDS: 27,785 INT (84.8%)
Sep-70	34,408		67	2,756	11		137	64		0			3,035	93.4%	0.0%	VCA-TTU, 1201058043	6	RDS: 27,789 ACQ (80.8%)
Oct-70	30,085		164	2,048	21		71	1					2,305	96.9%	0.0%	VCA-TTU, 1201058044	5	RDS: 22,352 ACQ (74.3%)
Nov-70	11,044		82	1,271	0		192	2					1,547	87.5%	0.0%	VCA-TTU, 1201058045	5	RDS: 7,022 ACQ (63.6%)
Dec-70	11,489		149	0	1,498		188	2			17		1,854	88.8%	0.0%	VCA-TTU, 1201058046	5	RDS: 5,685 CTB (49.5%)
Jan-71	16,559		138		1,510		170	26					1,844	89.4%	0.0%	VCA-TTU, 1201058047	5	RDS: 12,166 CTB (73.5%)
Feb-71	12,696	190			1,149		173	1,626					3,138	42.7%	0.0%	VCA-TTU, 1201058048	7	RDS: 5,375 PRP (42.3%)
Mar-71	8,029	167			2,194		208	36					2,605	90.6%	0.0%	VCA-TTU, 1201058049	8	RDS: 4,397 CTB (54.8%)
Apr-71	8,220	135			2,585		103	14					2,837	95.9%	0.0%	VCA-TTU, 1201058050-51	5,7	RDS: 4,788 CTB (58.2%)
May-71	225				98								98	100.0%	0.0%	VCA-TTU, 1201058052	7	RDS: 225 CTB

Table D-5. 2nd Battalion, 11th Marines, May 1966 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
May-66																VCA-TTU,1201058056		Data not recorded.
Jun-66	9,162	202				376				386			964	21.0%	40.0%	VCA-TTU,1201058057	2	
Jul-66	18,727	429				919				2,012			3,360	12.8%	59.9%	VCA-TTU,1201058058	2	
Aug-66	15,503	328				203				1,092			1,623	20.2%	67.3%	VCA-TTU,1201058059	2	
Sep-66	10,285	218				156				909			1,283	17.0%	70.8%	VCA-TTU,1201058060	2-3	
Oct-66	10,672	148				86				1,144			1,378	10.7%	83.0%	VCA-TTU,1201058061	2	
Nov-66	8,305	112				58				1,145			1,315	8.5%	87.1%	VCA-TTU,1201058062	2	
Dec-66	5,948	129				90				651			870	14.8%	74.8%	VCA-TTU,1201058063	2	
Jan-67	5,271	204				43				486			733	27.8%	66.3%	VCA-TTU,1201058064	4	
Feb-67	4,292	119				53				483			655	18.2%	73.7%	VCA-TTU,1201058065	4	
Mar-67	4,925	129				99				830			1,058	12.2%	78.4%	VCA-TTU,1201058066	4	
Apr-67	10,295	223				176				1,275			1,674	13.3%	76.2%	VCA-TTU,1201058067	4	
May-67	32,636	930				410				2,791			4,131	22.5%	67.6%	VCA-TTU,1201058068	4	
Jun-67	31,801	759				328				2,879			3,966	19.1%	72.6%	VCA-TTU,1201058069	4	
Jul-67	34,315	781				418				2,819			4,018	19.4%	70.2%	VCA-TTU,1201058070	4	
Aug-67	54,555	1,237				789				5,353			7,379	16.8%	72.5%	VCA-TTU,1201058071	4	
Sep-67	45,948	885				1,215				3,344			5,444	16.3%	61.4%	VCA-TTU,1201058072	4	
Oct-67	16,713	418				235				2,049			2,702	15.5%	75.8%	VCA-TTU,1201058073	4	
Nov-67	26,103	1,081				179				2,697			3,957	27.3%	68.2%	VCA-TTU,1201058074	3-4	
Dec-67	21,039	833				179				2,902			3,914	21.3%	74.1%	VCA-TTU,1201058075	3-5	

Table D-6. 2nd Battalion, 11th Marines, January 1968 to March 1971

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	17978	655				214				2443			3312	0.1978	0.7376	VCA-TTU,1201058076	4-5	
Feb-68	14,611	379				100				1,096			1,575	24.1%	69.6%	VCA-TTU,1201058077	4-5	
Mar-68	16,096	324				270				2,313			2,907	11.1%	79.6%	VCA-TTU,1201058078	4-5	
Apr-68	26,149	456				468				4,413			5,337	8.5%	82.7%	VCA-TTU,1201058079	4	
May-68																		Record not available.
Jun-68	33,002	477				3,899							4,376	10.9%	0.0%	VCA-TTU,1201058080	4	
Jul-68	25,300	385				2,605							2,990	12.9%	0.0%	VCA-TTU,1201058081	4	
Aug-68	23,445	446				840				2,005			3,291	13.6%	60.9%	VCA-TTU,1201058082	4	RDS: 12,101 H&I (51.6%)
Sep-68	35,774	589				342				1,973			2,904	20.3%	67.9%	VCA-TTU,1201058083	4	RDS: 10,527 H&I (29.4%)
Oct-68	35,481	661				1,193				1,291			3,145	21.0%	41.0%	VCA-TTU,1201058084	4	RDS: 9,595 H&I (27.0%)
Nov-68	53,569	842				1,656				1,065			3,563	23.6%	29.9%	VCA-TTU,1201058085	4	RDS: 11,522 H&I (21.5%)
Dec-68	48,005	1,248				984				1,078			3,310	37.7%	32.6%	VCA-TTU,1201058086	4	RDS: 9,421 H&I (19.6%)
Jan-69	30,753	823				1,133				1,331			3,287	25.0%	40.5%	VCA-TTU,1201058087	3-4	RDS: 11,497 H&I (37.4%)
Feb-69	37,057	942				661				2,122			3,725	25.3%	57.0%	VCA-TTU,1201058088	6	RDS: 12,269 H&I (33.1%)
Mar-69	75,789	1,702				1,199				3,529			6,430	26.5%	54.9%	VCA-TTU,1201058089	6	RDS: 16,415 H&I (21.7%)
Apr-69	42,136	854				2,310				1,111			4,275	20.0%	26.0%	VCA-TTU,1201058090	6	RDS: 4,414 H&I (10.5%)
May-69	67,690	1,000				155	2,040			1,081			4,276	23.4%	25.3%	VCA-TTU,1201058091	6	RDS: 14,037 H&I (20.7%)
Jun-69	65,626	980				344	993			1,916			4,233	23.2%	45.3%	VCA-TTU,1201058092	6	RDS: 22,976 H&I (35.0%)
Jul-69	72,141	891				800	1,010			2,141			4,842	18.4%	44.2%	VCA-TTU,1201058093	6	RDS: 11,388 H&I (12.5%)
Aug-69	89,131	955				1,208	691			2,769			5,623	17.0%	49.2%	VCA-TTU,1201058094	5	RDS: 24,243 H&I (27.2%)
Sep-69	34,787	774				402	325			1,733			3,234	23.9%	53.6%	VCA-TTU,1201058095	5	RDS: 15,457 H&I (44.4%)
Oct-69	35,239	703				416	329			1,544			2,992	23.5%	51.6%	VCA-TTU,1201058096	5	RDS: 19,846 H&I (56.3%)
Nov-69	38,622	830				164	107			1,755			2,856	29.1%	61.4%	VCA-TTU,1201058097	5	RDS: 24,496 H&I (63.4%)
Dec-69	34,767	555				257	176			2,081			3,069	18.1%	67.8%	VCA-TTU,1201058098	5	RDS: 26,724 H&I (76.9%)
Jan-70	39,908	700				89	305			2,516			3,610	19.4%	69.7%	VCA-TTU,1201058099	5	RDS: 28,516 H&I (71.5%)
Feb-70	36,721	459				182	169			2,151			2,961	15.5%	72.6%	VCA-TTU,1201058100	5	RDS: 26,731 H&I (72.8%)
Mar-70	34,380	499				182	114			1,816			2,611	19.1%	69.6%	VCA-TTU,1201058101	5	RDS: 21,998 H&I (64.0%)
Apr-70	25,205	509				196	99			939			1,743	29.2%	53.9%	VCA-TTU,1201058102	5	RDS: 10,630 H&I (42.2%)
May-70	26,247	525				392	208			1,243			2,368	22.2%	52.5%	VCA-TTU,1201058103	5	RDS: 12,115 H&I (46.2%)
Jun-70	24,695	374				336	194			1,575			2,479	15.1%	63.5%	VCA-TTU,1201058104	5	RDS: 10,594 H&I (42.9%)
Jul-70	20,807	461				114	30			1,541			2,146	21.5%	71.8%	VCA-TTU,1201058105	5	RDS: 10,541 H&I (50.7%)
Aug-70	20,361	383				139	10			2,320			2,852	13.4%	81.3%	VCA-TTU,1201058106	5	RDS: 13,560 H&I (66.6%)
Sep-70	28,021	460				92	12			2,248			2,812	16.4%	79.9%	VCA-TTU,1201058107	5	RDS: 13,036 H&I (46.5%)
Oct-70	18,012	359				72	12			356			799	44.9%	44.6%	VCA-TTU,1201058108	5	RDS: 3,616 INT (20.1%)
Nov-70	9,718	257				14	12			149			432	59.5%	34.5%	VCA-TTU,1201058109	5	RDS: 1,705 INT (17.5%)
Dec-70	14,560	411				60	19			395			885	46.4%	44.6%	VCA-TTU,1201058110	6	RDS: 2,963 INT (20.4%)
Jan-71	17,156	495				4	6			580			1,085	45.6%	53.5%	VCA-TTU,1201058111	6	RDS: 4,753 INT (27.7%)
Feb-71	17,693	423				9	0			293			725	58.3%	40.4%	VCA-TTU,1201058112	6	RDS: 5,514 INT (31.2%)
Mar-71	1,381	38				0	0			24			62	61.3%	38.7%	VCA-TTU,1201058113	6	RDS: 352 INT (25.5%)

Table D-7. 3rd Battalion, 11th Marines, August 1965 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Aug-65																VCA-TTU,1201058114		Data not recorded.
Sep-65																VCA-TTU,1201058115		Data not recorded.
Oct-65																VCA-TTU,1201058116		Data not recorded.
Nov-65																VCA-TTU,1201058117		Data not recorded.
Dec-65																VCA-TTU,1201058118		Data not recorded.
Jan-66																VCA-TTU,1201058119		Data not recorded.
Feb-66																VCA-TTU,1201058120		Data not recorded.
Mar-66																VCA-TTU,1201058121		Data not recorded.
Apr-66																VCA-TTU,1201058122		Data not recorded.
May-66																VCA-TTU,1201058123		Data not recorded.
Jun-66																VCA-TTU,1201058124		Data not recorded.
Jul-66																VCA-TTU,1201058125		Data not recorded.
Aug-66	6,326	361				5				0			366	98.6%	0.0%	VCA-TTU,1201058126	2	OBS = REG, OPP, DEF, FFE
Sep-66	8,230	478				35				0			513	93.2%	0.0%	VCA-TTU,1201058127	3	OBS = REG, OPP, DEF, FFE
Oct-66	6,904	461				2				0			463	99.6%	0.0%	VCA-TTU,1201058128	2	OBS = REG, OPP, DEF, FFE
Nov-66	7,902	401				3				0			404	99.3%	0.0%	VCA-TTU,1201058129	2	OBS = REG, OPP, DEF, FFE
Dec-66	5,423	224				0				0			224	100.0%	0.0%	VCA-TTU,1201058130	2	OBS = REG, OPP, DEF, FFE
Jan-67	4,124	133				7				0			140	95.0%	0.0%	VCA-TTU,1201058131	4	OBS = REG, OPP, DEF, FFE
Feb-67	4,381	122				6				0			128	95.3%	0.0%	VCA-TTU,1201058132	5	OBS = REG, OPP, DEF, FFE
Mar-67	7,583	227				4				0			231	98.3%	0.0%	VCA-TTU,1201058133	6	OBS = REG, OPP, DEF, FFE
Apr-67	15,459	278				16				0			294	94.6%	0.0%	VCA-TTU,1201058134	1-5	OBS = REG, OPP, DEF, FFE
May-67	18,618	499				13				0			512	97.5%	0.0%	VCA-TTU,1201058135	6	OBS = REG, OPP, DEF, FFE
Jun-67	20,546	467				53				0			520	89.8%	0.0%	VCA-TTU,1201058136	6	OBS = REG, OPP, DEF, FFE
Jul-67	31,092	913				73				39			1,025	89.1%	3.8%	VCA-TTU,1201058137	6	OBS = REG, OPP, DEF, FFE, FOS
Aug-67	66,553	1,075				14				0			1,089	98.7%	0.0%	VCA-TTU,1201058138	4	OBS = REG, OPP, DEF, FFE, FOS
Sep-67	80,841	942				36				0			978	96.3%	0.0%	VCA-TTU,1201058139	4	OBS = REG, OPP, DEF, FFE, FOS
Oct-67	94,555	829				41				0			870	95.3%	0.0%	VCA-TTU,1201058140	4	OBS = REG, OPP, DEF, FFE, FOS
Nov-67	76,029	1,083				18				0			1,101	98.4%	0.0%	VCA-TTU,1201058141	4	OBS = REG, OPP, DEF, FFE, FOS
Dec-67	72,813	926				19				0			945	98.0%	0.0%	VCA-TTU,1201058142	4	OBS = REG, OPP, DEF, FFE, FOS

Table D-8. 3rd Battalion, 11th Marines, January 1968 to September 1970

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	76,717	2,059				127				113			2,299	89.6%	4.9%	VCA-TTU,1201058143	5	OBS = REG, OPP, DEF, FFE, FOS
Feb-68	75,586	1,866				43				24			1,933	96.5%	1.2%	VCA-TTU,1201058144	5	OBS = REG, OPP, DEF, FFE, FOS
Mar-68	54,465	1,534				168				8			1,710	89.7%	0.5%	VCA-TTU,1201058145	II-2	OBS = REG, OPP, DEF, FFE, FOS
Apr-68	85,068															VCA-TTU,1201058146	II-2	Data not recorded.
May-68	64,642															VCA-TTU,1201058147	II-3	Data not recorded.
Jun-68	47,861															VCA-TTU,1201058148	II-3	Data not recorded.
Jul-68	56,531															VCA-TTU,1201058149	II-3	Data not recorded.
Aug-68	52,722															VCA-TTU,1201058150	II-2	Data not recorded.
Sep-68	44,340															VCA-TTU,1201058151	II-2	Data not recorded.
Oct-68	39,898															VCA-TTU,1201058152	II-2	Data not recorded.
Nov-68	44,558															VCA-TTU,1201058153	II-1	Data not recorded.
Dec-68	35,715															VCA-TTU,1201058154	II-1	Data not recorded.
Jan-69	49,702															VCA-TTU,1201058155	II-1	Data not recorded.
Feb-69	42,164															VCA-TTU,1201058156	II-1	Data not recorded.
Mar-69	35,678															VCA-TTU,1201058157	II-1	Data not recorded.
Apr-69	21,071															VCA-TTU,1201058158	IV-A	Data not recorded.
May-69	21,090															VCA-TTU,1201058159	II-1	Data not recorded.
Jun-69	25,395															VCA-TTU,1201058160	II-1	Data not recorded.
Jul-69	40,839															VCA-TTU,1201058161	II-1	Data not recorded.
Aug-69	24,960															VCA-TTU,1201058162	II-1	Data not recorded.
Sep-69	25,668															VCA-TTU,1201058163	II-1	Data not recorded.
Oct-69	32,151															VCA-TTU,1201058164	II-1	Data not recorded.
Nov-69	29,088															VCA-TTU,1201058165	II-2	Data not recorded.
Dec-69	29,680															VCA-TTU,1201058166	II-2	Data not recorded.
Jan-70	43,296															VCA-TTU,1201058167	II-2	Data not recorded.
Feb-70	34,796															VCA-TTU,1201058168	II-2	Data not recorded.
Mar-70	40,255															VCA-TTU,1201058169	II-2	Data not recorded.
Apr-70	40,690															VCA-TTU,1201058170	II-3	Data not recorded.
May-70	44,283															VCA-TTU,1201058171	II-4	Data not recorded.
Jun-70	36,160															VCA-TTU,1201058172	II-5	Data not recorded.
Jul-70	34,730															VCA-TTU,1201058173	II-4	Data not recorded.
Aug-70																		Record not available.
Sep-70	20,927															VCA-TTU,1201058174	II-4	Data not recorded.

Table D-9. 4th Battalion, 11th Marines, February 1966 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Feb-66																VCA-TTU,1201058176		Data not recorded.
Mar-66		3				17				18			38	7.9%	47.4%	VCA-TTU,1201058177	IV-2	
Apr-66		15				63				204			282	5.3%	72.3%	VCA-TTU,1201058178	5	
May-66	1,573	28				26				161			215	13.0%	74.9%	VCA-TTU,1201058179	1	
Jun-66	6,996	131				121				352			604	21.7%	58.3%	VCA-TTU,1201058180	1	
Jul-66	10,070	270				225				595			1,090	24.8%	54.6%	VCA-TTU,1201058181	1-1	
Aug-66	9,452	175				88				876			1,139	15.4%	76.9%	VCA-TTU,1201058182	1-1,2	
Sep-66	15,670	258				26				1,381			1,665	15.5%	82.9%	VCA-TTU,1201058183	1-1	
Oct-66	8,384	286				13				633			932	30.7%	67.9%	VCA-TTU,1201058184	1-2,3	
Nov-66	6,997	216				29				540			785	27.5%	68.8%	VCA-TTU,1201058185	1-1,2	
Dec-66	5,191	212				122				347			681	31.1%	51.0%	VCA-TTU,1201058186	1-2	
Jan-67	7,154	176				134				480			790	22.3%	60.8%	VCA-TTU,1201058187	4	
Feb-67	10,119	221				127				578			926	23.9%	62.4%	VCA-TTU,1201058188	7	
Mar-67	7,921	222				133				657			1,012	21.9%	64.9%	VCA-TTU,1201058189	6	
Apr-67	13,619	208				114				1,225			1,547	13.4%	79.2%	VCA-TTU,1201058190	6	
May-67	10,502	231				213				1,118			1,562	14.8%	71.6%	VCA-TTU,1201058191	6	
Jun-67	11,315	304				145				808			1,257	24.2%	64.3%	VCA-TTU,1201058192	6	
Jul-67	12,886	204				528				1,284			2,016	10.1%	63.7%	VCA-TTU,1201058193	6	
Aug-67	18,284	202				330				3,628			4,160	4.9%	87.2%	VCA-TTU,1201058194	6	
Sep-67	11,123	183				213				2,845			3,241	5.6%	87.8%	VCA-TTU,1201058195	6	
Oct-67	9,312	179				342				3,607			4,128	4.3%	87.4%	VCA-TTU,1201058196	5	
Nov-67	12,065	222				581				11,062			11,865	1.9%	93.2%	VCA-TTU,1201058197	6	
Dec-67	10,555	202				758				3,307			4,267	4.7%	77.5%	VCA-TTU,1201058198	6	

Table D-10. 4th Battalion, 11th Marines, January 1968 to August 1969

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	12,053	413				970				2,448			3,831	10.8%	63.9%	VCA-TTU,1201058199	8-9	
Feb-68	10,658	273				306				2,907			3,486	7.8%	83.4%	VCA-TTU,1201058200	7	
Mar-68	17,544	347				418				4,488			5,253	6.6%	85.4%	VCA-TTU,1201058201	4,6	
Apr-68	16,382	315				1,088				3,109			4,512	7.0%	68.9%	VCA-TTU,1201058202	4	RDS: 3,109 H&I (41.8%)
May-68	19,432	550				1,283				2,540			4,373	12.6%	58.1%	VCA-TTU,1201058203	5	RDS: 2,540 H&I (42.4%)
Jun-68																VCA-TTU,1201058204		Data not recorded.
Jul-68	24,382	642				2,736				2,570			5,948	10.8%	43.2%	VCA-TTU,1201058208	5-7	RDS: 2,570 H&I (26.3%)
Aug-68	21,031	565				2,254				2,745			5,564	10.2%	49.3%	VCA-TTU,1201058209	4-6	RDS: 2,745 H&I (42.6%)
Sep-68	22,684	435				1,374				2,432			4,241	10.3%	57.3%	VCA-TTU,1201058210	4-5	RDS: 2,432 H&I (49.9%)
Oct-68	20,505	265				1,040				2,141			3,446	7.7%	62.1%	VCA-TTU,1201058211	4-11	RDS: 2,141 H&I (42.4%)
Nov-68	23,110	245				1,484				1,727			3,456	7.1%	50.0%	VCA-TTU,1201058212	4-9	RDS: 1,727 H&I (25.4%)
Dec-68	14,812	219				757				941			1,917	11.4%	49.1%	VCA-TTU,1201058213	5-8	RDS: 941 H&I (41.9%)
Jan-69	13,116	199				502				1,259			1,960	10.2%	64.2%	VCA-TTU,1201058214	5-7	RDS: 1,259 H&I (50.0%)
Feb-69	17,971	259				656				1,612			2,527	10.2%	63.8%	VCA-TTU,1201058215	5-6	RDS: 1,598 H&I (31.6%)
Mar-69	13,597	170				486				1,641			2,297	7.4%	71.4%	VCA-TTU,1201058216	5-7	RDS: 1,641 H&I (45.1%)
Apr-69	11,691	171				709				714			1,594	10.7%	44.8%	VCA-TTU,1201058217	5-6	RDS: 1,594 H&I (38.3%)
May-69	10,335	176				699				262			1,137	15.5%	23.0%	VCA-TTU,1201058218	7-9	RDS: 262 H&I (21.9%)
Jun-69	16,335	188				1,248				471			1,907	9.9%	24.7%	VCA-TTU,1201058219	7-8	RDS: 471 H&I (23.4%)
Jul-69	14,455	170				1,146			260				1,576	10.8%	0.0%	VCA-TTU,1201058220	7-8	RDS: 260 PRE (16.5%)
Aug-69	8,573	132				644			398				1,174	11.2%	0.0%	VCA-TTU,1201058221	7-8	RDS: 398 PRE (30.2%)

Table D-11. 1st Battalion, 12th Marines, March 1965 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Mar-65																VCA-TTU,1201059020		Data not recorded.
Apr-65																VCA-TTU,1201059021		Data not recorded.
May-65																VCA-TTU,1201059022		Data not recorded.
Jun-65																VCA-TTU,1201059023		Data not recorded.
Jul-65																VCA-TTU,1201059024		Data not recorded.
Aug-65																VCA-TTU,1201059025		Data not recorded.
Sep-65	7,976	92								2,865			2,957	3.1%	96.9%	VCA-TTU,1201059026	4	
Oct-65	8,071	81								3,053			3,134	2.6%	97.4%	VCA-TTU,1201059027	4	
Nov-65	9,753	168								4,317			4,485	3.7%	96.3%	VCA-TTU,1201059028	10	
Dec-65	11,460	38				1				4,863			4,902	0.8%	99.2%	VCA-TTU,1201059029	6	
Jan-66	10,500	56								5,076			5,132	1.1%	98.9%	VCA-TTU,1201059030	6	
Feb-66	9,123	94				7				4,837			4,938	1.9%	98.0%	VCA-TTU,1201059031	2	
Mar-66	12,461	190				4				3,769			3,963	4.8%	95.1%	VCA-TTU,1201059032	2	
Apr-66	13,730	203				63				2,108			2,374	8.6%	88.8%	VCA-TTU,1201059033	2	
May-66	11,457	186				22				2,368			2,576	7.2%	91.9%	VCA-TTU,1201059034	2	
Jun-66	16,726	221				602				2,415			3,238	6.8%	74.6%	VCA-TTU,1201059035	2	
Jul-66	15,068	203				929				3,197			4,329	4.7%	73.9%	VCA-TTU,1201059036	2	
Aug-66	10,958	232				603				2,781			3,616	6.4%	76.9%	VCA-TTU,1201059037	2	
Sep-66	8,663	164				404				2,409			2,977	5.5%	80.9%	VCA-TTU,1201059038	2	
Oct-66	6,375	167				89				2,704			2,960	5.6%	91.4%	VCA-TTU,1201059039	2	
Nov-66	8,000	178				598				4,026			4,802	3.7%	83.8%	VCA-TTU,1201059040	2	
Dec-66	14,151	174				3,592				964			4,730	3.7%	20.4%	VCA-TTU,1201059041	12	
Jan-67	5,603	278				3,722				1,603			5,603	5.0%	28.6%	VCA-TTU,1201059042	24	
Feb-67	21,101	414				3,498				1,344			5,256	7.9%	25.6%	VCA-TTU,1201059043	18	
Mar-67	36,850	957				3,256				1,277			5,490	17.4%	23.3%	VCA-TTU,1201059044	17	
Apr-67	53,057	1,006				5,359				4,021			10,386	9.7%	38.7%	VCA-TTU,1201059045	15	
May-67	10,122	481				185				3,175			3,841	12.5%	82.7%	VCA-TTU,1201059046	5	
Jun-67	14,421	635				107				3,569			4,311	14.7%	82.8%	VCA-TTU,1201059047	6	
Jul-67	31,100	682				130				4,942			5,754	11.9%	85.9%	VCA-TTU,1201059048	6	
Aug-67	52,085	762				216				4,638			5,616	13.6%	82.6%	VCA-TTU,1201059049	5	
Sep-67	23,693	305				478				3,148			3,931	7.8%	80.1%	VCA-TTU,1201059050	5	
Oct-67	35,937	571				1,147				2,111			3,829	14.9%	55.1%	VCA-TTU,1201059051	5	
Nov-67	24,817	629				928				689			2,246	28.0%	30.7%	VCA-TTU,1201059052	6	
Dec-67	23,353	266				1,482				411			2,159	12.3%	19.0%	VCA-TTU,1201059053	5	

Table D-12. 1st Battalion, 12th Marines, January 1968 to September 1969

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	35,717	580				1,446				1,133			3,159	18.4%	35.9%	VCA-TTU,1201059054	5	
Feb-68	25,268	671				1,080				1,893			3,644	18.4%	51.9%	VCA-TTU,1201059055	11-39	
Mar-68	25,082	757				1,074				1,693			3,524	21.5%	48.0%	VCA-TTU,1201059056	6	Record missing 1-7 March.
Apr-68	28,428	886				964				2,217			4,067	21.8%	54.5%	VCA-TTU,1201059057	6-7	
May-68	40,050	936				1,208				1,966			4,110	22.8%	47.8%	VCA-TTU,1201059058	7-8	
Jun-68	28,417	735				685				632			2,052	35.8%	30.8%	VCA-TTU,1201059059	7-9	
Jul-68	52,842	1,207				988				2,584			4,779	25.3%	54.1%	VCA-TTU,1201059060	8-9	
Aug-68	52,640	1,097				894				1,428			3,419	32.1%	41.8%	VCA-TTU,1201059061	8-10	
Sep-68	43,224	938				687				984			2,609	36.0%	37.7%	VCA-TTU,1201059062	7-8	
Oct-68	39,008	1,042				418				984			2,444	42.6%	40.3%	VCA-TTU,1201059063	7-8	
Nov-68	58,652	783				855				1,042			2,680	29.2%	38.9%	VCA-TTU,1201059064	7-8	
Dec-68	44,225	743				451				848			2,042	36.4%	41.5%	VCA-TTU,1201059065	7-9	
Jan-69	46,190	1,095				560				1,098			2,753	39.8%	39.9%	VCA-TTU,1201059066	6-7	
Feb-69	44,748	846				812				1,160			2,818	30.0%	41.2%	VCA-TTU,1201059067	8-10	
Mar-69	29,853	419				857				651			1,927	21.7%	33.8%	VCA-TTU,1201059068	7-8	
Apr-69	40,958	579				1,029				1,090			2,698	21.5%	40.4%	VCA-TTU,1201059069	7-8	
May-69	62,780	1,141				916				1,425			3,482	32.8%	40.9%	VCA-TTU,1201059070	8-10	
Jun-69	63,987	1,202				1,827				2,036			5,065	23.7%	40.2%	VCA-TTU,1201059071	6-9	
Jul-69	67,458	1,764				2,476				1,665			5,905	29.9%	28.2%	VCA-TTU,1201059072	6-8	
Aug-69	85,277	1,549				3,446				1,179			6,174	25.1%	19.1%	VCA-TTU,1201059073	6-8	
Sep-69	33,763	748				1,299				154			2,201	34.0%	7.0%	VCA-TTU,1201059074	6-7	

Table D-13. 2nd Battalion, 12th Marines, July 1965 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jul-65	257															VCA-TTU,1201059075	3	Data not recorded.
Aug-65	3,368															VCA-TTU,1201059076	2	Data not recorded.
Sep-65	5,795															VCA-TTU,1201059077	3	Data not recorded.
Oct-65	8,239	78				4				2,468			2,550	3.1%	96.8%	VCA-TTU,1201059078	3	
Nov-65	9,189															VCA-TTU,1201059079	3	Data not recorded.
Dec-65	6,775															VCA-TTU,1201059080	3	Data not recorded.
Jan-66	7,423															VCA-TTU,1201059081	3	Data not recorded.
Feb-66	7,104															VCA-TTU,1201059082	3	Data not recorded.
Mar-66	7,029									3,442			3,442	0.0%	100.0%	VCA-TTU,1201059083	3	371 MSNS, "3,442 H&I"
Apr-66	9,025									1,410			1,410	0.0%	100.0%	VCA-TTU,1201059084	3	279 MSNS, "1,401 H&Is"
May-66	9,626	366								1,350			1,716	21.3%	78.7%	VCA-TTU,1201059085	3	366 OBS, 1350 H&I MSNS
Jun-66	19,746	509				96				2,169			2,774	18.3%	78.2%	VCA-TTU,1201059086	3	
Jul-66	14,547	529				16				1,538			2,083	25.4%	73.8%	VCA-TTU,1201059087	3	
Aug-66	8,510	216				24				1,059			1,299	16.6%	81.5%	VCA-TTU,1201059088	3	
Sep-66	5,498	119				17				902			1,038	11.5%	86.9%	VCA-TTU,1201059089	3	
Oct-66	8,589	193				8				2,033			2,234	8.6%	91.0%	VCA-TTU,1201059090	3	
Nov-66	12,626	212				47				2,098			2,357	9.0%	89.0%	VCA-TTU,1201059091	3	
Dec-66	10,705	257				84				2,273			2,614	9.8%	87.0%	VCA-TTU,1201059092	3	
Jan-67	8,445	299				9				1,125			1,433	20.9%	78.5%	VCA-TTU,1201059093	2	
Feb-67	7,986	303				15				1,333			1,651	18.4%	80.7%	VCA-TTU,1201059094	2	
Mar-67	20,366	405				81				2,770			3,256	12.4%	85.1%	VCA-TTU,1201059095	2	
Apr-67	12,171	228				33				1,481			1,742	13.1%	85.0%	VCA-TTU,1201059096	2	
May-67	34,381	523				357				2,648			3,528	14.8%	75.1%	VCA-TTU,1201059097	3	
Jun-67	23,358	517				243				4,964			5,724	9.0%	86.7%	VCA-TTU,1201059098	2	
Jul-67	55,881	444				616				8,802			9,862	4.5%	89.3%	VCA-TTU,1201059099	2	
Aug-67	68,203	493				646				7,808			8,947	5.5%	87.3%	VCA-TTU,1201059100	3	
Sep-67	58,383	981				779				4,972			6,732	14.6%	73.9%	VCA-TTU,1201059101	3	
Oct-67	62,039	1,615				2,086				8,804			12,505	12.9%	70.4%	VCA-TTU,1201059102	3	
Nov-67	52,038	807				1,380				2,027			4,214	19.2%	48.1%	VCA-TTU,1201059103	4	
Dec-67	70,116	1,392				1,451				2,783			5,626	24.7%	49.5%	VCA-TTU,1201059104	4	

Table D-14. 2nd Battalion, 12th Marines, January 1968 to August 1969

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	80,397	2,188				1,665				2,803			6,656	32.9%	42.1%	VCA-TTU,1201059105	4	
Feb-68	45,496	1,609				1,877				2,646			6,132	26.2%	43.2%	VCA-TTU,1201059106	4	
Mar-68	37,187	1,233				2,101				3,664			6,998	17.6%	52.4%	VCA-TTU,1201059107	4	
Apr-68	41,319	1,186				4,188				4,221			9,595	12.4%	44.0%	VCA-TTU,1201059108	4	
May-68	91,117	1,910				3,646				2,781			8,337	22.9%	33.4%	VCA-TTU,1201059109	4	
Jun-68	50,208	1,336				3,749				2,519			7,604	17.6%	33.1%	VCA-TTU,1201059110	4	
Jul-68	36,886	771				2,050				1,501			4,322	17.8%	34.7%	VCA-TTU,1201059111	4	
Aug-68	36,418	551				1,285				642			2,478	22.2%	25.9%	VCA-TTU,1201059112	4	
Sep-68	56,073	740				1,449				1,335			3,524	21.0%	37.9%	VCA-TTU,1201059113	4	
Oct-68																VCA-TTU,1201059114		Detail page is missing.
Nov-68	41,539	467				1,260				1,037			2,764	16.9%	37.5%	VCA-TTU,1201059115	4	
Dec-68	40,347															VCA-TTU,1201059116	4	Data not recorded.
Jan-69	54,002															VCA-TTU,1201059117	4	Data not recorded.
Feb-69	80,145															VCA-TTU,1201059118	4	Data not recorded.
Mar-69	44,875															VCA-TTU,1201059119	4	RDS OBS = 23,468 (52.3%)
Apr-69	32,812															VCA-TTU,1201059120	4	Data not recorded.
May-69	29,640	355				1,669							2,024	17.5%	0.0%	VCA-TTU,1201059121	4	
Jun-69	19,274															VCA-TTU,1201059122	4	Data not recorded.
Jul-69																VCA-TTU,1201059123		Data not recorded.
Aug-69																VCA-TTU,1201059124	3	Redeployed.

Table D-15. 3rd Battalion, 12th Marines, June 1965 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jun-65	3,117	164								172			336	48.8%	51.2%	VCA-TTU,1201059125	2	OBS = "Will Adjust," REG
Jul-65	6,654	212				33				491			736	28.8%	66.7%	VCA-TTU,1201060001	3	OBS = "Will Adjust," REG
Aug-65	13,667	413				31				1,209			1,653	25.0%	73.1%	VCA-TTU,1201060002	2	OBS = "Will Adjust," REG
Sep-65	15,991	317				83				1,489			1,889	16.8%	78.8%	VCA-TTU,1201060003	3	OBS = OPP, DEF, FOS, REG
Oct-65	17,717	404				48				1,469			1,921	21.0%	76.5%	VCA-TTU,1201060004	5-2	OBS = OPP, DEF, FOS, REG
Nov-65	13,920	274				68				1,352			1,694	16.2%	79.8%	VCA-TTU,1201060005	C-1	OBS = OPP, DEF, REG
Dec-65	16,740	306				45				1,426			1,777	17.2%	80.2%	VCA-TTU,1201060006	5-C-1	OBS = OPP, DEF, REG
Jan-66	12,331	289				11				1,107			1,407	20.5%	78.7%	VCA-TTU,1201060007	5-C-1	OBS = OPP, DEF, FOS, REG
Feb-66	12,630	340				78				635			1,053	32.3%	60.3%	VCA-TTU,1201060008	5-C-5	OBS = OPP, DEF, REG
Mar-66	2,087	573				4				520			1,097	52.2%	47.4%	VCA-TTU,1201060009	5-B-1	OBS = OPP, DEF, REG
Apr-66	15,297	404				117				3,945			4,466	9.0%	88.3%	VCA-TTU,1201060010	5-B-5	OBS = OPP, DEF, REG
May-66	14,283	1,694				118				2,946			4,758	35.6%	61.9%	VCA-TTU,1201060011	5-B-6	OBS = OPP, DEF, REG
Jun-66	20,168	372				134				2,954			3,460	10.8%	85.4%	VCA-TTU,1201060012	5-B-2	OBS = OPP, DEF, REG
Jul-66	10,355	213				58				2,118			2,389	8.9%	88.7%	VCA-TTU,1201060013	5-B-2	OBS = OPP, DEF, REG
Aug-66	15,096	246				63				2,387			2,696	9.1%	88.5%	VCA-TTU,1201060014	5-B-2	OBS = OPP, DEF, REG
Sep-66	30,935	777				141				3,153			4,071	19.1%	77.5%	VCA-TTU,1201060015	4-B-2	OBS = OPP, DES
Oct-66	27,517	324				228				2,470			3,022	10.7%	81.7%	VCA-TTU,1201060016	5-2	OBS = OPP, DEF, REG
Nov-66	12,653	142				136				3,204			3,482	4.1%	92.0%	VCA-TTU,1201060017	5-2	OBS = OPP, DEF, REG
Dec-66	12,879	87				412				3,188			3,687	2.4%	86.5%	VCA-TTU,1201060018	4-2	OBS = OPP, DEF
Jan-67	15,172	154				386				3,112			3,652	4.2%	85.2%	VCA-TTU,1201060019	5-2	OBS = OPP, DEF, REG
Feb-67	6,561	118				155				1,593			1,866	6.3%	85.4%	VCA-TTU,1201060020	5-1	OBS = OPP
Mar-67	16,521	205				666				6,094			6,965	2.9%	87.5%	VCA-TTU,1201060021	5-2	OBS = OPP
Apr-67	23,415	304				566				6,152			7,022	4.3%	87.6%	VCA-TTU,1201060022	5-2	
May-67	12,533	339				250				4,085			4,674	7.3%	87.4%	VCA-TTU,1201060023	5-2	
Jun-67	13,979	481				59				3,915			4,455	10.8%	87.9%	VCA-TTU,1201060024	7-1	
Jul-67	14,610	437				109				4,805			5,351	8.2%	89.8%	VCA-TTU,1201060025	19-22	
Aug-67	10,854	512				93				3,094			3,699	13.8%	83.6%	VCA-TTU,1201060026	13,20	
Sep-67	10,045	318				40				2,371			2,729	11.7%	86.9%	VCA-TTU,1201060027	15,18	
Oct-67	24,970	531				749				1,730			3,010	17.6%	57.5%	VCA-TTU,1201060028	12,16	
Nov-67	12,721	353				162				2,069			2,584	13.7%	80.1%	VCA-TTU,1201060029	12	
Dec-67	13,965	251				181				2,541			2,973	8.4%	85.5%	VCA-TTU,1201060030	IV-9,11	

Table D-16. 3rd Battalion, 12th Marines, January 1968 to October 1969

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-68	15,247	276				161				2,416			2,853	9.7%	84.7%	VCA-TTU,1201060031	IV-9,10	
Feb-68	15,054	152				181				2,459			2,792	5.4%	88.1%	VCA-TTU,1201060032	IV-6	
Mar-68	30,986	648				492				3,120			4,260	15.2%	73.2%	VCA-TTU,1201060033	IV-6,17	
Apr-68	22,780	336				218				2,609			3,163	10.6%	82.5%	VCA-TTU,1201060034	IV-6,14	
May-68																VCA-TTU,1201060035	IV-A-C	Data missing.
Jun-68	7,577	233				111				656			1,000	23.3%	65.6%	VCA-TTU,1201060036	IV-B,C	Data incomplete.
Jul-68	29,558	580				387				1,363			2,330	24.9%	58.5%	VCA-TTU,1201060037	IV-A-C	Data incomplete.
Aug-68	48,453	993				754				2,890			4,637	21.4%	62.3%	VCA-TTU,1201060038	IV-B,C	
Sep-68	8,145	560				593				1,159			2,312	24.2%	50.1%	VCA-TTU,1201060039	IV-A	Data incomplete.
Oct-68	30,197	571				729				2,797			4,097	13.9%	68.3%	VCA-TTU,1201060040	IV-A-3	
Nov-68	25,878	560				444				2,989			3,993	14.0%	74.9%	VCA-TTU,1201060041	IV-A-3	
Dec-68	15,851	96				829				1,173			2,098	4.6%	55.9%	VCA-TTU,1201060042	IV-A	Data incomplete.
Jan-69	29,529	374				337				2,365			3,076	12.2%	76.9%	VCA-TTU,1201060043	IV-1	
Feb-69	33,996	474				220				2,718			3,412	13.9%	79.7%	VCA-TTU,1201060044	IV-1	
Mar-69	72,299	1,216				832				3,174			5,222	23.3%	60.8%	VCA-TTU,1201060045	IV-A	
Apr-69	41,848	1,109				702				2,314			4,125	26.9%	56.1%	VCA-TTU,1201060046	IV-A	
May-69	44,902	619				716				3,020			4,355	14.2%	69.3%	VCA-TTU,1201060047	IV-2	
Jun-69	40,488	684				1,132				2,529			4,345	15.7%	58.2%	VCA-TTU,1201060049	IV-3	
Jul-69	55,156	923				1,768				1,531			4,222	21.9%	36.3%	VCA-TTU,1201060050	IV-1	
Aug-69	54,640	892				2,601				2,116			5,609	15.9%	37.7%	VCA-TTU,1201060051	14	
Sep-69	51,195	657				1,584				1,075			3,316	19.8%	32.4%	VCA-TTU,1201060052	17	
Oct-69	14,279	283				846				573			1,702	16.6%	33.7%	VCA-TTU,1201060053	IV-2	Data missing 14 October.

Table D-17. 4th Battalion, 12th Marines, July 1965 to December 1967

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jul-65	1,690	121								338			459	26.4%	73.6%	VCA-TTU,1201060054	2	RDS: 621 H&I (36.7%)
Aug-65	4,727	309								855			1,164	26.5%	73.5%	VCA-TTU,1201060055	2	RDS: 1,430 H&I (30.3%)
Sep-65	3,136	120				3				614			737	16.3%	83.3%	VCA-TTU,1201060056	2-1	OBS = REG, AREA
Oct-65	5,966	345				1				1,121			1,467	23.5%	76.4%	VCA-TTU,1201060057	2-1	OBS = REG, OBS
Nov-65	6,590	0														VCA-TTU,1201060058	3-1	RDS: 2,807 H&I (42.6%)
Dec-65	5,667	211				58				2,424			2,693	7.8%	90.0%	VCA-TTU,1201060059	3-4	OBS = REG, OBS, DES, DEM
Jan-66	7,550	260				67				2,721			3,048	8.5%	89.3%	VCA-TTU,1201060060	2-5	OBS = REG, OBS, DES, DEM
Feb-66	11,015	517				205				3,338			4,060	12.7%	82.2%	VCA-TTU,1201060061	1-4	OBS = REG, OBS, DES
Mar-66	8,406	381				62				2,307			2,750	13.9%	83.9%	VCA-TTU,1201060062	12	OBS = REG, OBS, DES, CTB
Apr-66	3,395	128				18				2,100			2,246	5.7%	93.5%	VCA-TTU,1201060063	9	OBS = REG, OBS, DES
May-66	3,224	70				20				1,205			1,295	5.4%	93.1%	VCA-TTU,1201060064	7	OBS = REG, OBS
Jun-66	3,097	30				38				790			858	3.5%	92.1%	VCA-TTU,1201060065	6	OBS = REG, OBS
Jul-66	3,304	41				50				1,563			1,654	2.5%	94.5%	VCA-TTU,1201060067	8	OBS = REG, OBS
Aug-66	3,199	50				10				1,979			2,039	2.5%	97.1%	VCA-TTU,1201060068	7	OBS = REG, OBS
Sep-66	5,029	125				29				2,526			2,680	4.7%	94.3%	VCA-TTU,1201060069	7,8	OBS = REG, OBS
Oct-66	1,390	20				5				502			527	3.8%	95.3%	VCA-TTU,1201060070	8	OBS = REG, OBS
Nov-66	2,669	54				468				483			1,005	5.4%	48.1%	VCA-TTU,1201060071	7	OBS = REG, OBS
Dec-66	8,287	169				500				961			1,630	10.4%	59.0%	VCA-TTU,1201060072	8,9	OBS = REG, OBS
Jan-67	7,418	358				84				1,551			1,993	18.0%	77.8%	VCA-TTU,1201060073	7	
Feb-67	9,896	303				378				2,151			2,832	10.7%	76.0%	VCA-TTU,1201060074	8	
Mar-67	8,019	176				283				2,245			2,704	6.5%	83.0%	VCA-TTU,1201060075	7	
Apr-67	6,844	160				501				2,062			2,723	5.9%	75.7%	VCA-TTU,1201060076	7	
May-67	3,669	170				60				1,221			1,451	11.7%	84.1%	VCA-TTU,1201060077	6	
Jun-67	4,725	209				29				1,167			1,405	14.9%	83.1%	VCA-TTU,1201060078	6	
Jul-67	5,494	201				75				1,368			1,644	12.2%	83.2%	VCA-TTU,1201060079	5	
Aug-67	9,982	289				52				2,458			2,799	10.3%	87.8%	VCA-TTU,1201060080	5	
Sep-67	8,767	139				35				2,362			2,536	5.5%	93.1%	VCA-TTU,1201060082	7	
Oct-67	8,598	191				51				1,759			2,001	9.5%	87.9%	VCA-TTU,1201060083	7	
Nov-67	5,449	144				22				1,025			1,191	12.1%	86.1%	VCA-TTU,1201060084	6	
Dec-67	4,105	141				16				1,146			1,303	10.8%	88.0%	VCA-TTU,1201060085	5	

Table D-18. 4th Battalion, 12th Marines, January 1968 to September 1970

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks		
Jan-68	5,984	98				169				947			1,214	8.1%	78.0%	VCA-TTU,1201060086	4			
Feb-68	6,532	120				360				601			1,081	11.1%	55.6%	VCA-TTU,1201060087	4	RDS: 2,334 H&I (35.7%)		
Mar-68	8,187	175				443				768			1,386	12.6%	55.4%	VCA-TTU,1201060088	4	RDS: 2,277 H&I (27.8%)		
Apr-68	7,498	206				280				769			1,255	16.4%	61.3%	VCA-TTU,1201060089	4	RDS: 1,370 H&I (18.3%)		
May-68	10,952		261	227	67			379		412	67	3	1,416	39.2%	29.1%	VCA-TTU,1201060090	4	RDS: 910 H&I (8.3%)		
Jun-68	4,769		105	328	89			46		394	34	10	1,006	51.9%	39.2%	VCA-TTU,1201060091	4	RDS: 801 H&I (16.8%)		
Jul-68	23,200		176	1,040	12			274		505	70	25	2,102	58.4%	24.0%	VCA-TTU,1201060093	5	RDS: 1,432 H&I (6.2%)		
Aug-68	22,850		269	1,507	123			271			81	56	2,307	82.3%	0.0%	VCA-TTU,1201060094	4	RDS: 4,893 PRP (21.4%)		
Sep-68	20,387		305	618				168			136		1,227	75.2%	0.0%	VCA-TTU,1201060095	4	RDS: 3,657 PRP (17.9%)		
Oct-68	12,174		271	260				92			182		805	66.0%	0.0%	VCA-TTU,1201060096	4	RDS: 2,933 PRP (24.1%)		
Nov-68	21,096		422	490				138			262		1,312	69.5%	0.0%	VCA-TTU,1201060097	4	RDS: 2,612 PRP (12.4%)		
Dec-68	18,682		124	789	72			100			98		1,183	83.3%	0.0%	VCA-TTU,1201060098	6	RDS: 1,487 PRP (8.0%)		
Jan-69	15,694		108	1,214	2			54			92		1,470	90.1%	0.0%	VCA-TTU,1201060099	5	RDS: 10,264 ACQ (65.4%)		
Feb-69	17,013		133	1,428	22			33			66		1,682	94.1%	0.0%	VCA-TTU,1201060100	7	RDS: 9,484 ACQ (55.7%)		
Mar-69	33,663		262	1,601	80			73			76		2,092	92.9%	0.0%	VCA-TTU,1201060101	6	RDS: 16,076 ACQ (47.8%)		
Apr-69	20,522		244	1,666	20			70			72		2,072	93.1%	0.0%	VCA-TTU,1201060102	6	RDS: 11,401 ACQ (55.6%)		
May-69	20,305		207	814	56			63			139		1,279	84.2%	0.0%	VCA-TTU,1201060103	4	RDS: 8,502 ACQ (41.9%)		
Jun-69	12,570		155	759	85			26			109		1,134	88.1%	0.0%	VCA-TTU,1201060104	4	RDS: 4,774 ACQ (38.0%)		
Jul-69																		Record not available.		
Aug-69	17,846		186	552	88			81		147	155		1,209	68.3%	12.2%	VCA-TTU,1201060105	4	RDS: 645 INT (3.6%)		
Sep-69	11,631	201				982			190				1,373	14.6%	0.0%	VCA-TTU,1201060106	8	RDS: 1198 PRE (10.3%)		
Oct-69	22,050																	VCA-TTU,1201060107	4	Data not recorded.
Nov-69	25,979																	VCA-TTU,1201060108	5	Data not recorded.
Dec-69	21,626																	VCA-TTU,1201060109	5	Data not recorded.
Jan-70	16,468																	VCA-TTU,1201060110	5	Data not recorded.
Feb-70	21,121																	VCA-TTU,1201060111	5	Data not recorded.
Mar-70	23,209																	VCA-TTU,1201060112	5	Data not recorded.
Apr-70	25,350																	VCA-TTU,1201060113	5	Data not recorded.
May-70	18,576																	VCA-TTU,1201060114	5	Data not recorded.
Jun-70	18,758																	VCA-TTU,1201060115	5	Data not recorded.
Jul-70	20,362																	VCA-TTU,1201060116	5	Data not recorded.
Aug-70	18,474																	VCA-TTU,1201060117	5	Data not recorded.
Sep-70	5,330																	VCA-TTU,1201060118	5	Data not recorded.

Table D-19. 1st Battalion, 13th Marines, January 1967 to March 1970

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	OBS %	INT %	Archival Location	Page	Remarks
Jan-67																VCA-TTU, 1201060119		Data not recorded.
Feb-67																VCA-TTU, 1201060120		Data not recorded.
Mar-67																VCA-TTU, 1201060121		Data not recorded.
Apr-67																VCA-TTU, 1201060122		Data not recorded.
May-67																VCA-TTU, 1201060123		Data not recorded.
Jun-67																VCA-TTU, 1201060124		Data not recorded.
Jul-67																VCA-TTU, 1201060125		Data not recorded.
Aug-67	18,033	376				5				7,153			7,534	5.0%	94.9%	VCA-TTU, 1201060126	6	
Sep-67	11,258	323				32				7,399			7,754	4.2%	95.4%	VCA-TTU, 1201060127	6	
Oct-67	8,358	245				16				6,024			6,285	3.9%	95.8%	VCA-TTU, 1201060128	6	
Nov-67	4,829	138				26				3,906			4,070	3.4%	96.0%	VCA-TTU, 1201060129	6	
Dec-67	4,971	185				24				3,415			3,624	5.1%	94.2%	VCA-TTU, 1201060130	6	
Jan-68	23,326	441				287				4,580			5,308	8.3%	86.3%	VCA-TTU, 1201060131	7	
Feb-68	44,900	610				1,048				2,049			3,707	16.5%	55.3%	VCA-TTU, 1201060132	7	
Mar-68	48,170	711				968				360			2,039	34.9%	17.7%	VCA-TTU, 1201060133	8	
Apr-68	46,086	718				1,882				2,555			5,155	13.9%	49.6%	VCA-TTU, 1201060134	6	"Intelligence (H&I)."
May-68	14,911	201				147				2,095			2,443	8.2%	85.8%	VCA-TTU, 1201060135	5	"Intelligence (H&I)."
Jun-68	13,277	203				1,182				1,020			2,405	8.4%	42.4%	VCA-TTU, 1201060136	II-2	"H&I."
Jul-68	12,602	143				1,836				253			2,232	6.4%	11.3%	VCA-TTU, 1201060137	II-3	Shift from H&I to UN.
Aug-68	23,863	343				4,669							5,012	6.8%	0.0%	VCA-TTU, 1201060139	II-2	
Sep-68	18,603	279				5,558							5,837	4.8%	0.0%	VCA-TTU, 1201060140	II-2	
Oct-68	18,839	201				5,518							5,719	3.5%	0.0%	VCA-TTU, 1201060142	5	
Nov-68	19,704	184				7,379							7,563	2.4%	0.0%	VCA-TTU, 1201060143	4	
Dec-68	20,711	212				8,104							8,316	2.5%	0.0%	VCA-TTU, 1201060144	4	
Jan-69	11,126	134				4,139							4,273	3.1%	0.0%	VCA-TTU, 1201060145	4	
Feb-69	15,384	308				4,673							4,981	6.2%	0.0%	VCA-TTU, 1201060146	6	
Mar-69	16,372	356				4,042							4,398	8.1%	0.0%	VCA-TTU, 1201060147	5	
Apr-69	31,985	322				5,045							5,367	6.0%	0.0%	VCA-TTU, 1201060148	5	
May-69	33,222	363				2,311							2,674	13.6%	0.0%	VCA-TTU, 1201060149	4	
Jun-69	18,537	179				1,385							1,564	11.4%	0.0%	VCA-TTU, 1201060150	III-2	
Jul-69	16,991	211				1,693							1,904	11.1%	0.0%	VCA-TTU, 1201060151	II-1	
Aug-69	24,474	400				2,302							2,702	14.8%	0.0%	VCA-TTU, 1201060152	II-2	
Sep-69	21,486	400				3,458							3,858	10.4%	0.0%	VCA-TTU, 1201060153	II-1	
Oct-69	25,583	388				4,391							4,779	8.1%	0.0%	VCA-TTU, 1201060154	III-2	
Nov-69																VCA-TTU, 1201060155		Data not recorded.
Dec-69	39,376	386				6,421							6,807	5.7%	0.0%	VCA-TTU, 1201060156	I-4	
Jan-70	40,577	516				7,009							7,525	6.9%	0.0%	VCA-TTU, 1201060157	III-2	
Feb-70	38,685	318				6,625							6,943	4.6%	0.0%	VCA-TTU, 1201060158	III-2	
Mar-70	4,727	38				660							698	5.4%	0.0%	VCA-TTU, 1201060159	II-1	Redeployed.

Table D-20. 2nd Battalion, 13th Marines, February 1968 to August 1968

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	MN OBS	MN INT	Archival Location	Page	Remarks
Feb-68	24,869															VCA-TTU, 1201060161		Data not recorded.
Mar-68	24,898															VCA-TTU, 1201060162		Data not recorded.
Apr-68	24,929															VCA-TTU, 1201060163		Data not recorded.
May-68	24,959															VCA-TTU, 1201060164		Data not recorded.
Jun-68	24,990															VCA-TTU, 1201060165		Data not recorded.
Jul-68	25,020															VCA-TTU, 1201060166		Data not recorded.
Aug-68	25,051															VCA-TTU, 1201060167		Data not recorded.

Table D-21. K Battery, 4th Battalion, 13th Marines, November 1968 to October 1969

Month	RDS	OBS	CNF	ACQ	CTB	UN	S2	PRP	PRE	INT	SP	OTH	MSNS	MN OBS	MN INT	Archival Location	Page	Remarks	
Nov-68	2,074															VCA-TTU, 1201060169	II-2	RDS: 765 H&I (36.9%)	
Dec-68	3,834	96				101				82				279	34.4%	29.4%	VCA-TTU, 1201060170	4	RDS: 384 H&I (10.0%)
Jan-69	3,367	173				63				134				370	46.8%	36.2%	VCA-TTU, 1201060171	4	RDS: 748 H&I (22.2%)
Feb-69	4,779	164				51				429				644	25.5%	66.6%	VCA-TTU, 1201060172	5	RDS: 1,686 H&I (35.3%)
Mar-69	5,769	167				187				252				606	27.6%	41.6%	VCA-TTU, 1201060173	4	RDS: 1,352 H&I (23.4%)
Apr-69	5,377	118				246				117				481	24.5%	24.3%	VCA-TTU, 1201060174	4	RDS: 868 H&I (16.1%)
May-69	8,319	169				374				196				739	22.9%	26.5%	VCA-TTU, 1201060175	4	RDS: 1,438 H&I (17.3%)
Jun-69	8,265	170				232				253				655	26.0%	38.6%	VCA-TTU, 1201060177	4	RDS: 1,985 H&I (24.0%)
Jul-69	10,312	117				526				364				1,007	11.6%	36.1%	VCA-TTU, 1201060178	4	RDS: 1,780 H&I (17.3%)
Aug-69	10,597	103				603				262				968	10.6%	27.1%	VCA-TTU, 1201060179	4	RDS: 1,886 H&I (17.8%)
Sep-69																			Record is missing.
Oct-69	3,339	59				147				117				323	18.3%	36.2%	VCA-TTU, 1201060180	4	RDS: 458 H&I (13.7%)

BIOGRAPHICAL STATEMENT

John M. Hawkins received a Bachelor of Science from the United States Military Academy at West Point, New York, and a Master of Arts in history from Texas A&M University at College Station, Texas. He is an active duty Lieutenant Colonel of Field Artillery, United States Army, and is currently assigned to NATO Rapid Deployable Corps – France. The views expressed herein are his own and do not necessarily reflect those of NATO, the Department of Defense, or the United States Army.